ISFL Emission Reductions (ER) Program Document (PD)

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Acronym/Abbreviation

AF	Absortion Factors
AFOLU	Agriculture, Forestry and Other Land Use
APF	Federal Public Administration
AGB	Above-Ground Biomass
ASMA	Allometric Models Based on a Sensitivity Analysis
BGB	Below-Ground Biomass
BioCF	BioCarbon Fund
BioCF-ISFL	BioCarbon Fund's Initiative for Sustainable Forest Landscapes
BL	Base Line
BM	World Bank / Banco Mundial
BS	Benefit Sharing
BSP	Benefit Sharing Plan
BUR	Biannual Update Report
CADER	Rural Development Support Centers/ Centros de Apoyo al Desarrollo Rural
CAR	Carbon Action Reserve
CATS	Carbon Asset Tracking System
CBD	Convention on Biological Diversity
CC	Cropland Remaining Cropland
CCPI	Centros Coordinadores de Pueblos Indígenas
CDM	Registered Clean Development Management
CEDAW	Convention on the Elimination of All Forms of Discrimination against Women
CERs	Certified Emission Reductions
CONABIO	National Commission for the Knowledge and Use of Biodiversity / Comisión Nacional para el Conocimiento y Uso de la Biodiversidad
CONAFOR	National Forestry Commission / Comisión Nacional Forestal
CONAGUA	National Water Commission / Comisión Nacional del Agua
CPEUM	Political Constitution of the United Mexican States / Constitución Política de los Estados Unidos Mexicanos
CWD	Coarse Woody Debris
DA	Activity Data
DB	Distribución de Beneficios/Benefit Sharing
DOF	Diario Oficial de la Federación
DW	Dead Wood

EAS	Estándares Ambientales y Sociales
EF	Emission Factors
ENAREDD+	Estrategia Nacional para la Reducción de Emisiones por Deforestación y Degradación de los bosques
ENBIOFOR	Estrategia de Integración para la Conservación y Uso Sustentable de la Biodiversidad en el Sector Forestal / Strategy for Integration of Conservation and Sustainable Use of Biodiversity in the Forest Sector
ENBioMex	Estrategia Nacional sobre Biodiversidad de México / National Biodiversity Strategy of Mexico
ER	Emission Reductions
ERPA	Emission Reduction Purchase Agreement
ERPD	Emission Reductions Program Document
F	Fermentation layer
FAO	Food and Agriculture Organization / La Organización de las Naciones Unidas para la Agricultura y la Alimentación
FCPF	Forest Carbon Partnership Facility
FFM	Mexican Forest Fund / Fondo Forestal Mexicano
FGRM	Feedback and Grievance Redress Mechanism
FL	Forest Land
GE	Gross Energy Intake
GEI	Greenhouse Gases / Gases de Efecto Invernadero
GG	Grassland Remaining Grassland
GHG	Greenhouse Gas
GHG-ASIP	GHG Accounting Scope and Improvement Plan
GHGI	Greenhouse Gas Inventory
GL	Grassland
GTSMRV	Technical Management of the Monitoring, Reporting and Verification System / Gerencia Tecnica del Sistema de Monitoreo, Reporte y Verificación
HO	Leaf Litter
IFA	International Fertilizer Association
ILO	International Labor Organization
INAI	National Institute for Access Information / Instituto Nacional de Transparencia, Acceso a la Información y Protección de Datos
INECC	National Institute of Ecology and Climate Change / Instituto Nacional de Ecología y Cambio Climático
INEGI	National Institute of Statistics and Geography / Instituto Nacional de Estadística y Geografía
INFyS	National Forest and Soils Inventory / Inventario Nacional Forestal y de Suelos
IMJUVE	Mexican Youth Institute/Instituto Mexicano de la Juventud
INMUJERES	National Institute for Women/Instituto Nacional de las Mujeres
INPI	National Institute for Indigenous Peoples /Instituto Nacional de los Pueblos Indígenas

IPCC	Intergovernmental Panel on Climate Change
IPPM	Indigenous Peoples Planning Framework
ISFL	Initiative for Sustainable Forest Landscapes
L	Litter
LC	Land Converted to Cropland
LG	Land Converted to Grassland
LGBN	General Law of National Assets / Ley General de Bienes Nacionales
LGCC	General Law on Climate Change / Ley General de Cambio Climático
LGDFS	The General Law for Sustainable Forest Development / Ley General de Desarrollo Forestal Sustentable
LO	Land Converted to Other Land
LS	Land Converted to Settlements
LSNIEG	Law of the National System of Statistical and Geographical Information / Ley del Sistema Nacional de Información Estadística y Geográfica
LULUCF	Land Use Change and Forest
LW	Land Converted to Wetlands
M&E	Monitoring and Evaluation
MAC	Grievance Redress Mechanism / Mecanismo de Atención Ciudadana
MEL	Monitoring, Evaluation, and Learning
MFF	The Mexican Forest Fund/Fondo Forestal Mexicano
MLC	Fallen wood
MRV	Measurement, Reporting and Verification
NDC	Nationally Determined Contribution
NDVI	Normalized Difference Vegetation Index
NE	Not estimated
NO	Not occurring
OIC	Internal Control Body / Órgano Interno de Control
ONG	Non-governmental Organization / Organización no gubernamental
OO	Other Land Remaining Other Land
OR	Operating Rules
PCAS	Environmental and Social Commitment Plan /Plan de Compromiso Ambiental y Social
PD	Program Document
PDB	BSP/Plan de Distribución de Beneficios
PDFS	Program for Sustainable Forest Development/Programa de Desarrollo Forestal Sustentable
PES	Payment for Environmental Services
PPPI	Plan de Participación de las Partes Interesada / Stakeholder Engagement Plan

PRONAFOR	National Forest Program / Programa Nacional Forestal
PSU	Primary Sampling Units
PwDs	People who perform with great difficulty or are unable to do at least one of the following activities
RAN	National Agrarian Registry / Registro Agrario Nacional
REDD	Reduction of Emissions from Deforestation and Forest Degradation
RENE	National Emissions Registry / Registro Nacional de Emisiones
ROP	Operating Rules / Reglas de Operación
SADER	Secretariat of Agriculture and Rural Development / Secretaría de Agricultura y Desarrollo Rural
SAMOF	Satellite Forest Monitoring System /Sistema Satelital de Monitoreo Forestal
SEByC	Biomass and Carbon Estimation System / Sistema de Estimación de Biomasa y Carbono
SEMARNAT	Ministry of Environment and Natural Resources / Secretaría de Medio Ambiente y Recursos Naturales
SGAS	Environmental and Social Management System/Sistema Gestión Ambiental y Social
SIAC	Citizen Information and Attention Service/Servicio de Información y Atención a la Ciudadanía
SIAP	Agrifood and Fisheries Information Service / Servicio de Información Agroalimentaria y Pesquera
SIDEC	Citizen Complaint of Corruption / Sistema Integral de Denuncias Ciudadanas
SIDPA	Payment Management System / Sistema de Gestión de Pagos
SIIAC	Sistema Integral de Información de Apoyos de la CONAFOR
SMA	Environment Secretariat of Coahuila / Secretaría de Medio Ambiente - Gobierno De Coahuila
SMRV	Monitoring System Report and verification/Sistema de Monitoreo Reporte y verificación
SNMF	National Forest Monitoring System / Sistema Nacional de Monitoreo Forestal
SNMRV	National Monitoring, Reporting and Verification System / Sistema de Monitoreo, Reporte y Verificación
SOC	Soil Organic Carbon
SOP	Standard Operating Procedures
SRNyMA	Ministry of Natural Resources and Environment of Durango / Secretaria de Recursos Naturales y Medio Ambiente - Estado de Durango
SS	Settlements Remaining Settlements
UNFCCC	United Nations Framework Convention on Climate Change
USCUSS	Land Use and Land Use Change and Forestry
Wsf	weight of leaf litter and fermentation layer
WW	Wetlands Remaining Wetlands

Section 1: General Information and Guidance

Purpose of the Program Document (PD)

ISFL Emission Reduction (ER) Programs that have been included in the pipeline of the BioCarbon Fund Initiative for Sustainable Forest Landscapes (ISFL) are expected to provide detailed information on the design of the ISFL ER Program using the template provided in this document.

ISFL ER Programs must be designed in accordance with the ISFL ER Program Requirements (Requirements). The Program Document (PD), in combination with other documents such as World Bank program documents, demonstrates how an ISFL ER Program conforms with the Requirements. Following receipt of the final PD, the World Bank and ISFL participants (Participants) will decide whether to proceed to negotiate an Emission Reduction Purchase Agreement (ERPA) for the proposed ISFL ER Program.

The PD template is intended to assist an ISFL ER Program to provide information to demonstrate how it conforms with the Requirements. Before a PD may be deemed final, draft PDs will be subject to review and comments by the Trustee, the World Bank, Participants, and an independent third-party firm. For ease of reference, and where applicable, the sections in this PD specify the corresponding paragraph numbers specified in the Requirements.

The Requirements document contains a glossary that defines specific terms used in the Requirements. Unless otherwise defined in this PD template, any capitalized term used in this PD template shall have the same meaning ascribed to such term in the Requirements document.

Guidance on completing the PD

The PD should contain the most relevant data and information to assess the ISFL ER Program. Supporting data and information should be presented in specified annexes, when necessary.

Please complete all sections of this PD. If sections of the PD are not applicable, explicitly state that the section is left blank on purpose and provide an explanation of why this section is not applicable.

If a section specifies that information provided should be 'brief' please limit input to the word count specified for that section.

Provide definitions of key terms that are used and use these key terms, as well as variables, etc., consistently using the same abbreviations, formats, subscripts, etc.

The presentation of values in the PD, including those used for the calculation of emission reductions, should be in international standard format e.g., 1,000 representing one thousand and 1.0 representing one. Please use International System Units (SI units – refer to http://www.bipm.fr/enus/3_SI/si.html) and if other units are used for weights/currency (Lakh/crore etc.), they should be accompanied by their equivalent S.I. units/norms (thousand/million).

If the PD contains equations, please number all equations and define all variables used in these equations, with units indicated.

Assessment process for the PD

ISFL ER Programs and related PDs are to be prepared by ISFL host countries and submitted to the Trustee. The Trustee will review draft PDs for completeness and quality check purposes before sharing them with ISFL Participants for comment, and seeking assessment of the advanced draft PD by an independent third-party firm (selected by the Trustee). The ISFL host country will revise the PD for final

resubmission, a final assessment report will be produced by an independent third-party firm, and both the final PD and assessment report will be made public. The World Bank, as part of its due diligence process, will simultaneously review the ER Program, including the PD, and will assume primary responsibility for assessing the application of World Bank policies and procedures, including social and environmental safeguards, the application of the ISFL's Monitoring and Evaluation (M&E) requirements as they pertain to non-carbon benefits, and correlated Benefit Sharing Plans (BSPs). The PDs themselves, and their assessment and review, will inform decisions made by the World Bank and Participants on ER Programs, including whether to proceed with ERPA negotiations.

Section 2: Executive Summary

2.1 ISFL ER Program Description

2.1.1 Program Area information

Table 1. Program Area information

Name of the ISFL ER Program	Mexico's ISFL Emissions Reduction Program
Name of the Program Area	Chihuahua, Coahuila, Durango, and Nuevo León
Geographic area of the Program Area (hectares)	Jurisdiction: 58,652,760 ha[1] (Total for the four states)
Population of the Program Area	Jurisdiction: 14.6 M inhabitants (Total population for the four states)
Ex-ante estimate of emission reductions (ERs) for the ISFL ER Program (tonnes of CO_2e)	Phase 1: -2,727,017.93 tCO2e over the 5 years of the implementation of the ER Program. Total of the Program (Phase 2): -8,254,910.92 tCO2e (preliminary estimates without including livestock categories)

2.1.2 Selection of the Program Area

Mexico has selected four contiguous states in the north of the country to integrate the jurisdiction of its Emissions Reduction Program of the BioCarbon Fund Initiative for Sustainable Forest Landscapes (ISFL-BioCF).

These states represent 58,652,760 hectares, almost 30% of the country's total surface, which corresponds to the Program's accounting area (table 2). The jurisdiction covers 36% of the country's national forests (approximately 50,167,888 ha). There are 14,575,958 inhabitants in these states (11.5% of the national total)[2], of which 888,015 people live in forest areas (6.1%), and about 1.58% (approximately 230,000 people) are considered indigenous populations[3].

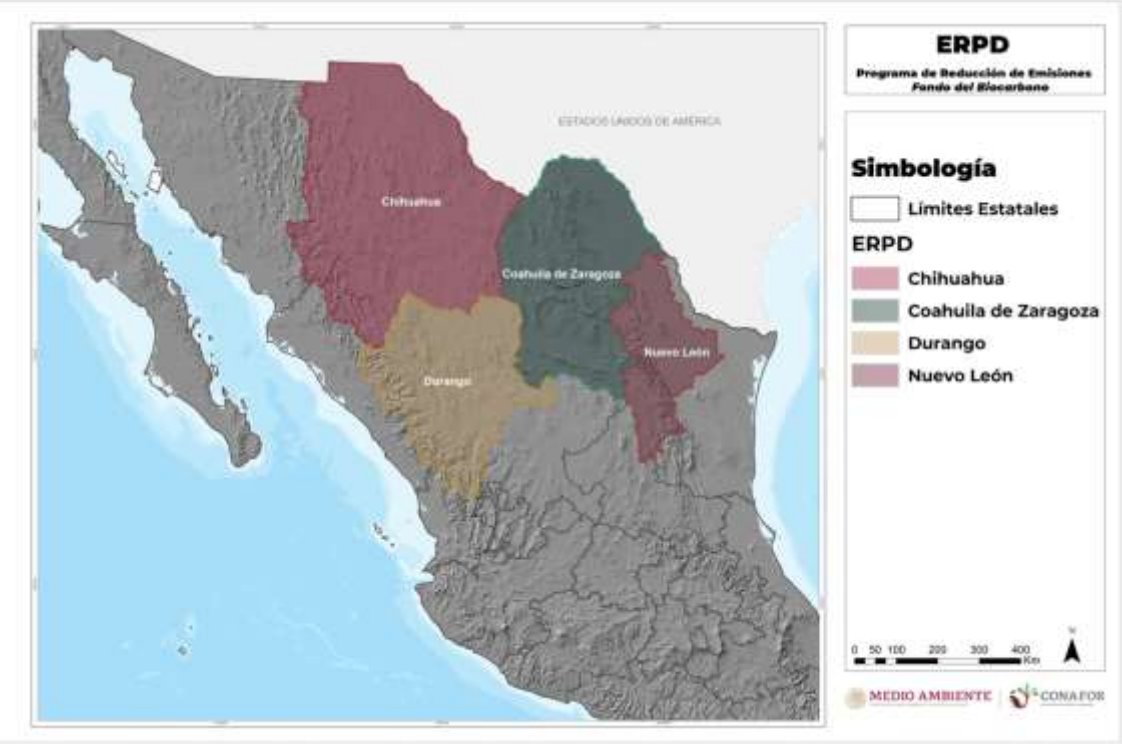
Table 2 ER Program jurisdiction area[4]

State	***Total area (ha)***	***% of the national surface***	***Population***	***% of the national population***	***Women***	***PwDs[5]***
Coahuila	15,159,480[6]	7.7%	3,158,312	2.50%	1,588,631	134,262

[1] This value comes from official sociodemographic information for each state published by INEGI, and may differ from the values used in the GHG estimates obtained from official shapefiles layers used.
[2] CONAFOR, 2022. Estimation made considering localities with less than 2,500 inhabitants, located within lands that support forest vegetation and in a maximum radius of 500 meters to forest areas, based on the Land Use and Vegetation Charter, Series VII of INEGI 2018 and the data from the 2020 Population and Housing Census of the INEGI.
[3] Rarámuris, Pimas, Kikapúes, Nahuatl, mainly.
[4] This charter was elaborated with information from the Population and Housing Census (INEGI, 2020). Available at: https://www.inegi.org.mx/programas/ccpv/2020/#Datos_abiertos

Chihuahua	24,741,260[7]	12.6%	3,773,703	2.99%	1,905,720	166,559
Durango	12,336,400[8]	6.3%	1,848,262	1.46%	935,221	101,216
Nuevo León	6,415,620[9]	3.3%	5,795,681	4.58%	2,897,841	219,536
Total	**58,652,760**	**29.9%**	***14,575,958***	***11.5%***	**7,327,412**	**621,573**

Figure 1. ER Program jurisdiction map



With these forests playing a vital role in water provision, and extensive lands suitable for grazing and agriculture, this privileged climate makes it a key region in forestry, agricultural, and livestock production. In 2018, the states in the jurisdiction contributed more than half of Mexico's timber forest production (mainly pine)[10] and several non-timber forest products[11]. Together, in 2019 these four states reported producing the 13.8% of the country's live cattle inventory, with 4.5 million head of cattle[12]. Likewise, the jurisdiction also accounts for the production of 34% of Mexico's dairy products and 41% of meat, and is the country's leader in the production of walnuts, apples, forage corn, alfalfa, beans and oats[13].

[6] INEGI (2020). Socio-demographic overview of Coahuila de Zaragoza 2020. Available at: https://www.inegi.org.mx/contenidos/productos/prod_serv/contenidos/espanol/bvinegi/productos/nueva_estruc/702825197766.pdf
[7] INEGI (2020). Socio-demographic overview of Chihuahua 2020. Available at: https://www.inegi.org.mx/contenidos/productos/prod_serv/contenidos/espanol/bvinegi/productos/nueva_estruc/702825197810.pdf
[8] INEGI (2020). Socio-demographic overview of Durango 2020. Available at: https://www.inegi.org.mx/contenidos/productos/prod_serv/contenidos/espanol/bvinegi/productos/nueva_estruc/702825197834.pdf
[9] INEGI (2020). Socio-demographic overview of Nuevo Leon 2020. Available at: https://www.inegi.org.mx/contenidos/productos/prod_serv/contenidos/espanol/bvinegi/productos/nueva_estruc/702825197926.pdf
[10] SEMARNAT (2021). Statistical yearbook of forest production 2018. Available at: https://snif.cnf.gob.mx/estadisticas-por-estados-de-produccion-forestal-maderable-y-no-maderable/
[11] The most important non-timber forest products produced in the jurisdiction are candelilla (Coahuila and Chihuahua), oregano (Chihuahua), lechuguilla (Coahuila), paixtle (Nuevo León) and maguey cenizo (Durango). SEMARNAT (2021)
[12] SIAP (2021)
[13] SIAP (2021)

The annual gross deforestation rate for the ISFL jurisdiction was estimated to average 13.9 thousand hectares for the period 2001-2018 representing 6.5% of the national annual gross deforestation rate[14]. The area under forest management in the jurisdiction is approximately 3 million hectares of timber and approximately 1 million hectares of non-timber forest products[15]. The selection of the jurisdiction states is related to their mitigation potential in the forestry and agricultural sectors and political commitment to integrated landscape management.

2.1.3 Description of ISFL ER Program vision, design, and expected outcomes

The ER Program is aligned with the most relevant national policy instruments on climate change and will support Mexico achieve its Nationally Determined Contribution (NDC) target of -zero net deforestation by 2030. To achieve this goal, Mexico is promoting an integrated landscape management approach that is designed to improve coordination among public policies of different sectors in the rural territory. Through the implementation of the Program, the Government of Mexico seeks not only to address climate change, but also to ensure that the livelihood of forest-dependent inhabitants and communities are improved and that forestry, as an economic activity, becomes more competitive. This Program seeks to promote activities that serve to increase the economic value of forests (sustainable forest management) and the implementation of forest landscape measures such as community forest management, forest restoration, payment for environmental services, forest protection (including pest and fire protection and management), and agroforestry and silvopastoral systems that could generate income for forest dwellers. Also the National Forest Program 2020-2024 highlights the role of the forest sector as a net carbon sink and has among its main objectives the promotion of a landscape management approach to sustain and improve the livelihoods of forest dwellers and forest-dependent communities. Likewise, the Sector Program for Agriculture and Rural Development 2020-2024 recognizes the importance of moving towards sustainable production systems, based on the efficient use of available resources and the revaluation of sustainable local systems to address the phenomenon of climate change, as well as soil degradation and biodiversity loss.

The GHG Inventory of the Program's jurisdiction reports an average of 6,058,702 tCO2e/year of emissions/removals in the period from 2009 to 2018[16] (See Table 3). The drivers of emissions and removals in the AFOLU sector in Mexico have a multisectoral and multidimensional origin. The main drivers in the Program's jurisdiction are related to overgrazing, extensive livestock farming, commercial agriculture, forest fires, illegal logging, mining, forest pests and diseases, and inadequate use of forest resources (timber and non-timber). On the other hand, removals occur as a result of the implementation of activities such as payment for environmental services, community forest management, and forest restoration and protection, which are beneficial for reducing emissions by decreasing the occurrence of deforestation in areas where they are undertaken. In addition, some of these activities could contribute to an increase in forest carbon stocks.

[14] The national annual rate of gross deforestation is 212,000 hectares on average for the period 2001-2018 (Estado que Guarda el Sector Forestal en México 2020).
[15] This information refers to the area in force as of 2021, according to SEMARNAT
[16] Of these, 59% of the emissions in the jurisdiction correspond to categories 3A Livestock and 3C Aggregate sources and 41% of emissions are absorbed through category 3B Land.

Table 3 Net emissions at the nationaland jurisdictional level

Category	*National level Net emissions (CO2etCO2e/yr)*[17]	*ISFL jurisdiccion Net emissions (CO2etCO2e/yr)*
3A Livestock	110,272,200	17,593,439
3B Land	-192,753,930	-13,926,440
3C Aggregate Sources	30,535,037	2,391,703
Total	-51,946,693	6,058,702

To achieve the ER Program's target of reducing 2,727,017.93 tCO2e, this Program promotes the implementation of activities that address the drivers of deforestation and ecosystem degradation and increases the value of the environmental goods and services they provide, through a landscape approach. Additionally, the ER Program seeks to promote a public policy vision that considers the needs and priorities in the territory, promoting the design of tailored interventions through coordination at the federal and state levels. Therefore, it relies on an inclusive and participatory planning process with ejidos, communities and rural producers[18] to understand their needs and where activities were identified to address the drivers of deforestation and degradation, preserving the natural heritage, resulting in a rural development model that is low in carbon and resilient to climate change. In addition, through the operationalization of a Stakeholder Engagement Plan (PPPI, in Spanish), it will seek to ensure the involvement of these stakeholders in the implementation and monitoring of the Program.

It is also expected that during the implementation of the ERPD, the integrated land management actions developed, as well as the lessons learned on local and regional governance, will be internalized and will be appropriated by the rural stakeholders, developing sustainable productive processes and activities that generate additional jobs and income, which will be reflected in sustainable practices in the medium and long-term, thus guaranteeing the provision of environmental services, improving their livelihoods and contributing to halting the causes of deforestation and forest degradation in the AFOLU sector.

This Program will also promote private sector participation through the implementation of activities that test the economic viability of new practices and models that can significantly impact the transformation of rural areas by protecting forests and biodiversity, restoring degraded lands, improving agricultural productivity, and enhancing local livelihoods and environments. At the time of writing this report, four potential production chains had been preliminarily identified in which private sector participation would be possible: i) development of a low-carbon dairy industry; ii) forest-oriented payment schemes for water services in agriculture and livestock; iii) partnerships for sustainable timber production, and iv) sustainable production of candelilla wax.

[17] Year 2019

[18] Stakeholders include forest producers, farmers, ranchers, representatives of ejidos and communities, indigenous peoples, youth, women, persons with disabilities, inhabitants of forest areas, representatives of state and municipal government agencies and entities, civil society organizations, producers and the private sector, academics and researchers.

2.1.4 Summary of ISFL ER Program financial plan and financing gap

The following table provides a summary of the financial plan for Mexico's ER Program and the funding gap for its implementation during the Program's implementation period.

Table 4. Summary of ISFL ER Program financial plan and funding gap.

Estimate of costs and revenues of planned actions and interventions, including institutional, implementation, and transaction costs	Total costs: 185.71 M USD Exchange rate: 20 MXN/USD
Amount of financing identified/secured financing for planned actions and interventions	Program interventions will be financed with public resources, which are estimated at USD 148.95 million.
Financing surplus or gap amount	36.76 M USD (gap)

In order to address the amount of the funding gap for the implementation of the ER Program, it was identified as a viable alternative to seek additional funding and synergies with other public programs at the federal and state levels. This requires intersectoral collaboration and institutional agreements between agencies at the federal and state levels. In this regard, the Ministry of Environment and Natural Resources (SEMARNAT, for its acronym in Spanish) and the National Forestry Commission (CONAFOR for its acronym in Spanish) have reached agreements with national and subnational entities for the design and implementation of the Emissions Reduction Program, which have been formalized through legal instruments.

The complete financing plan for the ER Program is presented in Annex 2: Financing Plan for the ISFL ER Program.

2.2 ISFL ER Program Implementation Arrangements

2.2.1 Program entity that is authorized to negotiate/sign the ERPA with the ISFL:

Name of entity: Ministry of Environment and Natural Resources

Type and description of organization: The Ministry of Environment and Natural Resources is in charge of incorporating criteria and instruments that ensure the optimal protection, conservation and use of the country's natural resources, through the configuration of an integral and inclusive environmental policy that allows Mexico's sustainable development to be achived. In order to comply with the above, SEMARNAT and the various decentralized bodies that are part of the Federal Environmental Sector work on four priority areas: i) conservation and sustainable use of ecosystems and their biodiversity, ii) pollution prevention and control, iii) integrated management of water resources, and iv) combating climate change.

Website: https://www.gob.mx/semarnat

Main contact person:

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2.2.2 Organization(s) responsible for managing/implementing the ISFL ER Program (if more than one, please list all):

1. **Name of entity:** National Forestry Commission

Type and description of organization: The National Forestry Commission (CONAFOR) is a Decentralized Public Entity of the Federal Public Administration with full legal status and its own assets created by decree published in the Official Gazette of the Federation on April 4, 2001. CONAFOR is the federal institution responsible for developing, promoting, and fostering activities related to forestry production, conservation, and restoration, as well as participating in the formulation of plans and programs, and in the implementation of sustainable forest development. Furthermore, the General Law on Climate Change (LGCC) establishes that CONAFOR will design strategies, policies, measures, and actions to reduce deforestation and forest degradation, which will be incorporated into the forestry policy planning instruments for sustainable development, taking into account sustainable development and community forest management. Therefore, it acts as a focal point for the development and production of instruments and policies for REDD+ in Mexico.

Organizational or contractual relationship between the organization and the ISFL ER Program Entity identified above: The National Forestry Commission (CONAFOR) is an

entity of the Federal Government of Mexico and a Decentralized Public Organism of the Ministry of Environment and Natural Resources (SEMARNAT). Therefore, the sectoral coordination of the institution corresponds to SEMARNAT.

Website: https://www.gob.mx/conafor

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Telephone: (33) 3777 7000

2. Name of entity: Ministry of Agriculture and Rural Development

Type and description of organization: The Ministry of Agriculture and Rural Development is an entity of the Federal Public Administration, which has among its objectives: i) to raise the level of human and patrimonial development of Mexicans living in rural and coastal areas; ii) to improve the income of producers by increasing their presence in global markets, promoting value-added processes and energy production; iii) to reverse the deterioration of ecosystems, through actions to preserve water, soil and biodiversity; iv) to lead the harmonious development of the rural sector through agreements with all actors in rural society, and by boosting actions that promote legal security in the rural environment.

Organizational or contractual relationship between the organization and the ISFL ER Program Entity identified above: In March 2019, this Ministry and the Ministry of Environment and Natural Resources signed a Framework Collaboration Agreement in order to establish the general bases and mechanisms through which both parties will carry out joint actions to implement programs or projects that allow the development of productive activities under criteria of sustainability and conservation of natural resources and biodiversity, particularly in those areas of the national territory where their original environments are protected under some special category. On June 1, 2020, a Specific Collaboration Agreement was signed between SEMARNAT, CONAFOR and SADER to promote sustainable agricultural and forestry activities, while conserving natural resources and the provision of environmental services to achieve sustainable rural development that is resilient to climate change, under an integrated land management approach.

Website: https://www.gob.mx/agricultura

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3. Name of entity: National Institute of Ecology and Climate Change (INECC)

Type and description of organization: INECC's mission is to contribute to the development, conduct and evaluation of national policy on climate change, green growth and sustainability through the development, coordination and dissemination of scientific and technological studies and research.

Organizational or contractual relationship between the organization and the ISFL ER Program Entity identified above: Responsible for coordinating, promoting and developing scientific and technological research related to national policy on biosecurity, sustainable development, environmental protection, conservation and restoration of ecological balance and ecosystem conservation and climate change, with the participation of other departments and bodies as appropriate. Responsible for integrating information to prepare national communications for the UNFCCC and BUR. Technical advice on the preparation of State Climate Change Action Programs in collaboration with State Governments, and Municipal Climate Action Plans with local governments.

Website: https://www.gob.mx/inecc

Main contact person:

Name: Beatriz Angélica Calderón Miranda

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Telephone: (55) 54246400

Email:

4. Name of entity: Ministry of Environment of Coahuila

Type and description of organization: The SMA is the entity of the Government of the State of Coahuila, that promotes the sustainable use of natural resources, through the regulation of activities that impact the environment and the promotion of a comprehensive and harmonious growth of the urban environment within the natural environment, through the application of public policies that improve the quality of life of the people of Coahuila.

Organizational or contractual relationship between the organization and the ISFL ER Program Entity identified above: On March 10th, 2022, CONAFOR and the State Government signed the Specific Coordination Agreement Number 01/2021 derived from the Framework Agreement, to establish the activities to be carried out, as well as the amount of economic resources to be allocated to such activities in order to give continuity to the actions established in the Framework Agreement to promote sustainable forest development in the State of Coahuila de Zaragoza. In this Specific Agreement, it was established (in Clause Eighth) to subscribe a Specific Annex for the design, formulation and implementation of an Emissions Reduction Program in the AFOLU sector.

Website: https://www.sema.gob.mx

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Title: Ministry of environment

Address: Centro de Gobierno 2º Piso, Carretera 57 Kilómetro 6.5 con Blvd. Centenario de Torreón, Saltillo.

Telephone: (844) 698-1098

Email: eglantina.canales@coahuila.gob.mx

5. Name of entity: Ministry of Rural Development of Chihuahua

Type and description of organization: The Ministry of Rural Development of Chihuahua is the entity of the State of Chihuahua, that aims to promote agricultural, livestock, fruit and forestry activities, promoting credit, organization, insurance and modernization in coordination with federal and municipal agencies and the social and private sectors in accordance with articles 24 section XI and 32 section I of the Organic Law of the Executive Power of the State of Chihuahua.

Organizational or contractual relationship between the organization and the ISFL ER Program Entity identified above: On January 17, 2022, CONAFOR and the Free and Sovereign State of Chihuahua signed the Framework Coordination Agreement on Forest Matters, to establish coordination activities to promote sustainable forestry development in the State, based on the sustainable use of forest resources, the promotion, development and implementation of productive programs, protection, conservation, restoration and sustainable use of forest soils and their ecosystems and in general the other initiatives

presented in forest matters to promote the integral development of this sector in the state. Clause Fourth of this Coordination Agreement specifies the commitment between CONAFOR and the State Government for the design and implementation of the ER Program.

Website: http://edo.chihuahua.gob.mx/secretaria-de-desarrollo-rural

Main contact person:

Name: Mauro Parada Muñoz

Title: Ministry of Rural Development

Address: Av División del Nte 2504, Altavista, 31100 Chihuahua, Chih.

Telephone: (614) 429 3300

Email: mauro.parada@chihuahua.gob.mx

6. Name of entity: Ministry of Natural Resources and Environment of Durango.

Type and description of organization: The Ministry is responsible for the implementation of rules and regulations, to achieve sustainable development of natural resources and ecological balance; It is also responsible for implementing the forest policy in the state, and for the development, coordination, and implementation of programs related to the forest sector entity, in line with the promotion of forestry and the sustainable use of forest resources, goods and services, and promotion to contribute to carbon sequestration, etc.

Organizational or contractual relationship between the organization and the ISFL ER Program Entity identified above: On March 13, 2019, CONAFOR and the Free and Sovereign State of Durango signed the Framework Coordination Agreement on Forest Matters to establish coordination activities to promote sustainable forest development in the State of Durango, based on the sustainable use of forest resources, the promotion, development and implementation of productive programs, protection, conservation, restoration and sustainable use of forest soils and their ecosystems and in general the other initiatives in forest matters presented to promote the comprehensive development of this sector in the state. In addition, CONAFOR and the State Government signed a Specific Coordination Agreement that stipulates the signing of a Technical Annex for the design and implementation of the Emissions Reduction Program in the AFOLU sector.

Website: http://medioambiente.durango.gob.mx

Main contact person:

Name: Mtra. Claudia Ernestina Hernandez Espino

Title: Ministry of Natural Resources and Environment

Address: Ferrocaril, Anexo 99, Parque Sahuatoba, 34070 Durango, Dgo.

Telephone: (618) 137 9916

Email: recursosnaturales@durango.gob.mx

7. Name of entity: Ministry of Agricultural Development of the state of Nuevo León

Type and description of organization: The Ministry of Agricultural Development is an entity of the State of Nuevo León. This agency is in charge of planning, promoting, coordinating, executing and evaluating actions in the agricultural, livestock, fishing, forestry, and aquaculture sectors in the state.

Organizational or contractual relationship between the organization and the ISFL ER Program Entity identified above: On March 7, 2022, CONAFOR and the Free and Sovereign State of Nuevo León signed a Framework Coordination Agreement on Forest Matters, to establish coordination activities to promote sustainable forest development in the State, based on the sustainable use of forest resources, the promotion, development and execution of productive programs, protection, conservation, restoration and sustainable use of forest soils and their ecosystems. On March 30, 2022, CONAFOR and the State Government signed the Specific Coordination Agreement Number 001/2022 which stipulated (in Clause eighth) the signing of a Specific Annex for the design, formulation and implementation of a Program to Greenhouse Gas Emissions Reduction Programa for the Agriculture, Forest and Other Land Use sector.

Website: https://www.nl.gob.mx/desarrolloagropecuario

Main contact person:

Name: Ernesto Christian Enkerlin Hoeflich

Title: Director of Natural Resources

Address: Washington 2000 (Torre Administrativa) Piso 11 en Colonia Obrera, de la Ciudad de Monterrey Nuevo León, Código Postal 64010.

Telephone: (812) 033 3125

Email: ernesto.enkerlin@nuevoleon.gob.mx

2.2.3 Partner organizations involved in the ISFL ER Program

Table 5. Partner organizations involved in the ISFL ER Program

List of existing partner agencies and organizations involved in the design and implementation of the ISFL ER Program		
Ministry of Environment and Natural Resources	Contact name : María Luisa Albores González Telephone (55) 5490 0900 Email secretaria@semarnat.gob.mx	In charge of incorporating criteria and instruments that ensure the optimal protection, conservation and use of the country's natural resources, through the

		configuration of a comprehensive and inclusive environmental policy that allows achieving Mexico's sustainable development.
National Forestry Commission of Mexico	Contact name Luis Meneses Murillo Email directorgeneral@conafor.gob.mx Contact name: Jorge David Fernández Medina Email jfernandez@conafor.gob.mx Telephone (33) 3777 7000	The National Forestry Commission (CONAFOR) is an entity of the Federal Government of Mexico and a Decentralized Public Organism of the Ministry of Environment and Natural Resources (SEMARNAT). Therefore, the sectoral coordination of the institution corresponds to SEMARNAT.
National Institute of Ecology and Climate Change (INECC)	Contact name Claudia A. Octaviano Villasana Telephone (55) 54246400 Email claudia.octaviano@inecc.gob.mx	Responsible, where appropriate to other departments and bodies, for coordinating, promoting and developing scientific and technological research related to national policy on biosecurity, sustainable development, environmental protection, conservation and restoration of the ecological balance and conservation of ecosystems and climate change.
Environment Secretariat of Coahuila	Contact name Biol. Eglantina Canales Gutiérrez Telephone (844) 698-1098 Email eglantina.canales @coahuila.gob.mx	In 2021 CONAFOR and the State Government signed the Specific Coordination Agreement. This Specific Agreement provided for the signing of a Specific Annex for the design, formulation and implementation of an Emissions Reduction Program in the AFOLU sector.
Rural Development Secretariat of Chihuahua	Contact name Mauro Parada Muñoz Telephone (614) 429 3300 Email mauro.parada@chihuahua.gob.mx	In 2021 CONAFOR and the State Government signed the Specific Coordination Agreement. This Specific Agreementprovided for the signing of a Specific Annex for the design, formulation and implementation of an Emissions Reduction Program in the AFOLU sector
Natural Resources and Environment Secretariat. Durango.	Contact name Mtra. Claudia Ernestina Hernandez Espino Telephone (618) 137 9916 Email recursosnaturales@durango.gob.mx	In 2021 CONAFOR and the State Government signed the Specific Coordination Agreement. This Specific Agreement provided for the signing of a Specific Annex for the design, formulation and implementation of an Emissions Reduction Program in the AFOLU sector.
Secretariat of Agricultural Development of the state of Nuevo León	Contact name Ernesto Christian Enkerlin Hoeflich Telephone (812) 033 3125 Email ernesto.enkerlin@nuevoleon.gob.mx	In 2021 CONAFOR and the State Government signed the Specific Coordination Agreement. This Specific Agreement provided for the signing of a Specific Annex for the design, formulation and implementation of an Emissions Reduction Program in the AFOLU sector.

2.2.4 Description of coordination between entities involved in ISFL ER Programs

For the correct and effective implementation of the Emissions Reduction Program in the AFOLU sector in the states of Chihuahua, Coahuila, Durango and Nuevo León, a series of institutional arrangements have been made, both at both the federal level and with the four states in the jurisdiction, which laid the foundations for collaboration and coordination between institutions.

At the federal level, a Specific Agreement between SADER-SEMARNAT-CONAFOR has been signed to coordinate actions for the implementation of programs, incentives and actions in the rural areas, with the aim of promoting sustainable agricultural and forestry activities, while conserving natural resources and the capacity to provide environmental services, which contribute to achieving sustainable rural development that is low in carbon and resilient to the effects of climate change, under an integrated territorial management approach. In addition, an Execution Annex has been prepared between CONAFOR and SADER for the design and implementation of the Emission Reduction Program.

Derived from the Framework collaboration Agreement between CONAFOR and the National Institute of Ecology and Climate Change (INECC), the collaboration under the Emissions Reduction Program has been strategic for the coordination and supervision of the development of the GHG inventory for categories 3A and 3C in the Program's jurisdiction. INECC has also worked with CONAFOR to strengthen the capacity of the states for the construction of their State GHG inventories, as well as to identify opportunities to improve estimates in the AFOLU Sector.

At the state level, four Framework Agreements have been signed, of which, the Framework Agreement with the State of Chihuahua includes a clause whereby it is agreed to sign a Technical Annex for the design, formulation and implementation of a Greenhouse Gas Emissions Reduction Program for the Agriculture, Forestry and Other Land Use sector. In the case of Coahuila, Durango and Nuevo León, the clause related to preparation of the ER Program is included in their Specific Agreements.

On the other hand, the participation of local stakeholders from Ejidos, communities, indigenous peoples, rural producers, civil society organizations, academia, research and the forest industry will be strengthened, using the consultation and advisory platforms available in each of the four entities, with the State Forest Councils, which are chaired by the state governments and CONAFOR, as the Technical Secretariat in each of them

The presentation of the Emissions Reduction Program and the creation of a specific Working Group in this Council is considered to be subject to the agreement of these Councils, in order to follow up on the actions defined and prepare proposals to be submitted for consideration by their respective State Councils.

It is also expected to encourage the participation of the private sector, expressed in existing centers for the transformation and commercialization of forest raw materials, both timber and non-timber, including forestry social enterprises, associations of livestock and agricultural producers, hydrological environmental services users, among others, particularly those linked to the most important production chains identified.

The following coordination/consultation platforms bodies have been identified in the ER Program jurisdiction:

Table 6. Consultative and participatory bodies in the jurisdiction

State	Platform	Functions
Chihuahua	State Forestry Council	The State Council acts as consultative and consensus building body in matters indicated by the Law on which its opinion is requested. In addition, it acts as an advisory, supervisory, monitoring, evaluation, and follow-up body in the application of the criteria and instruments of forest policy, provided in the General Law of Sustainable Forest Development and its regulations, of the Public Administration (at different levels).
	Social supervisory Committee	This supervisory body is composed of social organizations constituted by the beneficiaries of the Sustainable Forest Development Program, to follow-up, supervise and foversee of the execution of program, compliance of the goals and actions committed in the same, as well as the correct application of the monetary resources allocated to them.
Coahuila	State Forestry Council l	The Council acts as a consultative and advisory body, in matters of planning, monitoring , policy evaluation and use, conservation and restoration of forest resources. It also acts as an advisory, supervisory, monitoring, evaluation and follow-up body in the application of the criteria and instruments of forest policy, provided in the General Law of Sustainable Forest Development and its regulations.
	Social supervisory Committee	This supervisory body is composed by social organizations constituted by the beneficiaries of the Sustainable Forest Development Program, to follow-up, monitor and oversee of the execution of such program, the accomplishment of the goals and actions committed in them, as well as of the correct application of the monetary resources assigned to them.
Durango	State Forestry and Soil Council	The State Forestry and Soil Council acts as a consultative and advisory body in the matters indicated in this Sustainable Forestry Development Law, as well as in the supervision, monitoring, evaluation and follow-up in the implementation of the instruments of the state forest policy. In all cases, its opinion on forest planning, regulations and standards must be requested.
	Social supervisory Committee	This supervisory body is composed of social organizations constituted by the beneficiaries of the Sustainable Forest Development Program, to follow-up, monitor and oversee of the execution of such program, of the accomplishment of the goals and actions committed in them, as well as the correct application of the monetary resources assigned to them.
Nuevo León	State Forestry Council	The State Council assists in the implementation of the forest policy, issues opinions on forest management programs and requests for the use of timber and non-timber forest resources, and requests for land uses changes on forest and preferably forested lands. In all cases, its opinion on forest planning, regulations and standards should be requested.
	Social supervisory Committee	This supervisory body is composed by social organizations constituted by the beneficiaries of the Sustainable Forest Development Program, to follow-up, monitor and oversee of the execution of such program, the accomplishment of the goals and actions committed in them, as well as of the correct application of the monetary resources assigned to them.

Section 3: ISFL ER Program Design

3.1 Planned Actions and Interventions in the Program Area, Including Financing

3.1.1 Drivers of AFOLU emissions and removals

At the national level the main driver of deforestation is land use change from forested land to pastures for productive purposes (i.e., livestock production). In order of magnitude, this is followed by the transition from forested land to agricultural land, and then the transition to human settlements[19][20]. The main direct drivers of forest degradation are forest fires, overexploitation of resources and the incidence of forest pests or diseases[21].

At the regional level, overgrazing, extensive livestock production, commercial agriculture, illegal logging, and overexploitation of forest resources are identified as the main drivers of deforestation and emissionsgeneration from AFOLU Sector activities. In general, the main indirect drivers of these activities are identified as the lack of inter-institutional and vertical coordination (between different levels of government), and lack of law enforcement. The following table presents a summary of the individual drivers of deforestation at the state level.

Table 7. Identification of main drivers of emissions in the AFOLU Sector at the state level

Direct drivers	Deforestation Impacts	Degradation Impacts	GHG emissions Impacts	State in which it is relevant
Overgrazing	Loss of temperate forests due to the expansion of grasslands resulting in loss of productivity, and conversion of grasslands to scrubland or cropland.	Damage to trees on land adjacent to livestock production units.	Good management of extensive livestock has the potential to generate zero net emissions. However, overgrazing of the land causes the loss of carbon sequestration capacity of grasslands, causing the emissions generated by livestock to be greater than those captured by the soil.	Chihuahua Coahuila Durango Nuevo León
Extensive livestock production	Conversion of forested land to cropland due to increasing demand for livestock feed.		Increase in GHG emissions from manure management.	Chihuahua Coahuila Durango
Commercial agriculture	Conversion of forested land to farmland due to decreased or low soil productivity.		Increase in GHG emissions from the use of fertilizers and urea to supply international market demand.	Chihuahua Coahuila Durango Nuevo León

[19] CONAFOR (2020), Estimation of the gross deforestation rate in Mexico for the 2001-2018 period using the sampling method. Technical document. Available at http://www.conafor.gob.mx:8080/documentos/docs/1/7768Documento%20tecnico%202020%20Deforestacion%20Bruta%20Final.pdf

[20] This includes urban, industrial and tourism land uses

[21] CONAFOR (2020), Mexico's forest emissions reference level (2007-2016). Available at https://redd.unfccc.int/files/nref_2007-2016_mexico.pdf

Forest fires	Adverse climatic conditions, the availability of fuels in forests, and human factors are related to an increase in the severity of fires, which can cause the total loss of forest and soil cover. The affectation of forested land increases the risk of land use change.	Forest fires impact the integrity of forest biomass and soil, depending on their severity. They also increase the vulnerability of trees to pests and diseases and reduce their carbon sequestration capacity.		Chihuahua Coahuila Durango Nuevo León
Illegal logging	The logging of large areas for the cultivation of illegal species transforms the forest ecosystem into cropland.	Damage to forest cover and soil integrity due to fires intentionally caused to hide illegal logging practices. Overexploitation of timber resources causes large vegetation losses		Chihuahua Coahuila Durango
Mining	Land use change due to the construction of mines and quarries.			Chihuahua Coahuila Nuevo León
Overexploitation of timber and non-timber resources		The use of resources at a higher rate of renewal generates the loss of forest mass. In addition, harvesting without proper management makes forests more prone to other impacts such as fires, pests and diseases.		Coahuila Durango Nuevo León
Forest pests and diseases	Risk of land use change due to timber exploitation of affected trees.	Weakening and even death of vegetation.		Coahuila Nuevo León

The main underlying drivers of deforestation and forests degradation in the Program's jurisdiction are listed in the following table:

Table 8. Underlying drivers

Underlying drivers
Lack of horizontal, vertical and intersectoral coordination between levels and agencies with an integrated land management approach.
Weak governance.
Lack of valuation of ecosystem services.
Low productivity.
Lack of effectiveness in the application of sustainable forest development instruments.

Limited access to financing and subsidies.
Lack of incentives for the use of technologies to mitigate GHG emissions.
Lack of enforcement of environmental laws.
Marginalization and poverty
Organized crime.
Corruption.
Adverse weather conditions: high temperatures and cold waves

It is worth mentioning that the direct and underlying drivers of deforestation and forest degradation outlined above served as the basis for the analysis conducted during the participatory planning process for the design for the ER Program (see Section 3.2 *Description of stakeholder consultation process*)).

To identify the drivers of land use change that contribute to GHG emissions and removals, a qualitative historical analysis (2001-2020) was performed to identify those subcategories for which emissions or removals have changed significantly. Also, a trend analysis was carried out to identify the categories in which emissions or removals have increased in the 2001-2020 period and to know in which categories an increase or reduction in emissions would be expected in a business-as-usual scenario.

More information on the drivers of AFOLU emissions and removals, including the detailed methodology, is available in **Annex 1.**

3.1.2 Description and justification of the ISFL ER Program's planned actions and interventions

Mexico's ISFL Emissions Reduction Program proposes an innovative model for the states of Chihuahua, Coahuila, Durango and Nuevo León to promote and pilot an integrated rural landscape management approach to address the direct and indirect drivers of deforestation and forest degradation. This public policy proposal was designed in a participatory manner, considering the specific priorities and needs of the territory, and in accordance with the vision of the region's stakeholders and actors, who are aware of the importance of implementing actions aimed at sustainable rural development that will help improve their livelihoods, stimulate income alternatives in the short and medium term, as well as contribute to guaranteeing the provision of environmental goods and services, which are crucial for productive processes and food security (see section *3.2 Description of stakeholder consultation process*).

Through the participatory planning and integration process of the ER Program, a model of community governance and effective and inclusive social participation is promoted to address the needs of the target population, which generates a social base to contribute to the well-being and mitigation and adaptation to the impacts of climate change, with a territorial management approach. At the same time,

it promotes and supports community organization and capacities for the protection, management and use of timber and non-timber forest resources.

The ER Program focuses its attention on ejidos, communities and indigenous peoples in the four states under its jurisdiction to strengthen actions that support community forest management for the sustainable and diversified use of forest resources; protect forest ecosystems from fires, pests and forest diseases; preserve and restore the capacity to provide ecosystem services through payment for environmental services, forest restoration and productive reconversion; promote the development of competitive local value chains that trigger the development of local economies; and support the creation of development agents that may transform the territory. Likewise, collaboration between the federal government and its various agencies, with the subnational governments of the jurisdiction is relevant to improve the coherence of public policies and the implementation of incentive programs in the rural landscape.

As described in section *4.6 Estimation Emissions Reductions*, the ER Program considers a reduction in deforestation rates as a reduction in the loss of Forested land and Grassland[22] and an increase in carbon stock from forest management[23] and an increase in carbon stocks from afforestation, reforestation, and restoration[24]. Therefore, in the first phase of the Program, actions will focus on the protection, conservation, restoration and sustainable forest management, through the support concepts established in the Operating Rules of the subsidy program for sustainable forest management (see the following section on *"Potential activities to be developed in the ER Program"*)[25].

Additionally, this Program represents a potential linkage with the private sector by implementing transformative actions in rural areas for the protection of forest ecosystems, the restoration of degraded lands and the improvement of productivity and local livelihoods, with practical solutions related to the value chain in the territory. Through the development of the private sector engagement strategy, some value chains were selected that represent a great opportunity to implement a sustainable development engagement strategy with the private sector with scalable potential in the jurisdiction, while the government creates the regulatory framework for sustainable landscape management. The activities identified from the forest sector were the following:

- Payment for environmental services schemes. The objective is to promote collaborative initiatives between actors in the agricultural and livestock chains with forest communities that address the challenge of water scarcity and adaptation to climate change in order to preserve and regenerate forests with high water catchment potential. Specifically, it is planned to strengthen and expand initiatives that improve water supply for the agricultural and livestock sectors by moving funds from farmers and private companies to forest owners in the upper watersheds.

[22] Forested Land converted to Land and Grassland converted to Cropland categories including conversions from Forest Land-Grassland, Forest Land-Cropland, Forest Land-Settlements , Forest Land - Other Land and Grassland to Cropland subcategories [3B3bi], [3B2bi], [3B5bi], [3B6bi], and [3B2bii] respectively

[23] Forested Land remaining Forested Land, subcategory [3b1a]

[24] Land - Forested Land, including subcategories [3B1bii] and [3B1bi]

[25] CONAFOR's public incentive programs are designed to meet different forest policy objectives and serve as a source of support to Mexico's forest owners: communities, ejidos, and small landowners. These programs are demand-driven and are voluntary in nature. Support may be in cash or in-kind and is granted in accordance with the Operating Rules. These rules and guidelines are evaluated and updated on a yearly basis to take into account national and regional priorities, as well as the requirements of forest communities.

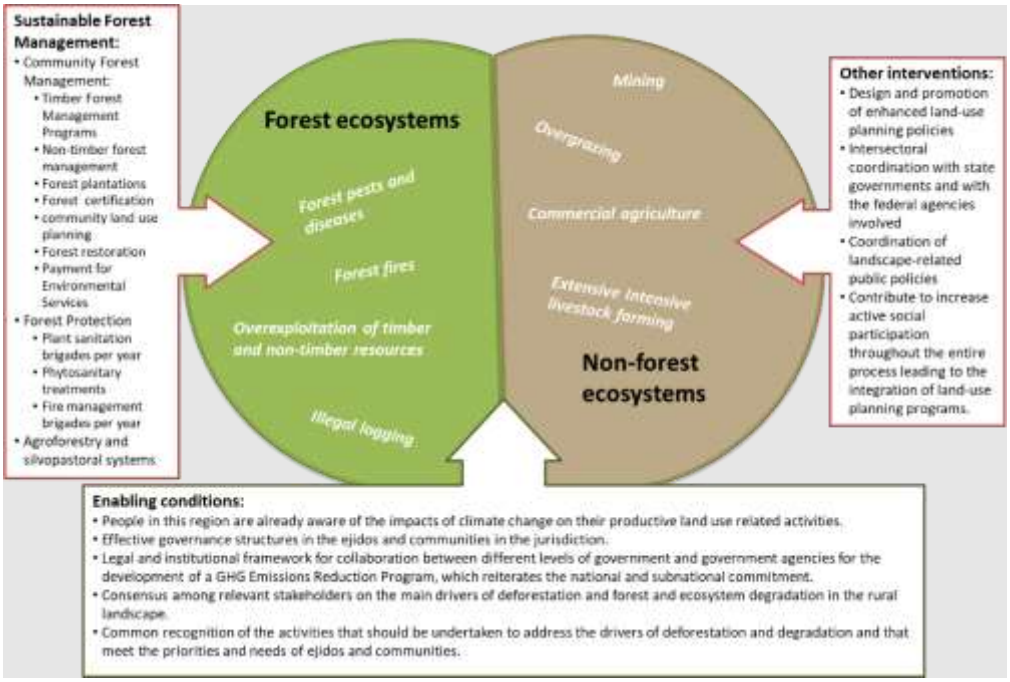
- Collaboration models for sustainable timber supply chains. The aim is to promote collaboration between ejidos, communities and the private sector based on improved management practices, greater valorization of forest community participation and a more sustainable timber supply, which would improve conservation and forest management efforts, increase carbon sequestration and revenues related to value-added activities.
- Sustainable candelilla wax production. This activity focuses on supporting the dissemination and exchange of existing research and knowledge for the regeneration of candelilla populations, safer and more modern wax processing, sustainable commercial plantations, development of value-added products and fair participation of small producers.

This, together with an effort to strengthen intersectoral and interinstitutional coordination, will contribute to better land management and the rehabilitation of degraded lands, which will help mitigate the effects of climate change by reducing greenhouse gas emissions and increasing the resilience of forest ecosystems to help ejidos and communities adapt to the negative effects of climate change, without threatening their environment, food security, productivity or income.

Potential activities to be developed in the ER Program

As mentioned above, Mexico's ISFL ER Program will be based, in the first instance, on strengthening sustainable forest management activities and conservation support mechanisms, to achieve the objectives of reducing greenhouse gas emissions and increasing carbon stocks through better land management as well as increasing the areas under sustainable forest management.

Figure 2. Activities (Initial activities) aimed to address deforestation and forest degradation with an integrated landscape management approach



In the context of the development of the Third Biennial Update Report (BUR3) formulated in collaboration with INECC, the contribution of some of CONAFOR's programs to climate change mitigation at the national level was assessed. The results of these evaluations show that the greatest mitigation benefits can be presented through the implementation of community forest management and payment for environmental services (PES), as they present an emissions reduction benefit by reducing the occurrence of deforestation in the areas where such programs are implemented. Additionally, the implementation of the forest management program provides a benefit by increasing forest carbon stocks associated with management actions that promote the growth of the forest mass mainly for timber.

It was identified that in order to achieve the reduction goal of the ER Program's it would be necessary to increase the target area for the granting of support related to the following concepts, in order of highest to lowest priority and in a permanent basis during the implementation period of the Program, considering the equivalent annual flux, the time horizon and the probability of success indicated in the profitability indicators of the ER and LB activities::

i. Agroforestry and silvopastoral systems to promote the productive diversification of land use and contribute to increase of the country's forest production, through the cultivation of trees of timber forest species for commercial use, with annual agricultural crops or pastures for livestock on the same land, with some type of spatial and chronological arrangement.
ii. Commercial Forest Plantations, which produce non-timber products, focused on promoting their establishment and development in a competitive and sustainable manner in order to increase productive diversification.
iii. Community Forest Management and Value Chains that promote the implementation of actions to strengthen governance; the development of social, technical and cultural capacities; technology transfer; the management, cultivation, harvesting and certification of timber and non-timber forest resources; and the strengthening of supply chains, transformation and markets for timber and forest products.
iv. Payment for Environmental Services for those who voluntarily decide to incorporate areas to the payment for environmental services for the active conservation of forest ecosystems through economic incentives, as well as to promote the concurrence of economic and operational resources with users of environmental services and interested parties, through the incorporation of good management practices to promote the conservation, protection and sustainable use of ecosystems, promote the provision of environmental services in the long term, and preserve biodiversity.
v. Forest Protection. This component is aimed at preventing, combating and controlling pests and forest fires in order to reduce the degradation of forest ecosystems by providing support for phytosanitary treatments, attention to phytosanitary contingencies, forest sanitation brigades and rural fire management brigades.
vi. Commercial Forest Plantations, which produce timber products, focused on promoting their establishment and development in a competitive and sustainable manner to increase productive diversification.
vii. Forest restoration with an integrated land management approach, through practices that contribute to recovering the productivity of degraded forest ecosystems, as well as generating

employment and improving the well-being of ejidos, communities, indigenous peoples and small landowners.

The activities outlined above are aligned with the activities proposed and prioritized by the participants in the two workshops of the participatory planning process in the four states of the jurisdiction. For more information, please refer to section 3.2 Description of the stakeholder consultation process.

On the other hand, due to the participation of the agricultural sector in the AFOLU sector emissions (52% of GHG emissions in the four states of the jurisdiction correspond to Category 3A Livestock), the importance of sustainable livestock practices is recognized, which will be defined in collaboration with SADER and state governments during the development of the program. However, for now these categories do not meet the requirements for estimation (Tier 2), and are therefore not included (see section 4.2 Identification of subcategories that are eligible for ISFL Accounting).

Overall, the proposed activities are intended to contribute to increased efforts to achieve a positive impact in the ER Program jurisdiction through landscape-level investments. This will seek to increase the forest area and quality of rural ecosystems leading directly to the reduction and sequestration of GHG emissions.

In particular, the estimate of the mitigation potential considers the reduction of emissions from deforestation and grassland loss, as well as the increase in forest carbon stocks. The emissions reduction target for deforestation and grassland loss amounts to 1,403,990.77 and 366,754.29 t CO2e respectively. The mitigation associated with the increase in forest carbon stocks amounts to 943,160.87 t CO2e for CBM activities (timber and non-timber) and 13,112.00 t CO2 e for restoration activities, as shown in the following table.

Table 9. Annual CO2e emissions/removals (t)

Subcategory	Annual CO2e emissions/removals (t)					
	Year 1	Year 2	Year 3	Year 4	Year 5	Total
Reducing emissions from deforestation	90,580.05	181,160.10	271,740.15	377,416.87	483,093.60	1,403,990.77
Reducing emissions from loss of grasslands	23,661.57	47,323.13	70,984.70	98,589.86	126,195.03	366,754.29
Increase in forest stocks due to Community Forest Management	62,877.39	125,754.78	188,632.17	251,509.56	314,386.96	943,160.86
Increase in forest stocks due to restoration	874.13	1,748.27	2,622.40	3,496.53	4,370.67	13,112.00
Total	177,993.14	355,986.28	533,979.42	731,012.83	928,046.24	2,727,017.92

Mitigation for the increase of forest carbon stocks from timber forest management activities considers a target area to be incorporated annually of 23,791 ha, estimated based on an additional 20% of the timber area allocated in 2021 (19,825.90 ha). The target areas considered for incorporating non-timber harvesting was 36,946 ha, estimated based on an additional 10% of the areas allocated in 2021 (33,587.00 ha) in this support.

It is also expected that the reduction of emissions from deforestation and loss of grasslands will be achieved through the incorporation of timber and non-timber forest management areas referred to in the previous paragraph, as well as the voluntary incorporation of forested land to payments for environmental services in an area of 30 thousand hectares per year in the jurisdiction of the ER Program. In both cases, these actions will be prioritized in areas with high and very high deforestation, which were identified during the process of estimating the deforestation rate in the Program's jurisdiction for the formulation of the AFOLU sector GHF inventory (particularly for category 3B) and the baseline.

Table 10. Target area for the estimation of the increase in forest carbon stocks.

Institutional Programs to be implemented during the ER Program	Main driver s of deforestation and forest degradation that will be addressed by Conafor's incentive programs	Activities/land cover (ha)/targets
Community Forest Management and Value Chains	Land use change Lack of or defficient land-use planning Inadequate forest management	450,000 ha Timber Forest Management Programs 1,225,000 ha Non-timber forest management 36,500 ha de forest plantations 26,200 ha forest certifications 173,000 ha community land use planning
Forest restoration	Land use change	23,000 ha
Payment for Environmental Services	Land use change	150,000 ha
Forest Protection.	Forest Fires Forest pests and diseases	10 plant sanitation brigades per year 3,000 ha of phytosanitary treatment 31 fire management brigades per year
Agroforestry and silvopastoral systems	Land use change	5,000 ha
Commercial Forest Plantation	Land use change	2,000 ha

3.1.3 Financing plan for implementing the planned actions and interventions of the ISFL ER Program

The financing plan for the implementation of the ERPD contemplates the investment during five years, through budgetary resources from CONAFOR, as well as from the State Governments under the jurisdiction of the ERPD, for the granting of support to the potential beneficiary population for the execution of the actions identified in the intervention proposal to incentivize the development of sustainable productive projects, forest restoration and productive reconversion, active conservation and protection against factors that deteriorate forest cover such as forest fires, pests and diseases. These investments will focus on priority areas identified in the States under the ERPD jurisdiction, for which no risk of non-implementation is foreseen. Agroforestry and silvopastoral system activities, do not included the aforementioned support, for which additional sources or financing will be sought.

In addition, 22% of the planned financing has not yet been secured in terms of budgetary resources. In this case, there are plans to promote the participation of the private sector in some of the value chains

identified, such as the harvesting, transformation and marketing of forest raw materials (timber and non-timber), the participation of stakeholders in supporting payment for environmental services through concurrent fund mechanisms in areas of interest, the development of silvopastoral systems, as well as interinstitutional coordination for protection against forest fires, pests and diseases.

Table 11. Financing plan for the implementation of planned actions and interventions under the ISFL ER Program.

Planned action/intervention and timing for implementation	Financing required (M USD)	Financing identified/ secured	Sources of financing	Surplus or gap	Proposed financing/ measures to address gap
Community Forest Management and Value Chains	37.50	80%	Public Resources	20%	Private initiative
Micro-watershed Forest Restoration	46.25	80%	Public Resources	20%	Private initiative
Environmental Services	28.00	80%	Public Resources	20%	Private initiative
Forest Protection	5.50	80%	Public Resources	20%	Private initiative
Agroforestry and Silvopastoral Systems	7.50	0%	TBD	100%	Private initiative
Commercial Forest Plantations	2.31	80%	Public Resources	20%	Private initiative
State contribution to forest management activities	14.75	100%	Public Resource	0%	
Total	**141.81**	**78%**	**N/A**	**22%**	**N/A**

The proposed activities are profitable from a private financial point of view, with the exception of those that are of a public or social nature, such as forest restoration, PES, fire management and forest sanitation (based on a sensitivity analysis with a 10+2% discount rate).

For the financial analysis, two groups of projects were considered: i) conservation and protection, and ii) production. The former are analyzed from the point of view of public value and the generation of ecosystemic services, for which the NPV of externalities and social values were positive, which indicating that the projects are profitable from a social point of view. As for productive projects, these are aimed at the generation of goods and services and must meet three basic objectives: survival, profitability and growth (these projects are focused on value creation, both public and private). In terms of NPV, all projects are profitable in social and private terms. Finally, the proposed ER projects are viable based on the cost-benefit indicator, they have benefits higher than the costs and an average probability of success greater than 76%. For more information on the financing plan, see **Annex 2**.

The above applies to the financing of the initial activities proposed in the Emissions Reduction Program; observe Table 13 of section 3.2 and section 3.6.1. In the event of obtaining favorable results, that is, a reduction in emissions is observed derived from the implementation of the initial activities of the Program, it is expected that a payment will be obtained for said results, in which case the provisions established in section 3.6 on the benefit sharing agreements, which in summary propose that these resources be implemented complementary activities to the initial ones (see figure 7 and 8), which seeks to strengthen the actions that address the causes of deforestation and degradation forest.

CONAFORs Rules of Operation

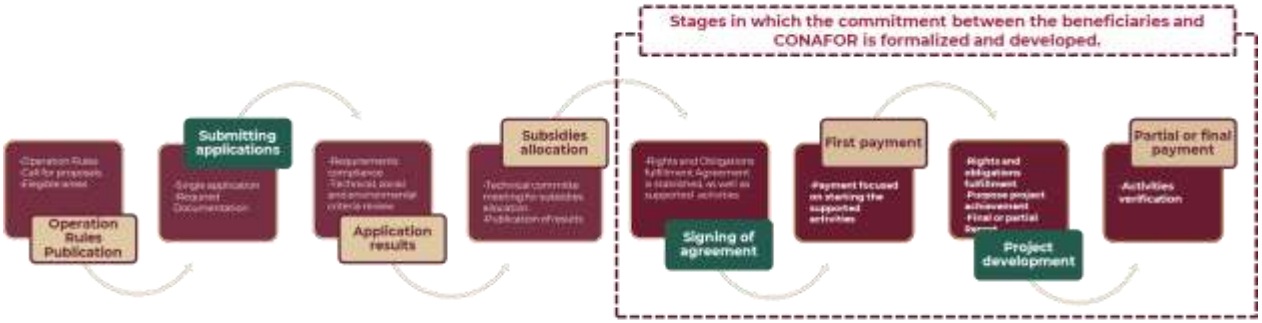
Each year CONAFOR publishes in the Federation Oficial Journal the Rules of Operation (ROP) of Programm of S219 - Sustainable Forestry Development for Wellbeing Program, in compliance with the legal framework. The objective of the ROP is to support owners, rightful possessors and inhabitants of the forest areas to access to CONAFOR subsidies to implement projects which contribute to protection,

conservation, restoration, and incorporation of land suitable for sustainable forestry management, as well as the strengthening of value chains forestry sector.

The ROP establishes the general application rules and procedures which must be observed in the operation, allocation, and execution of the - Sustainable Forestry Development for Wellbeing Program resources. The ROP are published joint with call for proposals, through which the periods and bases to participate in the allocation process are established, as well as the eligible areas for each subsidy type.

As can be seen in the next operational flowchart, once the ROP are published with the call for proposals and eligible areas, people voluntarily participate by submitting their applications according to periods and requirements established by the subsidy of interest; then CONAFOR evaluates and determines applications (considering the requirements established on the ROP and call for proposals); the viable applications are ordered according to the grades obtained through the prelation criteria established on the ROP. The resource allocation (subsidies) is granted in descending order of viable applications until there is available budget. Proposal; subsequently the results are published on CONAFORs website. The subsidy allocation is formalized through the signing of the agreement between CONAFOR and the beneficiary. This formally initiates the execution of the Project until the commitments from both parties are fulfilled. The above is applicable to the initial activities proposed in the Emissions Reduction Program.

Figure 2.1. Operation flowchart CONAFORs Rules of Operation



The budget for the ROP of CONAFOR comes from and is established in the Expenditure Budget of the Federation of the Government of Mexico. CONAFOR, once it applies the rules and procedures for the selection, allocation and execution of the resources of the Sustainable Forest Development Program for Well-being, manages the economic resources assigned to each beneficiary through the Mexican Forest Fund, through which traceability and transparency are given to the exercise of said economic resources. It should be noted that payments to beneficiaries are made through electronic transfer.

3.1.4 Analysis of laws, statutes, and other regulatory frameworks

The Government of Mexico has demonstrated a strong and progressive commitment to address climate change. The country ratified the Paris Agreement and has submitted an updated NDC to the UNFCCC where it recognizes the role of forests in relation to climate change mitigation and adaptation. It also commits to eliminating net deforestation by 2030.

Within the national legal framework, it is necessary to consider the provisions of the Political Constitution of the United Mexican States CPEUM, which recognizes in the fifth paragraph of Article 4 the right of all people to a healthy environment for their development and wellbeing, forcing the State to guarantee respect for this right. It also establishes that whoever causes environmental damage and deterioration must be held responsible. This human right must be guaranteed by all authorities in accordance with Article 1 of the CPEUM, although the Ministry of the Environment and Natural Resources (SEMARNAT) has a relevant role to play in promoting strategies focused on access, use and sustainable management of natural resources to reduce environmental deterioration and the effects of climate change.

Mexico's legal and programmatic framework for forest management and rural development is highly robust. The legal framework governing the environment and forests comprises, among its instruments, a number of laws, including the General Law on Climate Change (LGCC), the General Law on Sustainable Forest Development (LGDFS), and the Sustainable Rural Development Law (LDRS). Annex 12 presents a list of laws and policies that are relevant for the program implementation. Mexico is party to international agreements, treaties, and declarations that strengthen national legislation on indigenous issues, human rights, and protection of biodiversity and natural resources, among others. In addition to its laws, the forestry sector has 27 Mexican Official Standards (NOM)[26] and various Mexican Standards (NMX)[27,] covering issues ranging from the registration of forest carbon projects and the certification of sustainable forest management to mitigation of the impact of land-use changes on biodiversity.

With respect to national legislation, there is a commitment established in the General Law on Climate Change in its third transitory provision, and the General Law for Sustainable Forestry Development in its article 20, section XXVIII, which indicates the powers of SEMARNAT and CONAFOR to promote the design and elaboration of policies and associated mitigation actions to move to a zero percent rate of carbon loss in the original ecosystems, implementing mitigation actions associated with the corresponding sectors, considering the reduction of emissions of forest sector and carbon sequestration, maintaining and increasing carbon sinks; halt and reverse deforestation and degradation of forest ecosystems, to be incorporated into the planning instruments of forest policy for sustainable development.

26 Mexican official standard: the technical regulation on mandatory compliance issued by the relevant agencies, in accordance with the purposes referred to in Article 40, which establishes rules, specifications, attributes, guidelines, features, or prescriptions applicable to a product, process, installation, system, activity, service, or method of production or operation, as well as those pertaining to terminology, symbology, packaging, marking, or labeling, and those that refer to their compliance or application.

27 Mexican standard: this is prepared by a national standardization body, or the Secretariat, pursuant to this law, which provides, for common and repeated usage, rules, specifications, attributes, testing methods, guidelines, characteristics, or prescriptions applicable to a product, process, installation, system, activity, service or method of production or operation, as well as those pertaining to terminology, symbology, packaging, marking, or labeling, and those that refer to their compliance or application (Artículo 3 de la Ley Federal sobre Metrología y Normalización

States have climate change laws, however, not all contain specific provisions regarding the reduction of emissions in forest landscapes. This is not an obstacle since federal legislation establishes this concurrence of competencies.

It is clear that Mexico has developed a comprehensive and strengthened national legal framework that supports the international commitments for the establishment of REDD+ mechanisms.

3.1.5 Risk for displacement

The sources of emissions and removals in the AFOLU sector in the states under the jurisdiction of the program have a multi-sectoral and multidimensional origin. In this sense, the main drivers of deforestation and forest degradation in the region are related to land use change for agricultural purposes, clandestine or illegal logging, urbanization, forest fires, mining, and overexploitation of forest resources (timber and non-timber), forest pests and diseases, and the exploitation of fossil fuels.

In relation to the main drivers of deforestation and degradation identified, the risk of displacement of emissions that could occur in the jurisdiction of the program was analyzed (table 12).

Table 12. Risk of displacement of the main drivers of deforestation and degradation in the ER Program

Drivers of deforestation and degradation and the states in which they occur	***Risk of displacement (high, medium, low)***	***Explanation/justification of the risk analysis***
Overgrazing (Chihuahua, Coahuila, Durango y Nuevo León)	*Low*	*This activity will not be limited, only the use of best practices will be promoted, so it not necessary to move the activity outside the jurisdiction.*
Extensive livestock farming (Chihuahua, Coahuila y Durango)	*Low*	*The ER Program will not promote any reduction in operating costs, so the activity will continue to be profitable; it will only seek to implement best practices (it will not reduce productivity).*
Commercial agriculture (Chihuahua, Coahuila, Durango y Nuevo León)	*Low*	*The proposed interventions will consist of measures that combine productive intensification with conservation, based on traditional activities.*
Illegal logging (Chihuahua, Coahuila y Durango)	*Medium*	*The activities to be implemented are aimed at increasing the competitiveness of forestry activities and the generation of local value chains and may cause the displacement of emissions outside the jurisdiction. The level of risk is considered medium.*
Forest fires (Chihuahua, Coahuila, Durango y Nuevo León)	*Low*	*Mexico has a consolidated public policy for fire management in the process of consolidation, therefore no risk of displacement of this disturbance factor within or outside the jurisdiction has been identified.*
Mining (Chihuahua, Coahuila y Nuevo León)	*Medium*	*The level of risk is considered medium because better protection of forest resources could strengthen law enforcement actions and restrictive measuress for mining, which could lead to the displacement of the activity outside the jurisdiction.*
Overexploitation of timber and non-timber resources (Coahuila, Durango y Nuevo León)	*Low*	*Through the implementation of the ER Program, best practices will be promoted to increase production and productivity and, therefore, the availability of timber and non-timber products, discouraging the displacement of activities outside the jurisdiction to obtain these products.*
Forest pests and diseases (Coahuila y Nuevo León)	*Low*	*The activities to address this driver are aimed at reducing the deterioration of the different forest ecosystems, improving phytosanitary management, and reducing the risk of pests and diseases, which will benefit both inside and outside the jurisdiction. As a disturbance factor of natural origin, its presence depends on the health and vigor of the ecosystem;*

		actions implemented in this regard will limit its spread to other areas inside and outside the jurisdiction.

Interventions under the ER Program will seek to address the drivers of deforestation and forest degradation through better land management, the promotion of climate-smart agricultural practices, the reduction of forest ecosystem loss, and the design and promotion of better land-use planning policies[28]. These activities will be carried out in coordination with the support of the state governments and federal agencies involved, with the ultimate goal of reducing emissions and improving the living conditions of the inhabitants of rural areas (without detriment to other productive activities that are currently carried out), thus avoiding the risk for displacement of these activities outside the accounting scope.

It is important to note that the Measurement, Reporting and Verification (MRV) System has been designed to be implemented at the national level for the quantification and monitoring of GHG emissions, in such way that, if a displacement of activities outside the jurisdiction is identified, the MRV system will be able to identify this situation, so it can be addressed and corrected in a timely manner through the established institutional and legal frameworks.

3.2 Description of stakeholder consultation process

The design of the Emissions Reduction Program (ER Program) of the Sustainable Forest Landscapes Initiative (ISFL) is based on a participatory planning process, which has allowed the identification of needs and priorities in the territory of the states under jurisdiction and the joint design of relevant actions to address them, with a gender perspective and differentiated attention to populations considered vulnerable.

The planning process of the ER Program promoted the participation of different key stakeholders such as representatives of ejidos and communities, indigenous peoples, youth, women, people with disabilities, forest dwellers, agricultural and livestock producers located within the Program implementation areas, representatives of agencies and entities of the Federal Public Administration, state and municipal governments, civil society organizations, producers and the private sector, academics and researchers. To this end, the CONAFOR Forest Development Promotion Offices in the states, were urged to identify the key stakeholders that should participate in the process, in collaboration with the state governments and SADER representatives..

In this regard, it was proposed that the process be carried out in three stages: dissemination, validation and follow-up meetings. At the time of writing this document, the first two stages have been completed, as described below.

Stage 1. Dissemination workshops. After the identification or mapping of key stakeholders, the call was circulated through the State Forestry Councils, as well as among the institutions of the different levels of

[28] For example: Promoting a land-use planning model that considers the sustainable use of land, supporting a territorial governance with a rights-based approach, and strengthening coordination between different sectors and levels of government.

government. This stage took place between May 23rd and June 16th, 2022 and the objective, was to provide information and raise awareness among participants about Mexico's situation in the face of climate change, specifically on the role of the AFOLU sector, and the importance and impact that the ER Program will have in the different regions, not only in terms of halting degradation and deforestation, but also in promoting and strengthening sustainable rural development. To achieve this, participants were first introduced to the context of the ER Program, as well as the drivers of deforestation and forest degradation that resulted from a desk analysis conducted in 2021 that consulted literature, legislation and various relevant stakeholders in the jurisdiction. These workshops were developed under a systematic methodology established in a factsheet, with exhibition materials designed to be easiliy understood, with a language accessible to citizens in general and encouraging the participation of CONAFOR public servers who have a regional presence were they workshop was held.

As a result, the participants identified the most significant drivers of deforestation and forest degradation that directly impact their ejidos and communities. Subsequently, they discussed and proposed possible actions to reduce emissions, related to their activities, which could be used to address the problems identified, and promote local development and proper use of natural resources. A total of 384 people registered as workshop participants (85 people in Chihuahua, 85 in Coahuila, 141 in Durango and 73 in Nuevo León)[29], mainly representatives of ejidos, communities, producers (forestry, agriculture and livestock), public servers from different levels of government (federal, state and municipal), civil society organizations, academics, researchers and students. The characterization of the participating stakeholders is presented in figure 3:

Figure 3.Characterization of stakeholders participating in the Dissemination Workshops

Stage 2. Validation workshops. The second round of workshops took place between July 18th and 29th. Here the actions previously identified by the participants and based on regional needs were validated

[29] Of the participants, 87 were women and 286 were men, of whom nine people recognized themselves as indigenous.

and prioritized. The call was addressed to the participants registered in the lists of the first workshop; however, it was also extended to other relevant actors who due to different circumstances, did not participate in the dissemination workshops and who, due to their work in the territory, could make valuable contributions to the design of the program. A total of 265 registered people attended this stage (67 in Chihuahua, 69 in Coahuila, 69 in Durango, and 60 in Nuevo León)[30] participants were mainly representatives of ejidos and communities. producers (forestry, agriculture and livestock), public servers from different levels of government (federal, state and municipal), civil society organizations, academics, researchers and students. The characterization of the participants is presented in figure 4 as follow:

Figure 4. Characterization of the stakeholders participating in the Results dissemination and validation workshop

With the results of these workshops, the activities to address the drivers of deforestation and degradation were adjusted, which are a fundamental element to advance in the integration of this proposaled Emissions Reduction Program. The following are the main drivers of deforestation and forest degradation identified and the proposed activities to address them.

Table 13. Main drivers of deforestation and forest degradation

Identification of main drivers of deforestation and ecosystems degradation identified during the workshops	Identification of main activities to address the drivers of deforestation and ecosystems degradation identified during the workshops	Actions proposed for the ER Program intervention (Initial activities)
Forest Fires	Integration of rural fire management brigades. Acitivities for the prevention and extinction of forest fire by the three levels of government. Promotion and implementation of forest fire prevention activities by forest land owners and landholders. Raisise awareness and disseminate information on the anthropogenic causes of forest fires. Improved access to information on forest fires (early warning).	Forest Protection - Fire management brigades
Land use change	Improve the processes of harvesting, supply, transformation and marketing of forest products to increase the competitiveness of forest management. Training and technology transfer to improve forest management.	Community Forest Management and Value Chains Forest restoration Payment for Environmental Services

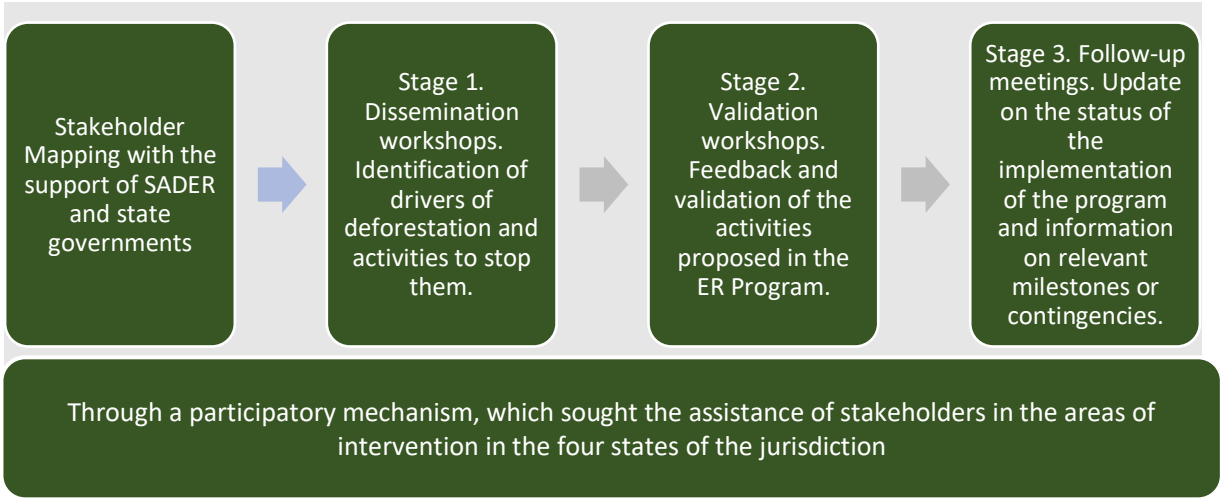
[30] Of the participants, there were 67 women and 198 men, of whom 10 people recognized themselves as indigenous

	Diversification of productive activities derived from forest management, considering "avecindados", women and youth. Incorporation of forest area in to Payments for Environmental Services. Incorporation of preferably forested areas into restoration and productive reconversion processes. Improvement of environmental governance in the territory with the participation of the government and society. Effective enforcement and supervision of the relevant regulations.	Agroforestry and silvopastoral systems
Lack of or defficient land-use planning	Elaboration and effective implementation of community land-use plans.	Community Forest Management and Value Chains - Community land use plans
Overgrazing	Proper application of livestock management programs (rotation and grazing). Supervision of grazing stocking rates in forested areas. Improvement of livestock diets and management, as well as manure management.	
Forest pests and diseases	Prevention and forest health activities. Integration of rural forest health brigades. Raise awareness- and disseminate information to improve prevention and control of forest pests and diseases. Improved information on forest pests and diseases (early warning).	Forest protection - Plant sanitation brigades - Phytosanitary treatments
Inadequate forest management	Elaboration, implementation and adequate monitoring of timber and non-timber forest management programs.	Community Forest Management and Value Chains

Stage 3. Follow-up meetings. The objective of this phase is to execute the control and follow-up mechanisms and identify all those actions susceptible to change, so that this is a process of continuous improvement and allows flexibility in the implementation of the ER Program. For this reason, meetings will be held with the stakeholders involved in the implementation and follow-up process. This last phase is long, as it should be permanent once the ER Program has been implemented and will allow adjustments to be made when deemed necessary or to modify some actions that favor the development of the program. For which, on the basis of permanent institutional and technical follow-up and guidance that will be done by the operational on-field staff from Local Forest Development Promoters, the needs and problems at the local level arising from the implementation of the ERPD, will be identified, preferable through work meetings with the communities. This feedback will be analyzed in the Working Group of the respective Forest State Council, to guide the attention that must be provided and, if necessary, will refer the attention to the corresponding government institution.

Figure 5 is a diagram showing the stages mentioned above:

Figure 5. Stage 3, follow-up meetings



It should be noted that Mexico is currently preparing the Stakeholder Engagement Plan (PPPI, by its acronym in Spanish) for the Program, which contemplates the relevant stakeholders that have an impact on the territory and will be continuously involved in the participatory processes related to the ER Program. The PPPI will be used during the subsequent phases to ensure that information is adequately conveyed to stakeholders and that actions implemented under the Program are fully and effectively documented and monitored.

The lessons learned from the organization and implementation of these workshops will be considered in the process of participatory construction of the benefit-sharing plan.

3.3 Non-carbon benefits

At the international level, specifically within the United Nations Framework Convention on Climate Change (UNFCCC), the term "co-benefits" was used by the Intergovernmental Panel on Climate Change in its Third Assessment Report to refer to the "non-climate benefits of greenhouse gas (GHG) mitigation policies that are explicitly incorporated into the initial construction of mitigation policies. Thus, the term co-benefits reflects that most policies designed to address GHG mitigation also have other reasons, of equal importance for the design of these policies (e.g., related to Sustainable Development Goals)".

According to the document called "ISFL Emissions Reduction Program Requirements", Mexico's ER Program must include the following indicators:[31:]

INDICATORS
Number of people involved in income generation activities (% women, % IPs)
Volume of for-profit private sector finance leveraged to contribute to ISFL objectives
Volume of not-for-profit finance (public or private) leveraged to contribute to ISFL objectives
Number of people in private sector schemes adopting sustainable practices

[31] Monitoring, Evaluation, and Learning (MEL) Framework, available at https://www.biocarbonfund-isfl.org/sites/isfl/files/2021-08/ISFL%20MEL%20Framework%20July%202021.pdf

In addition to the above, Mexico has decided to report the following optional indicators:

OPTIONAL INDICATORS
Total land area brought under sustainable management plans, including, where relevant: forest plans, biodiversity plans, land-use plans, other
Total area under active conservation schemes through payments for environmental services.
Total area under forest restoration processes
Total area under productive reconversion processes
Total land area under sustainable landscape management practices, including, where relevant: forestry, agriculture, other
Land users who have received training to improve land management (% women)
Government officials who have received technical training on interventions to improve the results of land use management
Number of government institutions provided with capacity building to improve land-use management
Number of operational coordination platforms

Finally, it is important to highlight that Mexico will define the methodology to measure and report these indicators based on the national context.

Adittionaly, Mexico has the National Biodiversity Strategy of Mexico (ENBioMex) under the coordination of the National Commission for the Knowledge and Use of Biodiversity (CONABIO) and the Strategy for Integration of Conservation and Sustainable Use of Biodiversity in the Forest Sector (ENBIOFOR) implemented by CONAFOR.

ENBIOFOR is a reference framework for the design of biodiversity criteria that must be included in the various interventions concerning forest protection, conservation, restoration and management.

3.4 Description of the Feedback and Grievance Redress Mechanism (FGRM)

The National Forestry Commission (CONAFOR), as the entity that receives the financing and is responsible for the execution of the ERP-ISFL in Mexico, has its own Feedback and Grievance Redress Mechanism (MAC, by its Spanish acronym) that, based on the legal framework, covers all existing procedures to provide adequate responses and solutions to requests for citizen information, receipt of complaints, claims and suggestions.

The operation of the MAC is carried out in three different areas with their own channels, regulations, and attention protocols according to the nature of the issues it resolves and/or attends to, namely:

1. Internal Control Body (OIC, by its Spanish acronym): receives complaints and claims for non-compliance with the obligations of public servers and is responsible on following-up on them. The OIC derives from the Ministry of Public Administration, whose objective is to promote a culture of transparency in government, accountability, the fight against corruption, and the efficient performance of public institutions, as well as receiving and following up on complaints and claims about non compliance the obligations of public servers.

In turn, the OIC is the body in charge of providing timely support in the activities of promotion and operation of the Social Comptroller in social development programs and sanctioning when irregularities are detected, the latter in accordance with the Internal Regulations of the Secretariat of the Public Function.

In this regard, article 31 of "Chapter VIII. Social Comptrollership" of the Operating Rules 2023 of the Program for Sustainable Forest Development (PDFS) establishes that CONAFOR will promote the participation of the beneficiaries of such rules, as well as civil society organizations or citizens interested in monitoring the execution of the regulations. Same to improve the efficiency, effectiveness and transparency in the allocation and exercise of support, through the integration, operation and linkage of social comptrollers or related figures, for the follow-up, monitoring and supervision of compliance of the goals and actions committed in the program, as well as the correct application of the public resources assigned to it.

CONAFOR will promote the Social Comptrollership as the mechanism of the Beneficiaries in an organized, independent, voluntary and honorary manner to monitor compliance with the goals and actions under the framework of the CONAFOR Operating Rules, as well as the correct application of the public resources allocated to it, in conformity with articles 69, 70 and 71 of the General Law of Social Development; 67, 68 and 70 of its Regulation.

At all times, the participation of the beneficiary indigenous and afromexican communities interested in the follow-up, monitoring and supervision of the operation and execution of the CONAFOR Operating Rules will be recognized, respected and encouraged; this through culturally and linguistically relevant means and communication channels.

CONAFOR's Operating Rules will be subject to the Guidelines for the Promotion and Operation of the Social Comptrollership in Federal Social Development Programs and the Framework Strategy in force, issued by the Secretariat of the Public Function, as well as regulatory documents (Outline, Operational Guide, and Social Comptrollership Annual Work Program) validated by the such agency, which integrate the Social Comptrollership Strategy.

The Social Comptrollership mechanism will include the following

I. The dissemination and promotion for the constitution of the Social Comptrollership Committees will be carried out by CONAFOR during the trainings of the Beneficiaries on the rights and obligations acquired. The aforementioned is not limited to what is established in the outline validated by the Secretariat of the Public Function.
II. The Beneficiaries interested in being part of the Social Comptrollership Committees will receive training and advice on the Program and the functions they will assume as members of the Social Comptrollership Committees.
III. The equal participation of women and men in the constitution of the Social Comptrollership Committees will be promoted.
IV. At the constitution meeting of the Social Comptrollership Committee, each Committee will define its Work Program, establishing dates and venues for the following meetings, which may be held in person or by audiovisual technological means.
V. The Work Program of each Social Comptrollership Committee will be documented and at least 2 (two) work meetings with CONAFOR will be considered, in which the necessary public

information will be provided for the follow-up, monitoring and supervision of compliance with the goals and actions committed to the Program. In the last scheduled work meeting, the Committee, with the support of CONAFOR, will generate a final report that integrates the results of its social audit activities.

VI. The follow up of the Social Comptrollership Committees that will be constituted will be in accordance with the fiscal year applicable to the current Operating Rules.

For the registration of a Social Comptrollership Committee, a document must be submitted to CONAFOR, which in turn will establish the mechanism through which it will recognize the constitution of the Social Comptrollership Committees.

The OIC uptake channels to receive complaints and claims are the following:

- Mail/In person: CONAFOR office located at Periférico Poniente #5360, building "C", Colonia San Juan de Ocotán, Zip code 45019, Zapopan, Jalisco.
- Telephone assistance: 800 5004361
- Email: quejas@conafor.gob.mx

The Ministry of Public Administration uptake channels to receive complaints and claims are the following:

- Citizen Complaint of Corruption (SIDEC, in Spanish): https//sidec.funcionpublica.gob.mx/#!
- Citizens reporting internal and external corruption: https://alertadores.funcionpublica.gob.mx/
- Mail: To General Directorate of Complaints and Investigations of the Ministry of Public Administration at Insurgentes Sur Ave. #1735, 2nd floor North face, Guadalupe Inn, Álvaro Obregón, Zip Code: 01020, Mexico city.
- Telephone assistance: Inside the Republic to 800 11 28 700 and Mexico city to 55 2000 2000.
- In person: Module 3 of the Ministry of Public Administration at Insurgentes Sur Ave. #1735, 1st floor, Guadalupe Inn, Álvaro Obregón, Zip Code: 01020, Mexico city.

2. Liaison Unit in CONAFOR, derived from INAI (National Institute for Access to Information): Responds to requests for government public information; protection of personal data that is in the hands of the federal government; and resolves the denial of access to information formulated by federal government agencies or entities.

The recruitments channels of the CONAFOR Liaison Unit to receive requestS for government public information are the following:

- Mail/In person: CONAFOR office located at Periférico Poniente #5360, building "A", Colonia San Juan de Ocotán, Zip code 45019, Zapopan, Jalisco.
- Information Request System: www.infomex.org.mx

3. Citizen Information and Attention Service (SIAC, by its Spanish acronym): Provides attention and timely response to citizens, resolving doubts, and offering general information on the Sustainable Forestry Development Program and other CONAFOR activities (competitions, calls, conferences, exhibitions, among others). The SIAC, in charge of the Communication and Production Management of CONAFOR, receives and, where appropiate, redirects to the units those concerns, claims and suggestions related to all the activities implemented by this institution.

The SIAC recruitmen channels to attend and respond to citizens to resolve doubts and offer general information are the following:

- In person:
    - CONAFOR office located at Periférico Poniente #5360, building "C", Colonia San Juan de Ocotán, Zip code 45019, Zapopan, Jalisco
    - 32 Offices to promote Forest Development located at each state entity.
    - 84 Local Offices to promote Forest Development located at priority areas inside each state entity.
- Email: conafor@conafor.gob.mx
- Telephone assistance: 800 3777 70 00
- Social networks: https://twitter.com/CONAFOR, https://www.facebook.com/CONAFOR.Central/

Process taken to disseminate MAC procedures at the local and national level, of the ISFL ER Program, in a language that is understandable to the relevant stakeholders

CONAFOR interacts with the beneficiaries of the Sustainable Forestry Development Program through different means in which it informs in understandable language about the recruitment channels and the process for handling complaints and claims as described below, according to its implementation scale:

- **National level**

    a) Operating Rules 2023 of the Program for Sustainable Forest Development (https://www.gob.mx/cms/uploads/attachment/file/689256/ROP_2022_CONAFOR.pdf):

    - Article 31, Chapter VIII. Social Comptrollership
    - Article 42, Chapter XVII. Transparency and Citizen Contact
    - Article 44, Chapter XVIII. Complaints and Claims.
    - Annex 5. Agreements. Clause Twenty two. About Complaint.
    - Annex 9. Notice of Privacy.
      Number III. Mechanisms and means available to exercise your ARCO rights and express refusal to the processing and transfer of data.
      Number V. Attention to Complaints.

    b) Document entitled "MAC" which aims to guide CONAFOR staff when responding to citizen requests, but also to guide any citizen who wishes to present a claim, complaint, suggestion or request for information related to the operation of CONAFOR's. Available at: https://www.gob.mx/conafor/documentos/mecanismo-de-atencion-ciudadana-mac-19225.

    c) MAC brochure, available at: http://www.conafor.gob.mx:8080/documentos/docs/35/5112Tr%C3%ADptico%20MAC.pdf

d) Call for proposals for the Sustainable Forest Development Program 2023 (https://www.conafor.gob.mx/apoyos//docs/adjuntos/9c88a582d21511f0a783592d18545b16.docx):
   - Number 8. Complaints and Claims.

e) In person counseling to present a claim, complaint, suggestion or request for information related to the operation of CONAFOR:
   - CONAFOR office located at Periferico Poniente #5360, building "Markku Simula", Colonia San Juan de Ocotán, Zip code 45019, Zapopan, Jalisco

- **ISFL ER Program level**

a) In person counseling to present a claim, complaint, suggestion or request for information related to the operation of CONAFOR:
   - 32 Offices to promote Forest Development located at each state entity.

- **Local level**

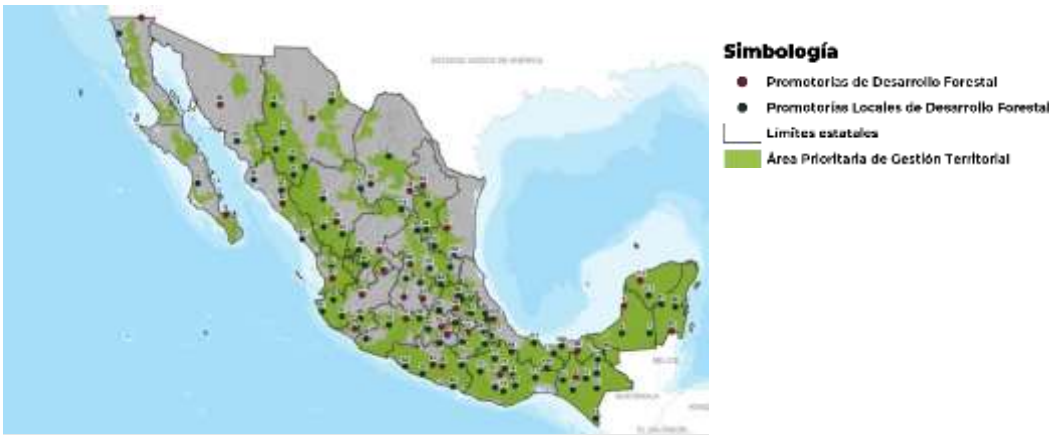
a) In person or virtual training workshops on rights and obligations as beneficiaries, including their right to receive attention through the MAC, and to integrate a Social Comptrollership (Article 27, Operating Rules 2023 of the Program for Sustainable Forest Development).

b) During the activities of promotion and operation of the Social Comptrollership, information is provided on the right that all beneficiaries have to present complaints and claims that may lead to the establishment of administrative, civil or criminal responsibilities, as well as the recruitment channels.

c) Social Comptrollership Brochure 2023, available at: https://www.conafor.gob.mx/apoyos//docs/adjuntos/663dcc88485fd5fcd88c5f26ca57e28e.pdf.

d) In person counseling to present a claim, complaint, suggestion or request for information related to the operation of CONAFOR:
   - 84 Local Offices to promote Forest Development located at priority areas inside each state entity.

Figure 6. Location of the 32 Offices to promote Forest Development and the 84 Local Offices to promote Forest Development.



To date, the implementation of the MAC has facilitated the detection of the main doubts of users regarding the forestry sector and about the institution itself; which makes it possible to provide an effective, efficient and transparent service, as well as to identify possible negative impacts and prevent conflicts[32].

Planned actions to improve the MAC

In 2022, CONAFOR developed an analysis to identify specific arrangements to complete the MAC in order to comply with the provisions required by the Environmental and Social Standard 10 of the World Bank's Environmental and Social Framework and Feedback and the ISFL ER Program requirements of the Grievance Redress Mechanism. This analysis, already reviewed by the World Bank, identified several actions to improve the MAC, including dissemination channels at the local level and in the appropriate languages, among others.

CONAFOR is currently developing the following social safeguard instruments for the ERP: Environmental and Social Management Framework, Indigenous Peoples Planning Framework and Indigenous Peoples Plans. The objective of the social safeguards instruments is to management social risks as a result of the implementation of the ERP, which in turn will provide more information on how feedback and grievances received through the MAC (coordination arrangements) can be consolidated for the ERP purposes.

3.5 Assessment of land and resource tenure in the Program Area

3.5.1 Description of land and resource tenure regimes in the Program Area

The Political Constitution of the United Mexican States (CPEUM, by its Spanish acronym) establishes different types of land ownership. Article 27 establishes the original property of the Nation, public property and private property. The first is established in the first paragraph, which states that the ownership of land and water within the limits of the national territory corresponds originally to the Nation, which exercises maximum power over them and, by virtue of this, can assign them to private individuals to constitute private property, or, once the ownership has been transferred, as the case may be, dispose of them by the means provided for in the same Supreme Law. Thus, although the ownership of land and water can be transferred to private individuals, this does not imply that the ownership of the natural resources found therein is always transferred, since the fourth and fifth paragraphs establish that the Nation has direct ownership, and only it may be able to dispose of the resources or goods described in these paragraphs, but in use of that sovereignty it will authorize the population to exploitand temporary use by means of a concession, except in the cases of exception provided in the sixth paragraph. Public ownership consists in the fact that the nation reserves direct control over the assets and resources that the aforementioned precept establishes, that is, land, water and other resources that have not been transferred to private individuals.

32 https://www.gob.mx/conafor/documentos/mecanismo-de-atencion-ciudadana-mac-19225

Another regime established in the Constitution is that of social property, which was constituted by dividing the existing large estates in the country through expropriations, in order to redistribute land ownership, giving rise to the creation of ejidos and the recognition of the ownership held by communities.

The General Law for Sustainable Forest Development (LGDFS) recognizes the ownership of forest resources by ejidos, communities, small landowners and legitimate owners; however, due to its importance, the State imposes modalities, including the provision of conditions for the integrated rural development of forestry activities for the correct use of the land. The LGDFS assigns the same rights over forest resources wether the land ownership is social or private. When natural resources are owned by ejidos or communities or they recive collective benefits, the decision on how to use them or how to distribute them corresponds to the community or ejido assembly, which operates in accordance with the Agrarian Law of national application.

The possible conflicts that could arise according to the trend of recent years could be the deterioration of the governance of the ejidos and communities in their forms of organization and decision-making processes, which has had repercussions on the levels of participation that impact their territories and the best performance of public policies aimed at the rural areas. However, there are procedures for their resolution.

3.5.2 Implications of land and resource tenure assessment for program design

Mexico has laws and regulations based on a robust and programmatic legal framework that lays the foundations for defining, regulating and clearly establishing land ownership and tenure regimes. It also has a solid legal framework and instruments for land tenure conflict resolution that are relevant for the development and implementation of the ER Program.

As mentioned in the previous section, according to the CPEUM the country has the right to regulate, for social benefit, the use of natural elements susceptible of appropriation, in order to care for their conservation, achieve a balanced development of the country and the improvement of livelihoods of the rural and urban population (art. 27). However, through the LGDFS, the Mexican Government recognizes that the ownership of forest resources within the national territory corresponds to the ejidos, communities, indigenous peoples and communities, individuals or legal entities, the Federation, the States and the Municipalities that own the land where they are located.

It should be noted that an important part of the implementation of the Mexico's Emissions Reduction Program will be based on the incentive programs of the federal government, the Operating Rules for Sustainable Forest Development (OR), complying with criteria of objectivity, equity, transparency, publicity, selectivity and temporality. The purpose of these Operating Rules is to promote community forest management in and with agrarian nuclei, indigenous peoples, Afro-Mexican peoples and communities, owners, legitimate owners and users of forested lands, preferably forested or temporarily forested land, under the principles of sustainability, equity, inclusion and with respect to collective and differentiated rights, uses and customs; as well as for the integration of value networks and the development of local and regional economies, and support for schemes for the protection, conservation

and restoration of forest ecosystems and their biodiversity to guarantee the provision and quality of environmental goods and services; based on planning and management with a territorial approach, biocultural landscapes, watersheds and agroecological criteria, risk management and safeguards, all with the purpose of contributing to improving the quality of life of the target population and advancing in the fulfillment of commitments of mitigation and adaptation to climate change, established in the Nationally Determined Contribution of Mexico for the period 2020-2030.

Also, the rules of the RO include an article that establishes that all social groups and genders must have equal access to the support provided herein, for which mechanisms for the promotion, distribution, operation and management of resources will be established, based on social equity criteria.

The unique system of land tenure and communal ownership, the country's highly diverse social mosaic and the large proportion of the forested land under collective ownership by indigenous and local communities provide a firm basis for the community-based landscape approach.

3.6 Benefit Sharing Arrangements

3.6.1 Summary of benefit sharing arrangements

The Benefit Sharing Plan (BSP) establishes the mechanism through which resources from potential payments from verified emission reductions will be allocated to beneficiaries who have implemented activities to reduce deforestation and forest degradation while contributing to increase carbon sinks in the states of Chihuahua, Coahuila, Durango and Nuevo León (the Emission Reductions Program (ERPD) jurisdiction) . This will happen through stakeholder consultation and participation processes, in addition to establishing how CONAFOR will communicate, implement, and monitor the BS process. Benefit sharing will also ensure compliance with the World Bank's Environmental and Social Framework standards.

For the intervention areas of the four states, the following categories of potential beneficiaries are identified who may be eligible to receive benefits under this BSP:

i. Owners or possessors of forest land or groups of these: Legal entities or individual with properties under private or social regime (*ejidos*[33] and communities [34)].
ii. Indigenous peoples and communities with forest lands: Indigenous peoples and communities, and *ejidosand communities* that define and recognize themselves as indigenous.
iii. Legal usufructuaries of forest lands: Groups or individuals recognized by ejido and communal assemblies or with any agreement established with ejidatarios and comuneros; tenants of private properties.
iv. *Avecindados*: Mexican individuals of legal age who have resided for one year or more on the lands of the ejidal population nucleus and who have been recognized as such by the ejidal assembly or the competent agrarian court.

[33] *Ejido* is a Mexican territory owned communally and operated by the inhabitants of an area either individually or cooperatively.

[34] Ejidatarios, comuneros, posesorios and avecindados are understood to be those people who have at least one parcel certificate (RAN, 2021).

v. Users: Individual without property title who inhabit ejidal and communal lands, including women or groups of women producers, youth groups, migrants, and other inhabitants on communal or ejidal lands.
vi. Individuals and groups with prperties with non-forest activities within the rural landscape, particularly in the agrifood sector, such as livestock and agriculture.

The criteria for the distribution of results-based payment resources in the four states comprising the jurisdiction will be carried out under the following scenario: results-based payments will be distributed proportionally according to the size of the eligible or priority areas in each of the four ERPD entities[35] through Special Operating Guidelines.

The Special Operating Guidelines will establish priority criteria to ensure the inclusion of women, youth, indigenous peoples, and communities. To this end, CONAFOR's extensive experience in developing criteria of this type, as applied through the Sustainable Forestry Development for Well-Being Program, will be considered, and included in the design of the Special Operating Guidelines for the BS derived from the results-based payment. The criteria will be consistent with the general principles, the World Bank's Environmental and Social Framework standards and respect for the social and environmental safeguards provided by the LGDFS and will be agreed upon and reflected in the final BSP.

The Mexican Forest Fund (MFF) has been selected as the financial mechanism for the transfer of resources for results-based payments. It has been chosen, for being a solid, efficient, and effective instrument through which resources will be allocated proportionally according to the size of the eligible or priority areas in each of the four ERPD entities. As expected, this proportionality will continue to be respected due to the socio-territorial differences among the states. On the other hand, and in order to reduce transaction costs, resources will be allocated directly from the MFF to final beneficiaries through the design of specific Guidelines with activities and selection criteria agreed upon in BSP..

The mechanism for the BS will be through the following process (Figure 7):

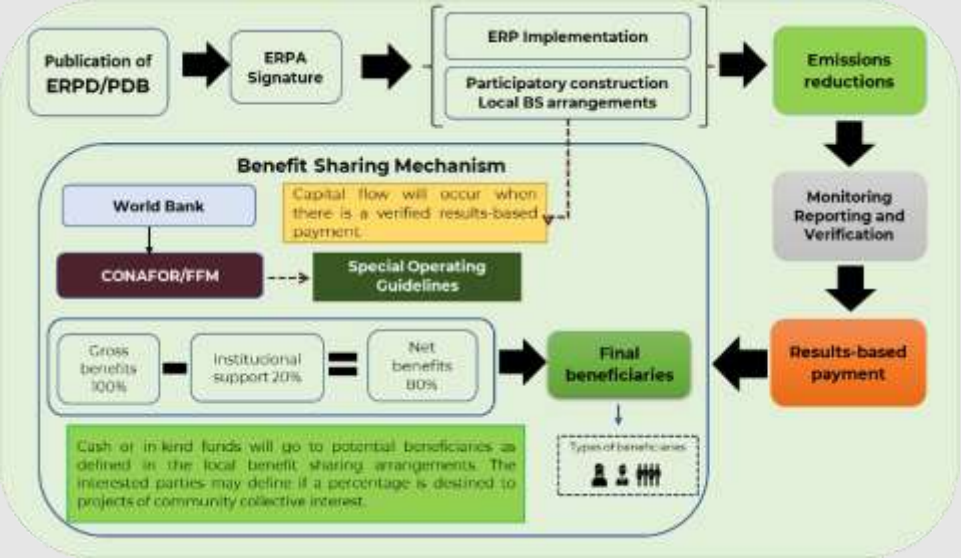
1. Publication of the revised Emissions Reduction Program, including the Advanced Draft of the Benefit Sharing Plan (to be developed in a consultative manner). This advanced draft will be available in English and Spanish, and in a format, manner and language understandable to the parties participating in the ER program, prior to the signing of the ERPA.
2. If applicable, SEMARNAT and the World Bank sign the payment for emissions reduction (ER) agreement. This agreement will establish the volume of reduced emissions agreed for a given period, in accordance with the Reference Level.

[35]Although it will be subject to a consultation process with the states, there are important territorial differences in terms of area, population and natural resources, so that benefit sharing will be in accordance with the size of the eligible or priority areas in each of the four entities of the ER program and the results presented for each of them.

3. If applicable, CONAFOR implements the initial activities considered in the Emissions Reduction Program in the states of Durango, Chihuahua, Coahuila, and Nuevo León, with budgetary resources from CONAFOR and, if applicable, from the state governments.
4. Parallel to point 3, the participatory methodology will be implemented for the design and consultation of **local arrangements for benefit sharing**, which will consider prior, free and informed consultation with stakeholders within the areas of implementation of the ER Program, in addition to strengthening differentiated attention for vulnerable populations or those that have historically been excluded from participatory processes such as indigenous people, women and youth. This will be carried out within a maximum period of 12 months from the signing of the ERPA.
5. After 12 months from the signing of the ERPA, local benefit sharing arrangements will be in place, which will consider possible complementary activities, with consensus and respect for safeguards and in compliance with the provisions of the Environmental and Social Framework of the World Bank.
6. CONAFOR monitors greenhouse gas emissions reductions in the four states where the ER Program is implemented.
7. CONAFOR prepares the monitoring report on emissions reductions and submits it to the World Bank.
8. The World Bank, based on the CONAFOR report, will contract a third party to verify emissions reductions. In addition, the WB will ensure compliance with environmental and social management, in accordance with the procedures established for this purpose.
9. If the emissions reductions have been verified, CONAFOR requests the results-based payment from the World Bank based on the information generated by the MRV on emissions reductions for the corresponding period.
10. The corresponding results-based payment would be transferred from the WB to the Mexican Forest Fund.
11. The FFM will receive such payment in its holding account, which will be deposited in the specific sub-account established for the ER Program, which will be administered by CONAFOR and through which direct payment will be made to beneficiaries and the traceability will be maintained of the proceeds, if any, of the results-based payment.
12. CONAFOR prepares and publishes, based on the agreed local benefit sharing arrangements, the Special Operating Guidelines for allocating funds36 to carry out complementary activities aimed at strengthening the ER Program.
13. Resources will be shared and labeled as follows: a) 20% for management and institutional support and b) 80% to be distributed in the territory to the final beneficiaries that participated in emissions reduction activities in the eligible areas for the ER Program and other people that have been considered as beneficiaries in the local benefit sharing arrangements.

Figure 7: Benefit sharing process

36 The activities to be considered for results-based payments should be complementary and be agreed upon through the process of participatory construction of local arrangements with stakeholders, these activities should be different from the "initial activities" that are currently offered in the Sustainable Forest Development for Well-Being Program and other programs and subsidies that impact the territory on an annual basis.



In general terms, carbon benefit sharing at the local level can be of two types: monetary and non-monetary (goods or services) and should be directly related to the implementation of the ER Program. They should generate direct incentives to beneficiaries and be monitored in an objective, systematic and transparent manner. Benefit sharing and the way in which benefits will be delivered will depend on the beneficiaries who participate in the program and who, through participatory processes, will define the way in which they want to receive the benefits according to the agreed decision-making processes.

Initial activities. Actions that are carried out during the implementation of the Emissions Reduction Program (ERP), with fiscal resources allocated through the Operating Rules.

These activities are contemplated in the ER Program intervention proposal, and will be supported mainly with public resources from CONAFOR's Sustainable Forest Development for Well-Being Program, categorized in five components:

1) Community Forest Management and Value Chains.
2) Commercial Forestry and Agroforestry Plantations.
3) Forest Restoration of Watersheds and Strategic Regions.
4) Environmental Services.
5) Forest Protection.

These activities enable the implementation of the ER Program to begin with a wide range of actions aimed at emissions reductions; the success of their execution depends on the existence of a first results-based payment and the activation of complementary activities, whose resources would be allocated through Special Operating Guidelines.

There are also plans to promote agroforestry and silvopastoral systems, with the participation of producers and private initiative.

Complementary activities. Actions that will be carried out with resources from a possible results-based payment of the ERP, which will be defined in the creation of local arrangements for benefit sharing, after

the implementation of the initial activities and in case of a favorable scenario to receive a results-based payment derived from the measurement of the performance of the corresponding emissions reductions. These actions will strengthen the intervention and implementation model of the ERP.

These will be offered through a Special Operating Guideline, designed, and validated through local benefit sharing arrangements, exclusively for the ER Program implementation areas and will be activated after receiving resources from the World Bank to the Mexican Forest Fund[37]

These projects should be consulted, modified and adjusted according to the observations and suggestions of stakeholders during the implementation of the ER-Program and follow-up of the BSP.

Figure 8: ERPD implementation period

3.6.2 Summary of the design process for benefit sharing arrangements

The process of designing the ERPD benefit sharing agreements will be through a participatory process for the construction of the ERPD benefit-sharing arrangements in forest landscapes of the four states, which will be defined and led by SEMARNAT with the support of CONAFOR. To initiate the participatory process for the design of local agreements with stakeholders, it is required to have the ERPA signed and the ERPD in the implementation phase.

For this purpose, two participatory processes are considered:

37 The number of projects to be executed will depend on the demand and the budget ceiling of the resources received to the FFM for that cycle during the implementation period, this process is expected to be conducted every two years, given that the MRV reports are submitted biennially.

i. A process with the institutions that will intervene in the first instance within CONAFOR, in a second stage with SEMARNAT and, in a third stage, with SADER, INPI, state governments and State Forestry Councils. This process will be carried out once the Emission Reductions Program has been reviewed and validated, which will include the advanced draft of the Benefit Sharing Plan.. It is important to note that the consultation within CONAFOR already took place on March 30, 2023, and what was agreed upon regarding the proposed Benefit Sharing Plan was reflected in the Preliminary Draft of the ERPD.

ii. Once the ERPA has been signed and the implementation of the ER Program has been initiated, the participatory methodology for the design of local benefit sharing arrangements with stakeholders will be developed in parallel, a participatory consultation process will be carried out with local stakeholders in the territory (ejidos, communities , indigenous peoples, women, youth, small owners and inhabitants of the rural areas of implementation), to agree on local Benefit Sharing Arrangements, which will define the complementary activities to be included in the Special Operating Guidelines, through which the possible resources from a results-based payment will be distributed.

The key stakeholders to be considered in the participatory process are described in Table 14.

Table 14. Potential key stakeholders for the participatory process

Public actors	• Federal (SEMARNAT, SADER, CONAFOR, INPI, INMUJERES) • State Secretariats directly linked to the environmental, forestry and agricultural sectors). • Municipal (H. City Councils).
Local actors	• Local and community authorities • Ejidal authorities • NGOs • Women and youth groups • Opinion leaders • Local and community forestry and agrifood promoters • Members of productive agricultural, livestock and forestry sectors • Private initiative • Forestry and agrifood technicians • Academy and technical schools
Traditional community actors	• Traditional authorities • Councils of elders • Traditional leaders

Throughout the process of building the benefit sharing arrangements, at least four calls will be developed in accordance with the different phases proposed in the process.

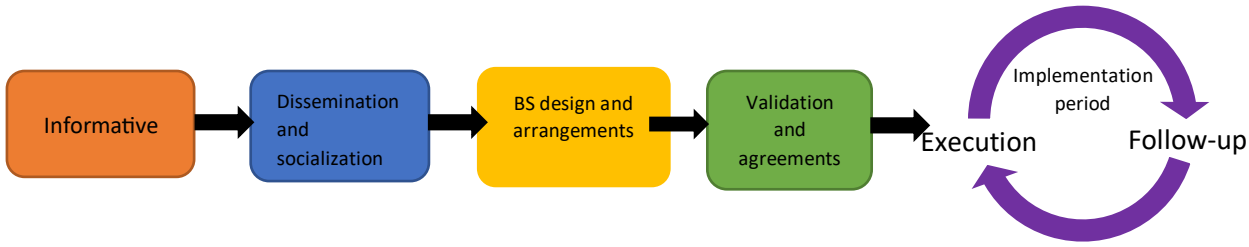
The calls should include the following considerations:

- To be inclusive. Therefore, each workshop should invite women, youth, local inhabitants and other actors to attend.
- The invitation should be made in advance, considering community times related to harvest season, festivities, academic or daily activities.
- Consider the relevant stakeholders (ejidos, communities, small owners), as well as the stakeholders who participated in the construction of these instruments.
- Present all materials in clear and culturally appropriate language.
- Use conventional means of convocation, but also include traditional and/or local means (e.g., loudspeakers announcements or *perifoneo*)
- Calls, in the case of the indigenous population, the calls must consider the cultural and linguistic relevance of the territory, ensuring the presence of interpreters to support the participatory and translation process, for which there should be coordination with the INPI.
- Uses and customs, as well as local government structures, must always be respected.
- The use of information technologies and social networks for the calls should be considered and designed according to the type of audience (e.g., youth, women, indigenous peoples, etc.)
- Consideration should be given to those organized groups with a presence in the territory, such as livestock, farmer, forestry and women's groups, among others.
- Including civil society, academia, and other relevant actors in the territory in specific feedback workshops will strengthen the transparency and validation of the participatory methodology and benefit sharing arrangements.

Regarding the implementation of the participatory methodology to agree on local benefit sharing arrangements, this will begin once the ERPA has been signed and the Emission Reductions Program is being implemented. It is comprised of the following stages:

1) Informative
2) Dissemination and socialization
3) BS arrangements
4) Validation and agreements
5) Implementation and follow-up

Figure 9: Stages of the participatory construction process of benefit sharing arrangements



During the implementation of the ERPD, CONAFOR will be the institution in charge of the overall follow-up and monitoring of the project. Being a solid institution with extensive capacities, BSP monitoring will use existing mechanisms, such as:

- National Forest Information System that records, integrates, organizes, updates and disseminates forest information.
- National Forest Monitoring System that provides information on the status and trends of forest resources.
- Safeguards Information System that provides information on how social and environmental safeguards are addressed and respected, in addition to including compliance with the Environmental and Social Framework and its 10 standards.
- Grievance mechanism to provide answers and citizen information requests, claims and suggestions.
- Payments tracking in CONAFOR's Integrated Support Information System (SIIAC in Spanish) for registration, selection, approval, signing of agreements, and the Payment Management System (SIDPA in Spanish) to track and control payments to beneficiaries of CONAFOR´s programs. Both systems can be disaggregated into: community/ejido/private rural landowner and allow observing information on gender, indigenous groups and number of beneficiaries within a forest community.

3.6.3 Description of the legal context of the benefit sharing arrangements

Article 27 of the Political Constitution of the United Mexican States (CPEUM) establishes the right of the Nation to impose on private property the modalities dictated by the public interest, as well as to regulate, for social benefit, the use of natural elements susceptible of appropriation, in order to make an equitable distribution of public wealth, take care of its conservation, achieve the balanced development of the country and the improvement of the living conditions of the rural and urban population.

The General Law for Sustainable Forest Development (LGDFS) establishes that the ownership of forest resources corresponds to the ejidos, communities, indigenous peoples and communities, individuals or legal entities owning the land where they are located, and that the procedures established by this Law will not alter the ownership regime of such land (art. 5). The above, considers that in order to comply with the safeguards, a set of principles, guidelines and procedures must be integrated to guarantee them under the principle of the broadest protection of people, to minimize social and environmental risks (art. 8)[38].

Article 138 Bis of the LGDFS empowers SEMARNAT to enter into international agreements on cooperation mechanisms for the reduction of emissions in the forestry sector, including avoided emissions. It also establishes that the resources obtained from results-based payments derived from emission reductions of will be granted in accordance with the benefit sharing program that, in a participatory and inclusive manner, is developed in accordance with the objectives, safeguards and criteria of the forestry policy. Article 139 establishes that the Mexican Forest Fund (FFM) will be the instrument to facilitate access to financial services for projects that promote the development of

[38] The integrated social and environmental approach is implemented through the Environmental and Social Management Framework (ESMF), which includes mitigation of ER Program impacts, as well as the Indigenous Peoples Planning Framework (IPPM), to comply with national level principles and procedures for social and environmental safeguards.

collection and payment mechanisms for environmental goods and services, which will facilitate the benefit sharing from the ER Program.

The General Law on Climate Change (LGCC) provides for the development of policies and programs for the reduction of emissions and carbon sequestration in the agricultural sector, forests and other land uses, and the preservation of ecosystems and biodiversity (art 34). Article 82 establishes provisions on the implementation of climate change adaptation measures, the purchase of certified emission reductions in registered projects or under international agreements in the country and points out other projects and strategic actions on climate change. Article 92 indicates the economic instruments, regulatory and administrative mechanisms through which people assume the benefits and costs related to mitigation and adaptation to climate change.

The CPEUM recognizes that signed and ratified international treaties act as Supreme Law (art. 133). The following international commitments will be considered in the PDB:

- Convention 169 of the International Labor Organization (ILO) on Indigenous and Tribal Peoples in Independent Countries.
- Convention on Biological Diversity (CBD) (Nagoya Protocol)
- United Nations Framework Convention on Climate Change (UNFCCC)
- Kyoto Protocol of 1995
- Convention on the Elimination of All Forms of Discrimination against Women (CEDAW)
- Paris Agreement on Climate Change

3.7 ISFL ER Program Transactions

3.7.1 Ability to transfer title to ERs

The Mexican legal framework establishes the centralized and parastatal structure of the Federal Public Administration (AFP)[39], distributing administrative functions through the Secretaries of State, with the support of parastatal entities created for this purpose.

The LGDFS contemplates federal powers, including the creation of economic mechanisms to compensate and stimulate the legitimate owners and possessors of forest resources for the generation of environmental goods and services, considering them as public goods[40].

Moreover, Article 138 bis of the LGDFS **empowers SEMARNAT to enter into international agreements on cooperation mechanisms for the reduction of emissions in the forestry sector, including avoided emissions, and if these agreements involve the transfer title of emission reductions,** SEMARNAT will first consider the technical opinion of CONAFOR, INECC and CONANP. In addition, the same article stipulates that the resources obtained from the results-based payments, derived from the reduction of emissions, shall be granted in accordance with the benefit sharing program, which shall be prepared in a participatory and inclusive manner in accordance with the objectives, safeguards, and forest policy criteria under the LGDFS framework.

[39] Political Constitution of the United Mexican States [CPEUM]. Article 90. February 5, 1917.
[40] Ibid. Article 29

The safeguards recognized in Article 8 of the LGDFS and in the National Strategy for REDD+ 2017-2030 provide that, in the event of accessing results-based payments derived from avoided emissions, it is the Federal Government that receives the results-based payments, recognizing that the right to receive the benefits of such payment will correspond to the owners and inhabitants of the regions in which efforts to halt deforestation and forest degradation are made under the mechanisms established for such purpose, respecting at all times their right to full and effective participation in the design and implementation of the benefit sharing mechanisms agreed among them.

For these purposes, the federation, through CONAFOR, will sign agreements with the beneficiaries, which may be ejidos, communities or small landowners who receive subsidies for the development of activities under this emission reductions program; these agreements will include express recognition to participate in the design and implementation of local benefit sharing arrangements derived from possible results-based payments.

3.7.2 Participation under other greenhouse gas (GHG) initiatives

According to national legislation, and in accordance with Article 138 Bis of the LGDFS, SEMARNAT has the power to agree with state (subnational) governments on how they can participate in cooperative mechanisms to reduce emissions from the forestry sector, which also considers emissions avoided in the territory under their jurisdiction. The article also states that if such agreements involve the transfer of emissions reductions, SEMARNAT will request the technical opinion of CONAFOR, INECC and CONANP to avoid double counting of ERs and to comply with the provisions of the Nationally Determined Contributions (NDCs). Finally, the article states that the owners and legitimate possessors of forest lands may offset or transfer emissions nationally or internationally in voluntary markets, as long as they adhere to the provisions of SEMARNAT.

In addition, the Climate Change Information System[41] is a public policy instrument that integrates, updates and makes available to the public information related to mitigation projects classified by i) Registered Clean Development Management (CDM) projects, ii) Expected Certified Emission Reductions (CERs), iii) Registered Clean Development Management (CDM) projects with Certified Emission Reductions (CERs) and iv) Certified Emission Reductions (CERs) obtained; However, so far there are no projects registered under the "Agriculture, Forestry and Other Land Use" category.

Currently, there are not many forestry carbon enhancement projects in Mexico, but they are expecting to grow in the future. A clear example of this is that within the accounting area, in the state of Durango there are 16 more listed projects[42] and 23 registered projects; for the state of Chihuahua, there are 8 listed projects and 8 registered. These projects were formulated according to the Climate Action Reserve

[41] This system is available at http://gaia.inegi.org.mx/sicc/#

42 *Listed* projects have paid the submittal fee and successfully met eligibility requirements and other aspects set forth within the appropriate protocol.

(CAR) Mexico Forest Protocol [43][44][45]which only considers "Improved Forest Management activities" Mexico´s [46]. These projects are focused on activities aimed to enhance forest carbon stocks through forest management activities. Additionally, there are two project formulated according to Verra's methodologies; the first project was formulated under the Improved Agriculture and Land Management (ALM) methodology [47] in the jurisdictional area of the ERP; so far, this project has requested its registration, and it is projected to be implemented in a total area of 800,000 acres (323,760 hectares), but no specific extent is provided for any of the proposed states [48]. The second project is under development in the state of Coahuila according to Verra's methodology for Sustainable Grazing Management (SGM) practices on grasslands in arid and semi-arid regions [49]; although the project is entirely located within the state of Coahuila, information on the project area extent is not available in the project document.

The voluntary forest carbon market is rising and the number and the number of projects in Mexico is expected to grow over time. To ensure transparency and avoid double counting, ERs originating from projects located within the ERP-ISFL jurisdiction, timeframe, activities, pools, and gases will be deducted from the program's total reported ERs during the reporting period. These deductions will be applied to ERs registered under any initiative, protocol, standard, or other program registry for which information is publicly available.

To avoid double counting or double sale of ER, Mexico will inform the ISFL in a timely manner regarding the existence of other initiatives related to reduced emissions transfers, and/or the granting of result-based payments for emissions reductions that are registered or seek to be registered within the ERP-ISFL jurisdiction, based on publicly available information.

3.7.3 Data management and registry systems to avoid multiple claims to ERs

Mexico has the National Emissions Registry (RENE), which is a public policy instrument to compile information related to emissions of compounds and Greenhouse Gases from the country's productive sectors.

In this regard, Chapter VIII. Registry of the LGCC (articles 87-90) stipulates that SEMARNAT must integrate and make publicly available the Registry of reportable emissions; it also states the obligation of individuals and legal entities subject to report, to provide information and documents regarding their

[43] Information available at https://www.arcgis.com/apps/dashboards/e2f5c6180f5040bfbdd418a0a04824c8

[44] According to CAR's categorization, registered projects are those that have successfully completed the verification of at least one reporting period. https://thereserve2.apx.com/myModule/rpt/ProjectStatusTypes.asp

[45] "Projects on list" are those whose project submission forms have been accepted by CAR and the project can proceed with reporting and verification.

[46] Information available at https://thereserve2.apx.com/myModule/rpt/myrpt.asp

47 This methodology quantifies the greenhouse gas (GHG) emission reductions and soil organic carbon (SOC) removals resulting from the adoption of improved agricultural land management (ALM) practices. Such practices include, but are not limited to, reduced tillage and improvements in fertilizer application, biomass residue and water management, cash and cover crop planting and harvesting practices, and grazing practices.

48 According to project information, available at https://registry.verra.org/app/projectDetail/VCS/2887

49 Methodology information is available at https://verra.org/methodologies/vm0026-methodology-for-sustainable-grassland-management-sgm-v1-0/

emissions, to be incorporated into the Registry; it also provides that those who carry out projects that result in emission reductions may register them in the RENE, establishing in its regulations the procedures for monitoring, reporting and verification and/or certification of emissions reductions obtained in projects enrolled in the Registry.

Likewise, Article 14 (Frac. XIX) of the LGDFS, as amended in 2022, states that it is the responsibility of SEMARNAT to regulate, establish, integrate, operate and keep updated the Registry of the reduction or absorption of emissions derived from deforestation and forest degradation, as well as to authorize the transfer of these to cooperative mechanisms and international carbon trading.

For Mexico's ISFL Emission Reduction Program, and in compliance with numeral 3.7.2 of the Program's requirements[50], CONAFOR will initially keep an internal registry of the Programs and Emission Reduction Projects of the AFOLU sector in which the following data will be registered to ensure that no double accounting is incurred, in accordance with Article 27 of the Regulations of the General Law on Climate Change regarding the National Emission Registry[51]:

1. General data of the parties involved in the development of the project:

a. Name, denomination or company name, address, telephone number, e-mail address, and other applicant's contact data, as relevant;

b. Name, company name or corporate name, address, telephone number,e-mail address, and participating partners' contact data, as relevant; and

c. Name, denomination or corporate name, address, telephone number and e-mail address of the accredited Body and that is approved by the Secretariat or by the international organizations to which the United Mexican States is a party;

2. General data of the Project:

a. Name or denomination;

b. Objective;

c. Description of activities;

d. Type of project, program, activity or set of activities;

e. Implemented technology, activity or set of activities, and

f. In forestry projects, georeferenced geographic location and vegetation type, and

3. Mitigation or Reduction of Emissions:

a. Greenhouse Gas reduction, capture or absorption actions implemented, achieved annual emission reductions (ERs) in metric tons of carbon dioxide equivalent (CO_2e), and total projected ERs over the project lifetime;

[50] Depending on national needs and circumstances, the Transaction Registry could be complemented by the use of a (national) Program and Project Data Management System to support programs recording and reporting.
[51] Available at: https://www.diputados.gob.mx/LeyesBiblio/regley/Reg_LGCC_MRNE_281014.pdf

b. Detailed methodology for estimating Emission reductions;

c. Monitoring plan;

d. Transactions in Emissions trading, either domestic or international of Certified Reductions, expressed in Tons of Carbon Dioxide Equivalent;

e. If applicable, beneficiaries of the reductions;

f. Date on which the reductions were verified and certified, as well as the crediting period;

g. If applicable, the resources obtained and the respective fund or source of financing, and

h. Registration number with which the corresponding agency identifies the project.

The aforementioned elements are intended to be consistent with the regulations of the Law, so that, when possible, they can be integrated into the RENE. For now, this information will be concentrated in a spreadsheet designed for this purpose, which will allow the identification of each ER project, using the serial number or unique key assigned by their respective initiative, program or standard, which will make it possible to trace and verify in a transparent manner the status of their respective ER (for example, the amount of ER that have been verified, sold, transferred or cancelled) based on publicly available information.

Regarding the establishment of a transaction registry system, in compliance with requirement 3.7.1[52], Mexico plans to test (in the initial phase of the ER program) the Carbon Asset Tracking System (CATS) designed by the World Bank to register, track and, as appropriate, retire or cancel units of emission reductions generated under the Program, in order to minimize the risks of double counting, double selling and double claiming. This centralized system consists of a secure and transparent web-based platform that allows the registration of emission reduction units with a serial number, in addition to other data related to the results-based climate finance programs. The first version of CATS provides the fundamental and central architecture for accounting and monitoring transactions of emission reduction units under the BioCF-ISFL programs[53]. In this sense, the WB will be the one to issue and process ER units on behalf of the country, subject to consent and approval.

Finally, in the event that Mexico decides to migrate the information related to emissions reduction units to a national transaction system, the consistency of information with that previously reported in CATS will be ensured, and it will be guaranteed that ERs are not issued, sold or claimed by more than one entity.

[52] ISFL ER Programs should work with the host country to select an appropriate arrangement to avoid double counting, including double emission, double sale/use or claiming, in order to track emission reductions to ensure that any emission reductions that have been generated are not used again by any entity for sale, public relations, compliance or any other purpose unless otherwise agreed by the parties in an ERPA, monitored and verified under the ISFL ER Program and paid for by ISFL are not used again by any entity for sale, public relations, compliance or any other purpose unless the parties agree otherwise in an ERPA and, where applicable, consistent with any applicable guidance adopted under the Paris Agreement. For this purpose, ISFL ER Programs will identify a Transaction Log to record, track and, as appropriate, retire or cancel ER Units generated under the ISFL ER Program.

[53] The operating guidelines, user manual and terms and conditions for the use of CATS are available at https://cats.worldbank.org/html/knowledge.html

Section 4: GHG Reporting and Accounting

4.1 Program GHG Inventory

4.1.1 Short description of the Program GHG Inventory

The Agriculture, Forestry and Other Land Use (AFOLU) greenhouse gases (GHG) inventory for the ISFL jurisdictional area in Mexico (states of Chihuahua, Coahuila, Durango, and Nuevo León) includes three main categories: [3A] Livestock, [3B] Land and [3C] Aggregated sources. The GHG inventory, estimated for the 2000-2018 period, was elaborated with the use of 2006 IPCC Guidelines for National Greenhouse Gas Inventories and using the same inputs, assumptions, and methodologies used in the GHG inventory for the 3rd Biennial Updated Report (BUR) published by the UNFCCC on June 30th, 2022..

Livestock [3A]

Livestock category includes methane emissions from enteric fermentation [3A1], and methane and nitrous oxide emissions from manure management [3A2]. Originally, the GHG inventory developed by INECC for BUR3 was estimated annually for 1990-2019 (which cover the 2000-2018 period) and for each one of the 32 federal entities (which include ISFL jurisdictional area). The livestock inventory was developed using the 2006 IPCC Guidelines and the 2019 Refinement to the 2006 IPCC Guidelines.

Enteric fermentation [3A1]: methane emissions from herbivores as a by-product of enteric fermentation (a digestive process by which carbohydrates are broken down by micro-organisms into simple molecules for absorption into the bloodstream). Ruminant animals are major sources with moderate amounts produced from non-ruminant animals. Tier 1 method was applied for all animal categories using default emissions factors mixed with national activity data and parameters; however, Mexico used country specific emission factors for cattle at the national level, which could not be representing the ISFL jurisdictional area circumstances, therefore, for ISFL purposes, it should be considerate such as an adapted Tier 1 method for cattle. Activity data (animal population) was provided by the Secretariat of Agriculture and Rural Development (SADER). Country specific emission factors were obtained from 41 national research papers for 25 of 32 federal entities. The following animal categories were included: dairy cows [3A1ai], other cattle [3A1aii], sheep, [3A1c], goats [3A1d], horses [3A1f], mules and asses [3A1g], and swine [3A1h].

Manure management [3A2]: methane and nitrous oxide emissions from the decomposition of manure under low oxygen or anaerobic conditions and on-farm co-digestates combined with manure in on-farm biogas plants. These conditions often occur when large numbers of animals are managed in a confined area, where manure is typically stored in large piles or disposed of in lagoons and other types of manure management systems. Tier 2 method was applied for cattle and swine using national parameters (volatile solid, annual average N excretion, and fraction of managed manure nitrogen for livestock) while Tier 1 method was applied for other animal categories using default emission factors mixed with national activity data and parameters (i.e., average temperature, typical animal mass, fraction of managed manure nitrogen for livestock, etc.). Mostly activity data was provided by SADER, while annual average temperature data was provided by the National Water Commission (CONAGUA). Country specific emission factors were obtained from 41 national research papers for 25 of 32 federal entities. The following animal categories were included: dairy cows [3A2ai], other cattle [3A2aii], sheep [3A2c], goats [3A2d], camels [3A2e], horses [3A2f], mules and asses [3A2g], swine [3A2h], and poultry [3A2i].

Land [3B]

The 3B GHG inventory was estimated annually for the 2000-2018 period and for the ISFL jurisdictional area specifically. This inventory includes estimations of emissions and removals of GHG for all 3B subcategories, five carbon pools (above-ground biomass -AGB-, below-ground biomass -BGB-, dead wood -DW-, litter, and soil organic carbon -SOC-) and carbon dioxide (CO_2) in gaseous form. In all 3B subcategories: (i) activity data (AD) were obtained from data generated by the Satellite Forest Monitoring System (SAMOF) sampling approach, using the third[54] approach of the IPCC (2006) Consistent Representation of Lands was used; (ii) emission factors (EF) for five carbon pools were estimated from the first (2004-2007) and second (2009-2014) National Forest and Soils Inventory (INFyS) datasets, except for EF for perennial crop lands; (iii) estimations of emissions/removals were obtained using the stock change approach following the 2006 IPCC Guidelines; and (iv) Uncertainty was estimated using Monte Carlo simulations for the propagation of errors, following the 2006 IPCC Guidelines. Operational definitions of land use are the same as the ones used in the 3B GHG inventory for the 3rd BUR and are briefly explained below:

3B1 Forest land: refers to an area with a canopy cover greater than 10%, woody species over 4 meters high, or capable of reaching this condition *in situ*, and with a minimum area of 1 ha. AGB EF of Forest land remaining Forest land [3B1a] was estimated at level 2 ecoregions and using two cycles of INFyS data; BGB EF were estimated as a function of AGB (using R:S IPCC 2006 ratios), therefore, Tier 2 estimates were used to obtain the EF of AGB and BGB for this subcategory. On the other hand, GHG emissions/removals from DW, litter and SOC were assumed as neutral; therefore, Tier 1 EF was used for these carbon pools. For Forest land converted to Land [3B3bi, 3B2bi, 3B5bi and 3B6bi] and Land converted to Forest land [3B1bii and 3B1bi][55], EF for three carbon pools (AGB, DW and litter) were estimated at level 1 ecoregions and using INFyS data; BGB EF was estimated as a function of AGB (using R:S IPCC 2006 ratios) and, SOC EF was estimated by using soil organic Carbon estimates for 30-cm depth, in Mexico and the conterminous USA, 1991-2011 https://daac.ornl.gov/cgi-bin/dsviewer.pl?ds_id=1737. Therefore, Tier 2 estimates were used for the five carbon pools in this subcategory.

3B2 Cropland: It refers to all the lands dedicated to rainfed, irrigation, and humidity agriculture, including annual, semi-perennial and perennial crops. EF of annual cropland remaining annual cropland [a subset of 3B2a] was assumed carbon-neutral, hence, carbon densities of annual Cropland for five carbon pools were assumed to be zero. According to the IPCC Guidelines (2006), Chapter 5-Croplands, the change in biomass is estimated only for perennial woody crops. It is assumed that, in annual crops, the increase in biomass stocks each year is equivalent to the biomass losses produced by the harvest and mortality in the same year-thus, there is no net accumulation of carbon stocks in biomass. Therefore, the annual crop EFs remaining as annual crops [a subset of 3B2a] were assumed to be carbon neutral, so the carbon densities of the annual crops of the five carbon reservoirs were assumed to be zero.

[54] According to Table 3.6A of 2019 IPCC Refinement (Vol4, Chap 3, Subsection 3.1), SAMOF System meets with both criteria to consider sample-based method as approach 3: Permanent and consistent georeferenced ground plots and Continuous and consistent samples using remote sensing data.

55 The SAMOF system didn't identify activity data throughout the complete time series in the ISFL Program area for the subcategories 3B1biii Wetlands converted to Forest Land, 3B1biv Settlements converted to Forest Land and 3B1bv Other Land converted to Forest Land, so, these subcategories are reported as NO (Not Occurring).

EF of perennial Cropland remaining perennial Cropland [a subset of 3B2a] was estimated as a single national AGB value[56] taken from the 3rd BUR GHG inventory for Land; on the other hand, carbon density for other land use to or from perennial Cropland was estimated as a single national AGB value taken from the 3rd BUR GHG inventory for Land. No other carbon pools were reported. Tier 1 with improved data at national level was used for this subcategory. Detailed information about data sources and methods to estimate emissions/removals from conversions from and to cropland (perennial or annual) is provided in Annex 6 and Annex 7.

3B3 Grassland: refers to all grasslands whether they are natural or induced, in addition to other types of natural or induced vegetation, dominated by herbaceous species, with little representation of woody species; less than 10% forest cover and less than 4 m in height. AGB EF of Grassland remaining Grassland [3B3a] was estimated at level 1 ecoregions and using data from two INFyS cycles; BGB EF was estimated as a function of AGB (by using R:S IPCC 2006 ratios), therefore, Tier 2 estimates were used to obtain EF of AGB and BGB for this subcategory; on the other hand, GHG emissions/removals from DW, litter and SOC were assumed neutral, so Tier 1 EF were used for these carbon pools. According to the IPCC Guidelines (2006), Chapter 6-Grasslands, it is considered that there are no changes in the biomass of the grasslands that remain as such. In grasslands where there is no change in type or intensity of management, biomass shall be on a more or less constant basis (i.e., carbon accumulation due to plant growth is balanced with losses due to grazing, decomposition, and fire).

For Grassland converted to Land [3B2bii, 3B5biii and 3B6iii] and Land converted to Grassland [3B3bi, 3B3bii, 3B3biii, 3B3bvi, 3B3bv], EF for three carbon pools (AGB, DW and Litter) were estimated at Level 1 Ecoregions and using INFyS data; BGB EF were estimated as a function of AGB (by using R:S IPCC 2006 ratios) and, SOC EF were obtained from *Soil Organic Carbon Estimates for 30-cm Depth, in Mexico and the conterminous USA, 1991-2011* https://daac.ornl.gov/cgi-bin/dsviewer.pl?ds_id=1737, only for Grassland converted to Land, so Tier 2 estimations were used for the five carbon pools in this subcategory.

3B4 Wetland: It includes all water bodies such as lakes, ponds, dams and other lands covered or saturated with water throughout the year or most of it, which are not included within the category of Forest Lands, Croplands and Grasslands. On the other hand, some bodies of water lower their level in the dry season and in the rainy season it reaches its maximum level, however, they are considered as Wetlands until there is a change of land use (http://file.cnf.gob.mx/sop/SOP_03_Fotointepreacion.pdf)]

EF of Wetland remaining Wetland [3B4a] was assumed carbon neutral and, therefore, carbon densities for five carbon pools of Wetland were assumed to be zero. Subcategory 3B4bii. Land converted to flooded land included a small area identified as Forest Land converted into a water body, Tier 2 estimations for emission factors for CO_2 in AGB, BGB, DOM, Litter and SOC were estimated at Level 1 Ecoregions and using INFyS data.

3B5 Settlements: All urban areas and settlements are included, as well as transportation infrastructure. EF of Settlements remaining Settlements [3B5a] was assumed carbon-neutral and, therefore, carbon densities for the five carbon pools of Settlements were assumed to

[56] As explained in detail in Annex 6 and Annex 7, the EF used for perennial Cropland remaining perennial Cropland [a subset of 3B2a] is 2.70 C (t/ha).

be zero. For subcategory 3B5bii Cropland converted to Settlements CO_2 emissions were calculated for AGB pool; respecting subcategories 3B5bi Forest Land converted to Settlements and 3B5biii Grassland converted to Settlements, CO_2 emissions were calculated for AGB, BGB, DOM, Litter and SOC Tier 2 level.

However, subcategories 3B5bv. Other land converted into settlements and 3B5biv. Wetlands converted into settlements were not detected in the SAMOF sampling method, so these subcategories don´t occur.

3B6 Other land: All lands devoid of vegetation such as bare soil, urban areas and infrastructure are included. EF of Other land remaining Other land [3B6a] all transitions from Other Land to Land were assumed carbon-neutral and, therefore, carbon densities for five carbon pools of other land were assumed to be zero. 3B6biv Wetlands converted to Other Land and 3B6bv Settlements converted to Other Land do not occur. For 3B6biii Grassland converted to Other Land and 3B6bi. Forest Land converted to Other Land emissions factor for CO_2 in AGB, BGB, DOM, Litter and SOC were estimated at Level 1 Ecoregions and using INFyS data; for 3B6bii Cropland converted to Other Land a national level EF for AGB was used; Tier 2 EF were used in all these subcategories.

In order to ensure the full application of IPCC Guidelines for National Greenhouse Gas Inventories, land-use conversions occurring between data collection intervals were estimated. As described in Annex 6 and Annex 7, this process considers all possible combinations between the six main classes previously defined.

GG = Grassland Remaining Grassland	LG = Land Converted to Grassland
CC = Cropland Remaining Cropland	LC = Land Converted to Cropland
WW = Wetlands Remaining Wetlands	LW = Land Converted to Wetlands
SS = Settlements Remaining Settlements	LS = Land Converted to Settlements
OO = Other Land Remaining Other Land	LO = Land Converted to Other Land

To define when a permanence or conversion occurs a set of assumptions, technical criteria, and methods were applied. These criteria are described in detail in Annex 6.

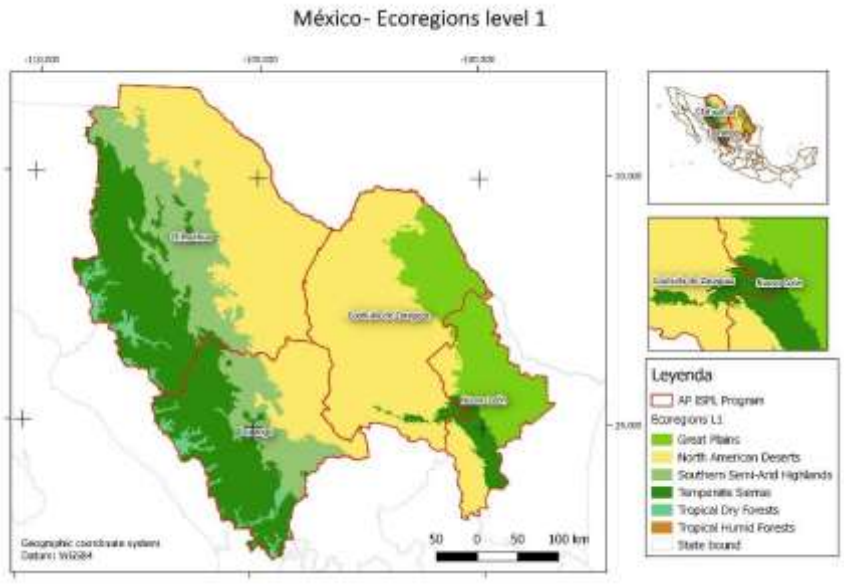
On the other hand, according to IPCC Guidelines for National Greenhouse Gas Inventories, once land-use and land-use conversion areas have been established, it is necessary to consider further stratification according to ability and necessity[57].

In order to stratify forest lands into more homogeneous units, the 7 terrestrial ecoregions of Mexico defined as biogeographical regions with similar ecosystems, climate and physiographic conditions) were used; ecoregions were crossed with the three distances between INFyS sampling units (5x5km for temperate forests and rainforests; 10x10km for semi-arid communities; and 20x20km for arid communities) to define sub-strata. From the combination of these two inputs (ecoregion and sampling intensity), 21 sub-strata were identified. For example, a sub-strata consists of the territorial unit corresponding to ecoregion 3 "Southern semi-arid elevations" with a sampling intensity (or

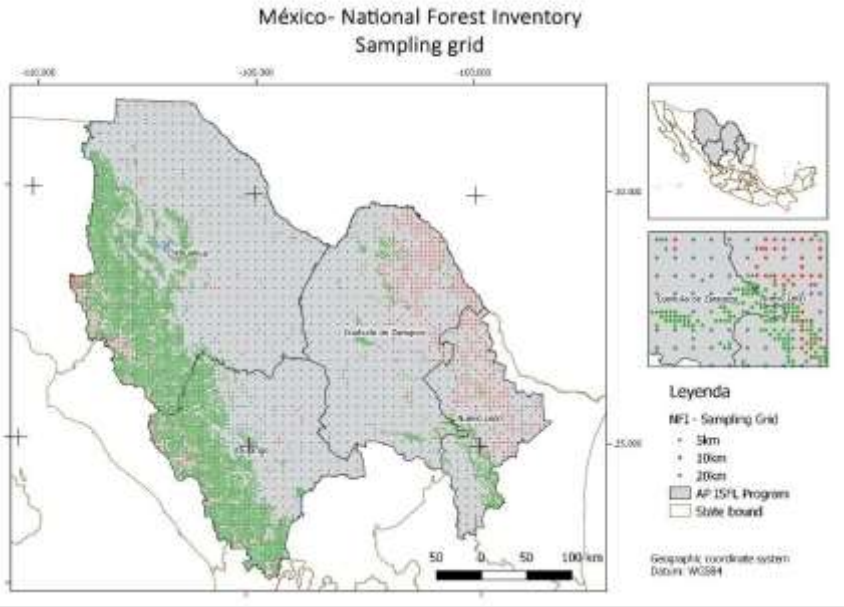
[57] Stratification is the process of disaggregating a land-use category (e.g. Forest Land, Cropland, Grassland) into logical, homogenous, sub-divisions (e.g. tropical/dry forest, crop types, improved or unimproved pastures). This process is commonly applied to reduce the uncertainty of emissions and removals estimates (IPCC, 2006)

distance) of 5x5 km; another sub-treatment would be defined by ecoregion 3 "Southern semi-arid elevations" with a sampling intensity (or distance) of 10x10 km, etc. The following figure shows a map with the ecoregions of Mexico and a map representing the sampling points in the northeastern portion of Mexico:

Figure 10. Accounting area stratification criteria: a) Terrestrial ecoregions of Mexico (level I), b) Distribution pattern of INFyS conglomerates or sampling units (5X5 km, 10X10 km and 20X20 km) Source: a) Estimating deforestation rate in Mexico for the period 2001-2018 using the sampling method. Technical Document (CONAFOR, 2020), b) National Forest and Soil Inventory, Results Report 2009-2014 (CONAFOR, 2018).



a)



b)

Aggregate Sources and Non – CO2 Emissions Sources on Land [3C]

Includes emissions from activities that are likely to be reported at very high aggregation land level or even country level. Originally, the GHG inventory developed by INECC for BUR3 was estimated

annually for 1990-2019, which cover the 2000-2018 period. The category inventory was developed using the 2006 IPCC Guidelines and its 2019 Refinement.

Emissions from biomass burning [3C1]: emissions from biomass burning that include nitrous oxide and methane in forest land [3C1a], croplands [3C1b], and grasslands [3C1c]. CO2 emissions were included in 3B categories as carbon stock changes. Tier 1 method was applied for forest land and grassland using default emission factors and activity data from the National Forestry Commission (CONAFOR), while Tier 1 and Tier 2 methods were applied for cropland using country specific emission factor for corn, sorghum, wheat, barley and sugarcane and default emission factors for other crops and activity data from SADER. Emissions from biomass burning were estimated by strata at the national level, therefore, forest land and grassland burnt areas by federal entity were used as proxies to desegregate emissions at the federal entities level and cultivated area was used as proxy to desegregate emissions from cropland.

Liming [3C2]: CO2 emissions from the use of lime in agricultural soils. Tier 1 method was applied for limestone [3C2a] and dolomite [3C2b] using default emission factors and activity data from the National Institute of Statistics and Geography (INEGI) at the national level. Cultivated area by federal entities was used as proxy to desegregate CO2 emissions from liming.

Urea application [3C3]: CO2 emissions from urea application. Tier 1 method was applied for urea application using default emission factors and activity data from International Fertilizer Industry Association (IFADATA). CO2 emissions were estimated at the federal entity level.

Direct N2O emissions from managed soils [3C4]: in most soils, an increase in available N enhances nitrification and denitrification rates which then increase the production of N2O. Increases in available N can occur through human-induced N additions or change of land-use and/or management practices that mineralize soil organic N. The following N sources are included in the ISFL inventory: synthetic fertilizers [3C4a], crop residues [3C4c], and pasture, range and paddock manure [3C4d]. Animal manure applied to soils [3C4b] not occur in the country, while mineralization/immobilization associated with loss/gain of soil organic matter [3C4e], and cultivation of organic soils [3C4f] were not estimated due to lack of information. Tier 1 method was applied for N sources using default emission factors and activity data from SADER, INEGI and FAOSTAT. Direct N2O emissions were estimated at the federal entity level.

Indirect N2O emissions from managed soils [3C5]: indirect N2O emissions from (1) the volatilization of N (as NH3 and NOx) following the application of synthetic and organic N fertilizers or urine and dung deposition from grazing animals, and the subsequent deposition of the N (as NH4+ and NOx) on soils and waters, and (2) the leaching and runoff of N from synthetic and organic N fertilizer additions, crop residues, and urine and dung deposition from grazing animals, into groundwater, riparian areas and wetlands, rivers and eventually the coastal ocean. Tier 1 method was applied using default emission factors and activity data used for direct N2O emissions [3C4]. Indirect N2O emissions were estimated at the federal entity level.

Indirect N2O emissions from manure management [3C6]: indirect N2O emissions from manure management (activity data amount of nitrogen in the manure excreted). Tier 1 method was applied using default emission factors and activity data used also for direct N2O emissions from manure management [3B2]. Indirect N2O emissions were estimated at the federal entity level, however, information by federal entities was not available for ISFL inventory. In order to desegregate the total indirect N2O emissions at the national level, direct N2O emissions from manure management distribution at the federal level were used as proxy.

Rice cultivations [3C7]: methane emissions not occurring into ISFL jurisdiction.

4.1.2 Summary of the Program GHG Inventory

Table 15 shows all GHG emissions and removals for the entire AFOLU categories [3A, 3B and 3C] within the Program Area (ISFL Reporting), these emissions and removals include pools and gases; methods and approaches were described in section 4.1.1.

The Program GHG Inventory is comparable in its use of definitions, categories, and subcategories with national reports such as the third Biannual Update Report (3rd BUR).

Table 15. Summary of the Program GHG Inventory

Subcategory	Net emissions and removals (t CO_2eq)	Relative contribution to the absolute level of the total GHG emissions and removals in the program area	Associated carbon pools and gases
3B1a. Forest Land Remaining Forest Land	-13,486,333.11	37.09%	CO2 in AGB and BGB
3A1a. Cattle	12,384,983.40	34.06%	CH4
3A2a. Cattle	2,389,689.00	6.57%	CH4
3A2a. Cattle	1,888,679.50	5.19%	N2O
3B3a. Grassland Remaining Grassland	-964,462.07	2.65%	CO2 in AGB and BGB
3B3bi. Forest Land converted to Grassland	806,792.00	2.22%	CO2 in AGB, BGB, DOM, Litter and SOC
3B2a. Cropland Remaining Cropland	-652,445.18	1.79%	CO2 in AGB
3C6. Indirect N2O emissions from manure management	555,334.50	1.53%	N2O
3C5. Indirect N2O emissions from managed soils	554,541.30	1.53%	N2O
3C4a. Synthetic fertilizers	304,625.40	0.84%	N2O
3A2i. Poultry	253,161.60	0.70%	CH4
3B2bii. Grassland converted to Cropland	236,615.67	0.65%	CO2 in AGB, BGB, DOM, Litter and SOC
3C4c. Crop residues	234,787.80	0.65%	N2O
3A1d. Goats	222,228.40	0.61%	CH4
3C1a. Biomass burning in forest lands	207,828.70	0.57%	CH4
3A2h. Swine	183,607.60	0.50%	CH4
3C4d. Pasture, range and paddock manure	173,512.70	0.48%	N2O
3C3. Urea application	125,887.00	0.35%	CO2
3A1f. Horses	92,315.10	0.25%	CH4
3A1c. Sheep	77,218.80	0.21%	CH4
3C1a. Biomass burning in forest lands	70,886.90	0.19%	CH4
3C1b. Biomass burning in croplands	69,707.80	0.19%	CH4

Subcategory	Net emissions and removals (t CO_2eq)	Relative contribution to the absolute level of the total GHG emissions and removals in the program area	Associated carbon pools and gases
3B2bi. Forest Land converted to Cropland	59,661.23	0.16%	CO2 in AGB, BGB, DOM, Litter and SOC
3B1bii. Grassland converted to Forest Land	-43,455.39	0.12%	CO2 in AGB, BGB, DOM and Litter
3B5bii. Cropland converted to Settlements	43,002.46	0.12%	CO2 in AGB
3C1c. Biomass burning in grasslands	36,226.70	0.10%	CH4
3A2i. Poultry	35,442.00	0.10%	CH4
3B5bi. Forest Land converted to Settlements	32,454.88	0.09%	CO2 in AGB, BGB, DOM, Litter and SOC
3C1c. Biomass burning in grasslands	31,304.60	0.09%	CH4
3C1b. Biomass burning in croplands	22,510.60	0.06%	CH4
3B5biii. Grassland converted to Settlements	21,485.08	0.06%	CO2 in AGB, BGB, DOM, Litter and SOC
3A2h. Swine	16,452.00	0.05%	CH4
3A1h. Swine	15,760.70	0.04%	CH4
3A1g. Mules and asses	14,248.10	0.04%	CH4
3B6biii. Grassland converted to Other Land	13,620.39	0.04%	CO2 in AGB, BGB, DOM, Litter and SOC
3A2f. Horses	8,410.90	0.02%	CH4
3B6bi. Forest Land converted to Other Land	6,892.39	0.02%	CO2 in AGB, BGB, DOM, Litter and SOC
3C2. Liming	4,548.50	0.01%	CO2
3A2d. Goats	3,727.00	0.01%	N2O
3B6bii. Cropland converted to Other Land	2,816.03	0.01%	CO2 in AGB
3A2c. Sheep	2,704.70	0.01%	N2O
3A2d. Goats	2,490.20	0.01%	N2O
3B3bii. Cropland converted to Grassland	-2,317.71	0.01%	CO2 in AGB and BGB
3A2g. Mules and asses	1,282.30	0.00%	CH4
3B1bi. Cropland converted to Forest Land	-1,207.71	0.00%	CO2 in AGB, BGB, DOM and Litter
3A2c. Sheep	1,037.70	0.00%	N2O
3B4bii. Land converted to flooded land	445.39	0.00%	CO2 in AGB, BGB, DOM, Litter and SOC
3B1biii. Wetlands converted to Forest Land	NO	0.00%	CO2 in AGB, BGB, DOM and Litter
3B1biv. Settlements converted to Forest Land	NO	0.00%	CO2 in AGB, BGB, DOM and Litter

Subcategory	Net emissions and removals (t CO_2eq)	Relative contribution to the absolute level of the total GHG emissions and removals in the program area	Associated carbon pools and gases
3B1bv. Other Land converted to Forest Land	NO	0.00%	CO2 in AGB, BGB, DOM and Litter
3A1i. Poultry	NA	0.00%	CH4
3B4aii. Flooded land Remaining flooded land	NE	0.00%	
3B5a. Settlements Remaining Settlements	NE	0.00%	
3B6a. Other Land Remaining Other Land	NE	0.00%	
3C4e. Mineralization/immobilization associated with loss/gain of soil organic matter	NE	0.00%	N2O
3C4f. Cultivation of organic soils	NE	0.00%	N2O
3D1. Harvested Wood Products	NE	0.00%	CO2
3A1b. Buffalo	NO	0.00%	CH4
3A1e. Camels	NO	0.00%	CH4
3A2b. Buffalo	NO	0.00%	CH4
3A2b. Buffalo	NO	0.00%	CH4
3A2e. Camels	NO	0.00%	CH4
3A2e. Camels	NO	0.00%	CH4
3A2f. Horses	NO	0.00%	CH4
3A2g. Mules and asses	NO	0.00%	CH4
3B2biii. Wetlands converted to Cropland	NO	0.00%	
3B2biv. Settlements converted to Cropland	NO	0.00%	
3B2bv. Other Land converted to Cropland	NO	0.00%	
3B3biii. Wetlands converted to Grassland	NO	0.00%	
3B3biv. Settlements converted to Grassland	NO	0.00%	
3B3bv. Other Land converted to Grassland	NO	0.00%	
3B4ai. Peatlands Remaining peatlands	NO	0.00%	
3B4bi. Land converted for peat extraction	NO	0.00%	
3B5biv. Wetlands converted to Settlements	NO	0.00%	
3B5bv. Other Land converted to Settlements	NO	0.00%	
3B6biv. Wetlands converted to Other Land	NO	0.00%	
3B6bv. Settlements converted to Other Land	NO	0.00%	
3C1d. Biomass burning in all other land	NO	0.00%	CH4
3C1d. Biomass burning in all other land	NO	0.00%	CH4
3C4b. Animal manure applied to soils	NO	0.00%	N2O

Subcategory	Net emissions and removals (t CO_2eq)	Relative contribution to the absolute level of the total GHG emissions and removals in the program area	Associated carbon pools and gases
3C7. Rice cultivations	NO	0.00%	CH4
TOTAL	**6,058,705.84**	**100%**	

Note: this Summary of the Program GHG Inventory was calculated as the average for time series 2009-2018 considering this as the selected baseline period. NO: Not occurring, NE: Not estimated.

4.2 Identification of subcategories that are eligible for ISFL Accounting

In order to comply with ISFL Emission Reductions (ER) Program Requirements, ISFL ER Programs has identified the subcategories eligible for ISFL Accounting in the ISFL ERPA Phase following steps listed below:

Step 1: Initial selection of subcategories

Step 2: Review of the available data and methods for the subcategories from the initial selection against the quality and baseline setting requirements for ISFL Accounting

Step 3: Final selection of the subcategories eligible for ISFL Accounting

Inputs, assumptions, activities, methods and tools to obtain the results from initial selection to baseline for the ISFL Program are described in the SOP 18 baseline for the ISFL Program.

4.2.1 Step 1: Initial selection of subcategories

Analysis of subcategories involving conversions between land-use categories

Table 16 lists all the subcategories from the Program GHG Inventory, with the associated Carbon Pools and gases. In order to analyze the subcategories involving conversions between land-use categories the following steps were taken:

- All subcategories involving conversions between land-use categories were selected.
- Table 16 was populated first by listing conversions from or to forest land in order of the relative magnitude of net contribution of these subcategories to the absolute level of the total GHG emissions and removals in the Program GHG Inventory.
- Conversions between land-use categories other than forest land were added and listed in order of the relative magnitude of net contribution of the subcategories to the absolute level of the total GHG emissions and removals in the Program GHG Inventory.

- The absolute total net GHG emissions and removals associated with all land use conversions in the Program GHG Inventory were calculated.
- For each subcategory in the table, the relative and cumulative contributions to the absolute total GHG emissions and removals associated with all land use conversions in the Program GHG Inventory were calculated.

Table 16. Subcategories involving conversions between land use categories

Subcategory involving conversions between land-use categories	Net emissions and removals (t CO2eq)	Relative contribution to the total absolute GHG emissions and removals associated with all land use conversions in the Program GHG Inventory	Cumulative contribution to the total absolute GHG emissions and removals associated with all land use conversions in the Program GHG Inventory
3B3bi. Forest Land converted to Grassland	806,792.00	63.49%	63.49%
3B2bi. Forest Land converted to Cropland	59,661.23	4.69%	68.18%
3B1bii. Grassland converted to Forest Land	-43,455.39	3.42%	71.60%
3B5bi. Forest Land converted to Settlements	32,454.88	2.55%	74.16%
3B6bi. Forest Land converted to Other Land	6,892.39	0.54%	74.70%
3B1bi. Cropland converted to Forest Land	-1,207.71	0.10%	74.79%
3B2bii. Grassland converted to Cropland	236,615.67	18.62%	93.41%
3B5bii. Cropland converted to Settlements	43,002.46	3.38%	96.80%
3B5biii. Grassland converted to Settlements	21,485.08	1.69%	98.49%
3B6biii. Grassland converted to Other Land	13,620.39	1.07%	99.56%
3B6bii. Cropland converted to Other Land	2,816.03	0.22%	99.78%
3B3bii. Cropland converted to Grassland	-2,317.71	0.18%	99.96%
3B4bii. Land converted to flooded land	445.39	0.04%	100.00%
Total absolute GHG emissions and removals associated with all land use conversions in the Program GHG Inventory	1,176,804.71		

Based on table 16, in order to comply with the criteria of section 4.3.4 ISFL ER Programs initial selection, the subcategories are shown in Box 1 were selected.

i. Any subcategories involving conversions from or to forest land;

ii. Forest land remaining forest land;

iii. Any subcategories involving conversions between land-use categories other than forest land that, cumulatively with the conversions from or to forest land, amount to 90% of the absolute level of the total GHG Emissions and Removals associated with all land use conversions in the Program GHG Inventory; and

iv. The single most significant of the remaining subcategories in order of the relative magnitude of the contribution of these subcategories to the absolute level of the total GHG Emissions and Removals in the Program GHG Inventory.

v. Additional non-forest related subcategories included at the discretion of the ISFL ER Program;
vi. Any subcategories that were accounted during previous ERPA Phase(s), where applicable.

Box 1. List of subcategories included in the initial selection

Subcategory	Net emissions and removals5 (tCO_2eq)	Justification for initial selection
3B1a. Forest Land Remaining Forest Land	-13,486,333.11	Mandatory subcategory by 4.3.4 ii
3A1a. Cattle	12,384,983.40	Mandatory subcategory by 4.3.4.iv
3B3bi. Forest Land converted to Grassland	806,792.00	Mandatory subcategory by 4.3.4 i
3B2bii. Grassland converted to Cropland	236,615.67	Mandatory subcategory by 4.3.4 iii
3B2bi. Forest Land converted to Cropland	59,661.23	Mandatory subcategory by 4.3.4 i
3B1bii. Grassland converted to Forest Land	-43,455.39	Mandatory subcategory by 4.3.4 i
3B5bi. Forest Land converted to Settlements	32,454.88	Mandatory subcategory by 4.3.4 i
3B6bi. Forest Land converted to Other Land	6,892.39	Mandatory subcategory by 4.3.4 i
3B1bi. Cropland converted to Forest Land	-1,207.71	Mandatory subcategory by 4.3.4 i
	-3,596.65	

Note: There are not subcategories included in initial selection by criteria v (Additional non-forest related subcategories included at the discretion of the ISFL ER Program) and criteria vi (Any subcategories that were accounted during previous ERPA Phase(s), where applicable)

Table 17. Non-forest related subcategories.

Subcategory	Justification for initial selection
3A1a. Cattle – CH4	CH4 emissions from enteric fermentation are 34.06% of Program GHG Inventory
N/A	N/A
N/A	N/A
N/A	N/A

No other non-forest related subcategories, like manure management [3A2a], which may contribute to more than 10% of the GHGI, or others like aggregated sources [3C], which has no significant contribution to GHGI, are mandatory categories at this time, neither they meet ISFL requirements of Tier 2 estimation, and therefore were not included. Further analysis may be implemented once they are estimated with Tier 2, in such case they will continue as non-mandatory categories; the country may consider including them at discretion as allowed by the program requirements. Also, activities related to non-forest subcategories, such as agroforestry systems or improved grasslands, were not

included, as institutions with proper attributions to implement public policies in the agriculture and livestock sector will be dealing with them.

4.2.2 Step 2: Summary of the review of the available data and methods for the subcategories from the initial selection against the quality and baseline setting requirements for ISFL Accounting

For each of the subcategories selected in step 1, a summary of the review of the available data and methods for the subcategories against the quality and baseline setting requirements for ISFL is provided in Table 18. Details of the full review are shown below in Annex 7.

Table 18. Summary of the review of the available data and methods for the subcategories from the initial selection against the quality and baseline setting requirements for ISFL Accounting.

3B1a Forest Land Remaining Forest Land

Subcategory	3B1a Forest Land Remaining Forest Land
Summary of the historic time series (including start and end date) and data sources available for activity data needed to calculate the baseline	For subcategory 3B1a Forest Land Remaining Forest Land, information was available to provide annual estimates of area for the period 2000-2018. The source of the information used to estimate the area of conversions were the databases from the Satellite Forest Monitoring System (SAMOF) sampling approach, implemented and operated by CONAFOR. The SAMOF sampling approach consists of sampling plots located systematically (at 2.5x2.5 km for Forest Land, 5x5 km for semiarid ecosystems and 10x10 km for arid ecosystems)[58] over the ISFL jurisdiction, where conversions between 6 IPCC land use categories over time are analyzed by remote sensing specialists using the Collect Earth tool.
Summary of the main sources of data for determining emission or removal factors	EF of Forest land remaining Forest land [3B1a] was estimated at level 2 ecoregions and using two cycles of INFyS data; BGB EF were estimated as a function of AGB (using IPCC 2006 R:S ratios), therefore, Tier 2 estimates were used to obtain the EF of AGB and BGB for this subcategory. On the other hand, GHG emissions/removals from DW, litter and SOC were assumed as neutral; therefore, Tier 1 EF was used for these carbon pools.
Summary of assessment if the data used for the subcategory are compliant with IPCC Tier 2 methods and data	The estimations of GHG emissions in this subcategory use the following Tiers relative to IPCC 2006 guidelines: Pool: Forest Land Remaining Forest Land* (3B1a) AGB: Tier 2 BGB: Tier 2

[58] The SAMOF system uses a systematic sample of 6,997 plots located exactly over the central coordinates of INFyS plots, and 21,000 plots located in a nested intensified systematic grid

	<table><tr><td>DW</td><td>Tier 1</td></tr><tr><td>Litter</td><td>Tier 1</td></tr><tr><td>SOC</td><td>Tier 1</td></tr></table> * EF of AGB are Tier 2 as they were estimated at Level 2 Ecoregions[59] (https://www.biodiversidad.gob.mx/region/ecorregiones) using NFI data; EF of BGB are Tier 2 as they were obtained as fractions of AGB using IPCC 2006 Root to Shoot ratios; EF of DW, Litter and SOC were assumed as carbon neutral, therefore, the net stock change is zero, which implies Tier 1 according to IPCC (section 2.2.1 from the 2006 IPCC Guidelines, Volume 4, Chapter 2).
Summary of assessment if the data used for the subcategory allow for Approach 3 in land representation of land-use categories and land-use conversions	For this subcategory, the representation of land-use and land-use conversions were obtained by using the data of the SAMOF system sample-based approach, which is consistent with Approach #2 described in Chapter 3 (Consistent Representation of Land) Volume 4 of the 2006 IPCC Guidelines. According to Table 3.6A of 2019 Refinement (Vol4, Chap 3, Subsection 3.1), SAMOF System meets with both criteria to consider the sample-based method as approach 3: Permanent and consistent georeferenced ground plots and Continuous and consistent samples using remote sensing data. Using the data of the SAMOF system sample-based approach it was possible to produce a robust and accurate nonspatial-explicit land-use conversion matrix, including associated uncertainties of land use conversions.

3A1a Cattle – CH4

Subcategory	**3A1a. Cattle – CH_4**
Summary (150 words or less) of the historic time series (including start and end date) and data sources available for activity data needed to calculate the baseline	For subcategory 3A1a. Cattle information was available to provide annual estimations of cattle population for period 1990-2019. Cattle population statistics were available disaggregated by dairy cows [3A1ai] and other cattle [3A1aii], furthermore, cattle population can be desegregated by subcategory (mature dairy cows, mature cows, heifers, calves, and bulls) in line with an enhance characterization for livestock population which is required to apply a Tier 2 method. The source of the cattle population used to estimate CH_4 emissions from enteric fermentation was the databases from Annual Statistics of Agricultural and Livestock Production of the Agrifood and Fisheries Information Service (SIAP) of the Secretariat of Agriculture and Rural Development (SADER).
Summary (150 words or less) of the main sources of data for determining emission or removal factors	For subcategory 3A1a. Cattle, country specific emission factors were available to provide annual estimations of cattle population for period 1990-2019. Country specific emission factors were available desegregated by

[59] Ecoregions are biogeographic regions with similar characteristics, ecosystems and physiography.

	cattle subcategories (*vacas*, *vaquillas*, *toretes*, *sementales*, *becerros*, *vacas no leche*, and *vaquillas no leche*) also by climate regions (*norte*, *noroeste*, *golfo-península*, *pacífico*, *altiplano*, and *bajo*) and management systems (*pastoreo*, *corral*, and *corral-pastoreo*). The sources of country specific emission factors to estimate CH_4 emissions from enteric fermentation of cattle were 41 national research papers.
Summary (150 words or less) of assessment if the data used for the subcategory are compliant with IPCC Tier 2 methods and data	Country specific emission factors applied were estimated by cattle subcategories, climate regions and management systems for 25 of 32 federal entities, however, these are not fully representatives of ISFL jurisdictional area circumstances. A more complex approach that requires detailed country-specific data on gross energy intake and methane conversion factors for specific livestock categories into ISFL jurisdiction. In conclusion, data used for this category does not follow the IPCC Tier 2 method for the specific ISFL jurisdictional area circumstances.
Summary (150 words or less) of assessment if the data used for the subcategory allow for Approach 3 in land representation of land-use categories and land-use conversions	NA

3B3bi, 3B2bi, 3B5bi and 3B6bi (Deforestation)

Subcategory	3B3bi, 3B2bi, 3B5bi and 3B6bi (Deforestation)
Summary of the historic time series (including start and end date) and data sources available for activity data needed to calculate the baseline	For the subcategories included in the initial selection that represents Deforestation (FL -> L: 3B3bi, 3B2bi, 3B5bi and 3B6bi), information was available to provide annual estimates of area for the period 2000-2018. The source of the information used to estimate the area of conversions were the databases from the Satellite Forest Monitoring System (SAMOF) sampling approach, implemented and operated by CONAFOR. The SAMOF sampling approach consists of sampling plots located systematically (at 2.5x2.5 km for Forest Land, 5x5 km for semiarid ecosystems and 10x10 km for arid ecosystems)[60] over the ISFL jurisdiction, where conversions between 6 IPCC land use categories over time are analyzed by remote sensing specialists using the Collect Earth tool.
Summary of the main sources of data for determining emission or removal factors	For the subcategories included in the initial selection that represents Deforestation (FL -> L: 3B3bi, 3B2bi, 3B5bi and 3B6bi), emission/removal factors for three carbon pools (AGB, DW and litter) were estimated at level 1 ecoregions and using INFyS data;

[60] The SAMOF system uses a systematic sample of 6,997 plots located exactly over the central coordinates of INFyS plots, and 21,000 plots located in a nested intensified systematic grid

<table>
<tr><td></td><td>BGB EF was estimated as a function of AGB (using IPCC 2006 R:S ratios) and, SOC EF was estimated by using soil organic carbon estimates for 30-cm depth, in Mexico and the conterminous USA, 1991-2011 https://daac.ornl.gov/cgi-bin/dsviewer.pl?ds_id=1737. Therefore, Tier 2 estimates were used for the five carbon pools in this subcategory.</td></tr>
<tr><td>Summary of assessment if the data used for the subcategory are compliant with IPCC Tier 2 methods and data</td><td>The estimations of GHG emissions in these subcategories uses the following Tiers relative to IPCC 2006 guidelines:
<table>
<tr><th>Pool</th><th>Forest Land converted to Land** (3B3bi, 3B2bi, 3B5bi and 3B6bi)</th></tr>
<tr><td>AGB</td><td>Tier 2</td></tr>
<tr><td>BGB</td><td>Tier 2</td></tr>
<tr><td>DW</td><td>Tier 2</td></tr>
<tr><td>Litter</td><td>Tier 2</td></tr>
<tr><td>SOC</td><td>Tier 2</td></tr>
</table>
** EF of AGB, BGB, DW, Litter were estimated for Level 1 Ecoregions: (i) AGB, BGB, DW and Litter using NFI data and are therefore considered Tier 2 and, (ii) SOC using data from the Soil Organic Carbon Estimates for 30-cm Depth for Mexico and conterminous USA, 1991-2011 https://daac.ornl.gov/cgi-bin/dsviewer.pl?ds_id=1737 developed by Delaware University.</td></tr>
<tr><td>Summary of assessment if the data used for the subcategory allow for Approach 3 in land representation of land-use categories and land-use conversions</td><td>For these subcategories, the representation of land-use and land-use conversions were obtained by using the data of the SAMOF system sample-based approach, which is consistent with Approach #2 described in Chapter 3 (Consistent Representation of Land) Volume 4 of the 2006 IPCC Guidelines.
According to Table 3.6A of 2019 Refinement (Vol. 4, Chapter 3, Subsection 3.1), SAMOF System meets with both criteria to consider the sample-based method as approach 3: Permanent and consistent georeferenced ground plots and Continuous and consistent samples using remote sensing data.
Using the data of the SAMOF system sample-based approach it was possible to produce a robust and accurate nonspatial-explicit land-use conversion matrix, including associated uncertainties of land use conversions.</td></tr>
</table>

3B1bii and 3B1bi (Afforestation, Recuperation and Reforestation)

Subcategory	3B1bii and 3B1bi (Afforestation, Recuperation and Reforestation)
Summary of the historic time series (including start and end date) and data sources available for activity data needed to calculate the	For all subcategories included in the initial selection that represents Afforestation, Recuperation and Reforestation (L -> FL: 3B1bii and 3B1bi), information was available to provide annual estimates of area for period 2000-2018. The source of the information used to estimate the area of

<table>
<tr><td>baseline</td><td>conversions were the databases from the Satellite Forest Monitoring System (SAMOF) sampling approach, implemented and operated by CONAFOR.
The SAMOF sampling approach consists of sampled plots located systematically (2.5x2.5 km for Forest Land, 5x5 km for semiarid ecosystems and 10x10 km for arid ecosystems)[61] over the ISFL jurisdiction, where conversions between 6 IPCC land use categories over time are analyzed by remote sensing specialists using the Collect Earth tool.</td></tr>
<tr><td>Summary of the main sources of data for determining emission or removal factors</td><td>For all subcategories included in the initial selection that represents Afforestation, Recuperation and Reforestation (L -> FL: 3B1bii and 3B1bi), emission/removal factors for three carbon pools (AGB, DW and litter) were estimated at level 1 ecoregions and using INFyS data; BGB EF was estimated as a function of AGB (using R:S IPCC 2006 ratios) Therefore, Tier 2 estimates were used for four carbon pools in this subcategory.</td></tr>
<tr><td>Summary of assessment if the data used for the subcategory are compliant with IPCC Tier 2 methods and data</td><td>The estimations of GHG emissions in these subcategories uses the following Tiers relative to IPCC 2006 guidelines:
<table>
<tr><th>Pool</th><th>Land Converted to Forest Land*** (3B1bii and 3B1bi)</th></tr>
<tr><td>AGB</td><td>Tier 2</td></tr>
<tr><td>BGB</td><td>Tier 2</td></tr>
<tr><td>DW</td><td>Tier 2</td></tr>
<tr><td>Litter</td><td>Tier 2</td></tr>
<tr><td>SOC</td><td>NE</td></tr>
</table>
*** EF of AGB, BGB, DW and Litter are Tier 2 because they were estimated using NFI data (BGB as a fraction of AGB using IPCC 2006 Root to Shoot ratios). AGB and BGB were estimated at Level 1 Ecoregions and DW and Litter are estimated at a national level. EF of SOC were not estimated due to the lack of data.</td></tr>
<tr><td>Summary of assessment if the data used for the subcategory allow for Approach 3 in land representation of land-use categories and land-use conversions</td><td>For these subcategories, the representation of land-use and land-use conversions were obtained by using the data of the SAMOF system sample-based approach, which is consistent with Approach #2 described in Chapter 3 (Consistent Representation of Land) Volume 4 of the 2006 IPCC Guidelines.
According to Table 3.6A of 2019 Refinement (Vol4, Chap 3, Subsection 3.1), SAMOF System meets with both criteria to consider the sample-based method as approach 3: Permanent and consistent georeferenced ground plots and Continuous and consistent samples using remote sensing data.</td></tr>
</table>

[61] The SAMOF system uses a systematic sample of 6,997 plots located exactly over the central coordinates of INFyS plots, and 21,000 plots that located in a nested intensified systematic grid

	Using the data of the SAMOF system sample-based approach it was possible to produce a robust and accurate nonspatial-explicit land-use conversion matrix, including associated uncertainties of land use conversions.

3B2bii. Grassland converted to Cropland

Subcategory	3B2bii. Grassland converted to Cropland
Summary of the historic time series (including start and end date) and data sources available for activity data needed to calculate the baseline	For subcategory 3B2bii. Grassland converted to Cropland, information was available to provide annual estimates of area for period 2000-2018. The source of the information used to estimate the area of conversions were the databases from the Satellite Forest Monitoring System (SAMOF) sampling approach, implemented and operated by CONAFOR. The SAMOF sampling approach consists of sampled plots located systematically (2.5x2.5 km for Forest Land, 5x5 km for semiarid ecosystems and 10x10 km for arid ecosystems)[62] over the ISFL jurisdiction, where conversions between 6 IPCC land use categories over time are analyzed by remote sensing specialists using the Collect Earth tool.
Summary of the main sources of data for determining emission or removal factors	For the subcategory 3B2bii Grassland converted to Cropland, emission/removal factors for three carbon pools (AGB, DW and Litter) were estimated at Level 1 Ecoregions and using INFyS data; BGB EF were estimated as a function of AGB (by using R:S IPCC 2006 ratios) and, SOC EF were obtained from *Soil Organic Carbon Estimates for 30-cm Depth, in Mexico and the conterminous USA, 1991-2011* https://daac.ornl.gov/cgi-bin/dsviewer.pl?ds_id=1737, so Tier 2 estimations were used for the five carbon pools in this subcategory.
Summary of assessment if the data used for the subcategory are compliant with IPCC Tier 2 methods and data	The estimations of GHG emissions in these subcategories uses the following Tiers relative to IPCC 2006 guidelines: Pool / Grassland converted to Cropland (3B2bii)**** AGB / Tier 2 BGB / Tier 2 DW / Tier 2 Litter / Tier 2 SOC / Tier 2 **** EF of AGB, BGB, DW and Litter are Tier 2 because they were

[62] The SAMOF system uses a systematic sample of 6997 plots located exactly over the central coordinates of INFyS plots, and 21,000 plots located in a nested intensified systematic grid

	estimated using NFI data (BGB as fraction of AGB using IPCC 2006 Root to Shoot ratios). AGB and BGB were estimated at Level 1 Ecoregions and DW and Litter at a more general level. EF of SOC were using data from the *Soil Organic Carbon Estimates for 30-cm Depth for Mexico and conterminous USA, 1991-2011* https://daac.ornl.gov/cgi-bin/dsviewer.pl?ds_id=1737 developed by Delaware University, so it is considered as Tier 2.
Summary of assessment if the data used for the subcategory allow for Approach 3 in land representation of land-use categories and land-use conversions	For this subcategory, the representation of land-use and land-use conversions were obtained by using the data of the SAMOF system sample-based approach, which is consistent with Approach #2 described in Chapter 3 (Consistent Representation of Land) Volume 4 of the 2006 IPCC Guidelines. According to Table 3.6A of 2019 Refinement (Vol4, Chap 3, Subsection 3.1), SAMOF System meets with both criteria to consider the sample-based method as approach 3: Permanent and consistent georeferenced ground plots and Continuous and consistent samples using remote sensing data. Using the data of the SAMOF system sample-based approach it was possible to produce a robust and accurate nonspatial-explicit land-use conversion matrix, including associated uncertainties of land use conversions.

4.2.3 Step 3: Final selection of the subcategories eligible for ISFL Accounting

Table 19 identifies those subcategories for which step 2 has shown that set quality and baseline requirements for ISFL Accounting. According to subsection 4.2.2 of *ISFL Emission Reductions (ER) Program Requirements*, ISFL ER Programs shall account for the Total Net Emission Reductions across eligible subcategories by estimating the baseline and monitoring Emissions and Removals for the eligible subcategories using IPCC Tier 2 methods and data at minimum. The following table shows the results.

Table 19. Final selection of the subcategories eligible for ISFL Accounting

Subcategory from step 1	Emissions Baseline setting requirement(s) met? (Yes/No)	Methods and data requirement(s) met? (Yes/No)	Spatial information requirement(s) met? (Yes/No)	Eligible for ISFL Accounting? (Yes/No)
3B1a. Forest Land Remaining Forest Land	Yes	Yes*	Yes	Yes
3A1a. Cattle – CH4	Yes	No	No	No
3B3bi. Forest Land converted to Grassland	Yes	Yes	Yes	Yes
3B2bii. Grassland converted to Cropland	Yes	Yes**	Yes	Yes
3B2bi. Forest Land converted	Yes	Yes	Yes	Yes

Subcategory from step 1	Emissions Baseline setting requirement(s) met? (Yes/No)	Methods and data requirement(s) met? (Yes/No)	Spatial information requirement(s) met? (Yes/No)	Eligible for ISFL Accounting? (Yes/No)
to Cropland				
3B1bii. Grassland converted to Forest Land	Yes	Yes**	Yes	Yes
3B5bi. Forest Land converted to Settlements	Yes	Yes	Yes	Yes
3B6bi. Forest Land converted to Other Land	Yes	Yes	Yes	Yes
3B1bi. Cropland converted to Forest Land	Yes	Yes**	Yes	Yes

* EF of DW, Litter and SOC were assumed carbon neutral, this means a value of zero net change, . In addition, according to the Guidance note on the application of IPCC guidelines, in subsection 4. Changes in carbon stock in the dead organic matter were excluded from subcategories that involve changes within the same land use category or represent transitions between non-forest categories.

** EF of DW and Litter were estimated at a national level, and SOC was not estimated due to the lack of data.

4.3 Summary of time bound plan to increase the completeness of the scope of accounting and improve data and methods for the subsequent ERPA Phases during the ERPA Term

For 3A1a. Cattle – CH4 emissions from enteric fermentation subcategory, in order to improve the method applied for estimate CH4 emissions from enteric fermentation of cattle for representing ISFL jurisdictional area circumstances, Mexico should advance to implement a Tier 2 approach for ISFL jurisdiction. The key considerations for the Tier 2 method are the development of emission factors. The emission factors for each subcategory of cattle are estimated based on the gross energy intake and methane conversion factor for the subcategory. The gross energy intake data should be obtained using the approach described in Section 10.2 from the 2019 Refinement to the IPCC 2006 Guideline.

Using the energy balance Tier 2 approach an emission factor for each animal category should be developed following Equation 10.21:

EQUATION 10.21
METHANE EMISSION FACTORS FOR ENTERIC FERMENTATION FROM A LIVESTOCK CATEGORY

$$EF = \frac{GE \bullet \left(\frac{Y_m}{100}\right) \bullet 365}{55.65}$$

Where:

EF = emission factor, kg CH4 head-1 yr-1

GE = gross energy intake, MJ head-1 day-1

Ym = methane conversion factor, per cent of gross energy in feed converted to methane

The factor 55.65 (MJ/kg CH4) is the energy content of methane

As indicated in Annex 8, for [3B] there are gaps in the methods and data requirements in the DW, Litter and SOC pools for the following subcategories: Forest Land Remaining Forest Land (3B1a), Land Converted to Forest Land (3B1bii and 3B1bi).

For Forest Land remaining as Forest Land, the main gap consists in assuming carbon neutrality in DW, Litter and SOC, due to the lack of data. For Land converted to Forest Land, the main gap consists in removal factors taken from national regions and using small sample sizes for DW and litter pools, and there are no removal factors for SOC pool.

The actions proposed for addressing the above-mentioned gaps is improving removal factors by using more samples and using samples from the third cycle of NFI data (2015-2019) for regions closer to the ISFL jurisdictional area natural features through the third cycle (in the case of DW and litter) and exploring other approaches that allow better use of the available information and to ensure consistency with the approach used to estimate EF/AF for the SOC pool. As indicated in Annex 8, these actions are planned to be executed during the first monitoring period to the first quarter of 2025.

4.4 Emissions Baseline for ISFL Accounting

4.4.1 Approach for estimating Emissions Baseline

The first step is the preparation of the GHG Inventory for Agriculture, Forestry and Other Land Use (AFOLU) sector applying the methodology, categories and subcategories from the 2006 IPCC Guidelines (short description in section 4.1.1).

For categories 3A and 3C was developed in line with the IPCC quality indicator: transparency, completeness, consistency, comparability, and accuracy. The AFOLU inventory for the ISFL jurisdictional area in Mexico (states of Chihuahua, Coahuila, Durango, and Nuevo León) was elaborated applying the 2006 IPCC Guidelines for National Greenhouse Gas Inventories and the 2019 Refinement to the 2006 IPCC Guidelines using the same inputs, assumptions, and methodologies used in the GHG inventory for the Third Biennial Updated Report (BUR3) which is expected to be submitted to the UNFCCC by the 2022.

For category 3B, the Satellite System for Forest Monitoring (SAMOF, for its acronym in Spanish) and National Forest and Soils Inventory were the main data sources used to estimate emissions and their respective uncertainties for the 2000 – 2019 period.

The Program GHG Inventory baseline reports an average of -12,388,580.05 t CO_2e /year emissions (removals) for 2009 to 2018. The subcategory with the main contribution to the baseline is [3B1a] Forest Land Remaining Forest Land, . Regarding emissions, the main subcategory is [3B3bi] Forest Land converted to Grassland, and [3B2bii] Grassland converted to Cropland.

Uncertainties for activity data and emission factors were calculated following the IPCC Good Practice Guidance (2006). The propagation through the process of compile emissions was done by applying in particular two formulas cited in IPCC Volume I in Chapter 3 of Uncertainties: equation 3.2 to combine uncertainties using method 1. (Addition and subtraction).

After the AFOLU emissions inventory was completed, a group of relevant subcategories was identified: All subcategories which involve a change from or to forest land, other categories different from forest land, Forest land remaining Forest Land and the main significant subcategory in subsector 3A or 3C. As a result of this process, eight subcategories were selected: [3B1a] Forest Land Remaining Forest Land, [3B3bi] Forest Land converted to Grassland, [3B2bii] Grassland converted to Cropland, [3B1bii] Grassland converted to Forest Land, [3B2bi] Forest Land converted to Cropland, [3B5bi] Forest Land converted to Settlements, [3B6bi] Forest Land converted to Other Land and [3B1bi] Cropland converted to Forest Land.

In accordance with ISFL Emission Reductions (ER) Program Requirements, eight subcategories are included in the initial selection group (all into 3B category[63]). These subcategories passed through a set of selection criteria that included quality requirements: Baseline, data, methods and spatial information. All subcategories in subsector [3B] meet the requirements, thus, are not excluded in the current phase of ERPA. Strictly speaking, no subcategory should be included in the bounded plan however, it has been noted that some of the elected subcategories require improvement.

The baseline was constructed over a 10-year period (reference period). The initial year is 2009, and the final year is 2018 and it was calculated as the historical average of the annual emissions of all selected subcategories.

4.4.2 Emissions Baseline estimate

Box 2. Emissions (tCO2e) and uncertainties (%) on reference period and baseline

	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	Historical average
Emissions tCO_2e	-13,261,388.31	-12,671,515.65	-11,260,089.37	-12,248,003.64	-12,147,297.62	-11,989,788.88	-13,021,225.76	-12,126,100.14	-12,228,602.92	-12,931,788.25	-12,388,580.05
Uncertainty (%)	8.83	9.59	11.99	10.01	11.19	10.36	8.96	10.33	9.88	9.00	3.16

The historical average over the reference period is -12,388,580.05 tCO_2e, and its uncertainty is 3.16%.

Figure 11. Baseline ISFL Program

[63] Accordance with ISFL requirements the subcategory 3A1a. Cattle – CH4 was not eligible for ISFL accounting due it does not meet TIER 2 requirement.

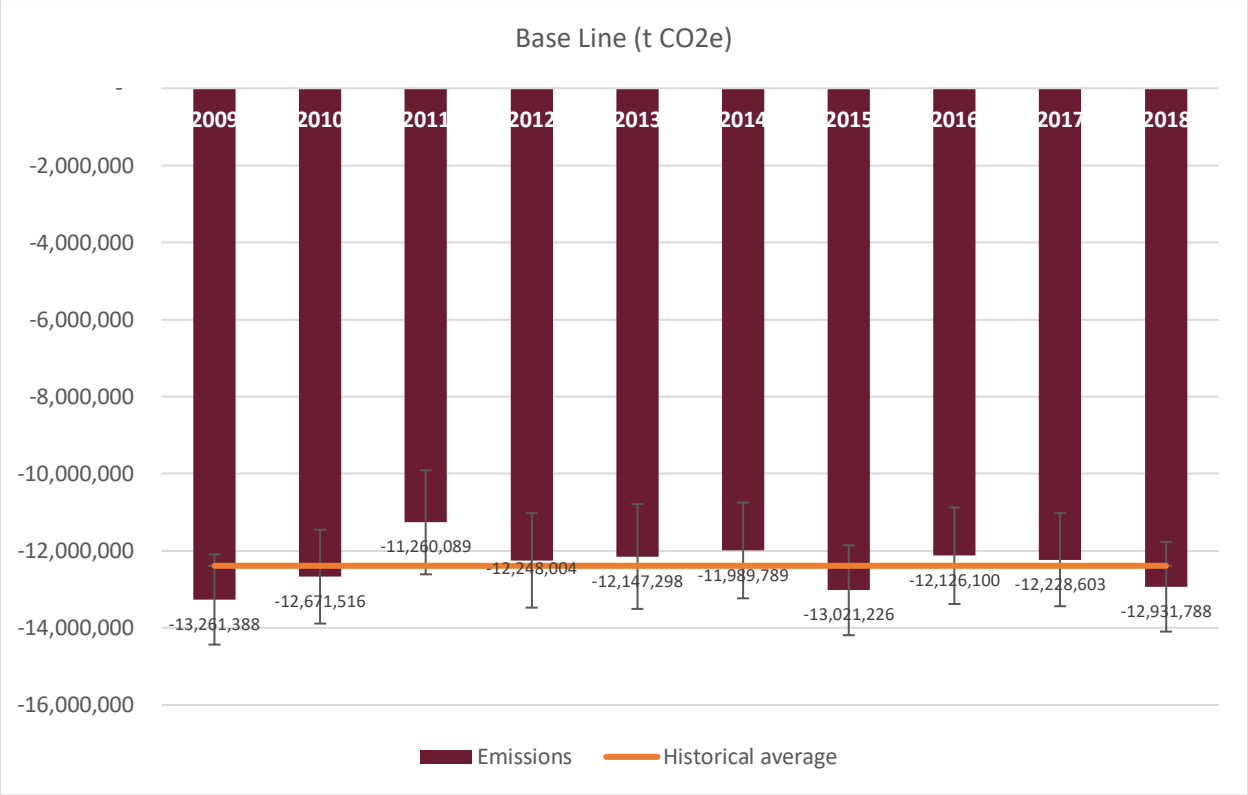


Table 20. Emissions Baseline estimate (2009 – 2018)

ERPA Phase	Emissions Baseline (tCO2e)
Phase 1	-12,388,580.05

4.5 Monitoring and determination of emission reductions for ISFL Accounting

4.5.1 Description of the monitoring approach

Emission reductions will be estimated by subtracting the net GHG balance average from each monitoring period from the baseline (net GHG balance average from period 2009-2018), as it is shown in the following formula:

$$ER_i = \underline{NB}_{2009-2018} - \underline{NB}_{Pi}$$

Where:

ER_i: Estimated Emission Reductions for period *i*

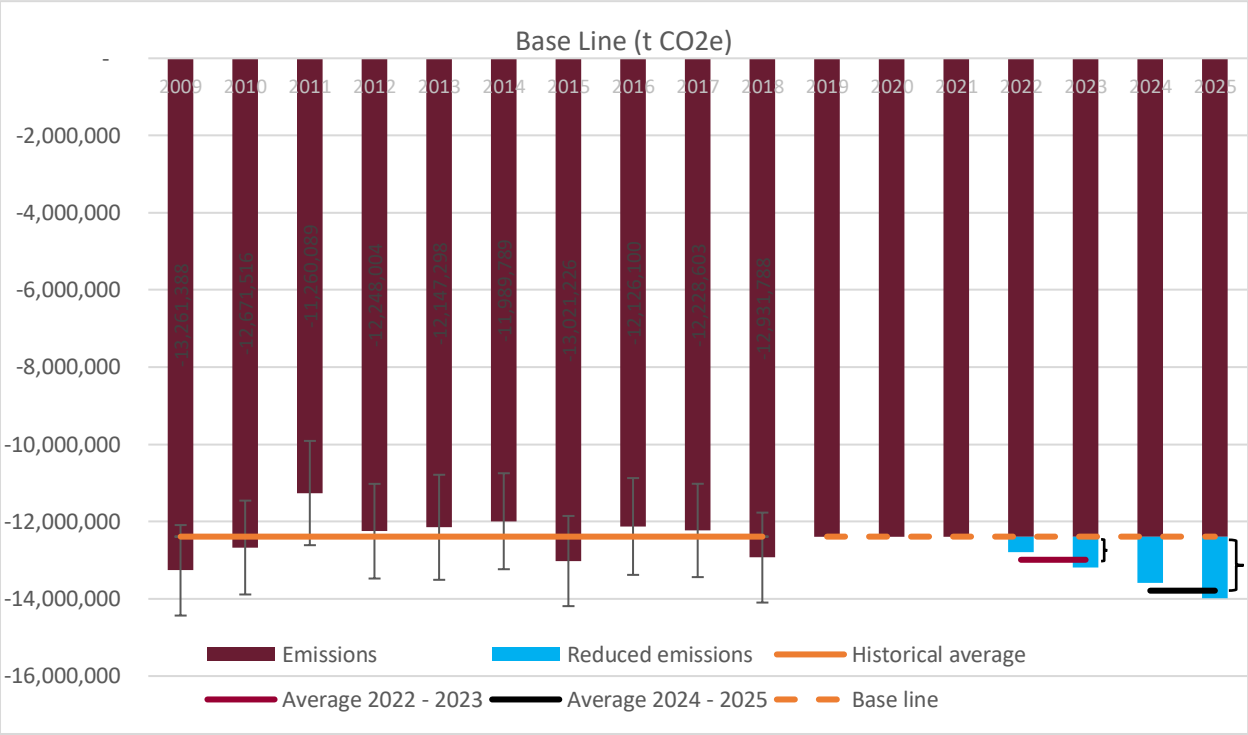
$\underline{NB}_{2009-2018}$: net GHG balance average from the 2009-2018 period

$\underline{NB}_{Pi}$: net GHG balance average from *i*

The starting of the monitoring period will depend on the agreement reached during the ERPA negotiations; nevertheless, we have included and hypothetical example to illustrate the reporting approach. **Example:** Assuming 2022 as a base year to start the monitoring of emission reductions at the ISFL jurisdictional area and considering that the National Forest Monitoring System generates updated information every two years; for the first ERP-ISFL phase, the first monitoring period will be 2022-2023, to be summited in 2025. According to the ISFL requirements, this reporting cycle will be repeated every two years. It is expected that after 2026 and ERPA second phase will begin.

This ERPA phase will include other AFOLU categories that have been enhanced according to the time bound plan and that comply with ISFL requirements.

Figure 12. Proposed ISFL monitoring periods: (i) First monitoring period of emission reductions (2022-2023) and (ii) Second monitoring period of emission reductions (2024-2025).



To implement a suitable estimation of emission reductions for monitoring periods, it is necessary to update the estimation of AD, and the estimations of emissions/removals for periods 2022-2023, 2024-2025, and so on. It is worth mentioning that EF that will be used in monitoring periods will be the same as the one used in the baseline period (2009-2018); therefore, EF values will remain fixed during the monitoring periods. The strategy for generating, recording, storing, collating and reporting data and the methods which will be used to obtain AD, EF and emissions/removals for monitoring periods, is explained in the following section.

Subcategories [3B1a] Forest Land Remaining Forest Land, [3B3bi], [3B2bi], [3B5bi] and [3B6bi] (Deforestation), [3B1bii] and [3B1bi] (Afforestation, Recuperation and Reforestation) and [3B2bii] Grassland converted to Cropland

- **Activity Data**. AD for monitoring periods will be generated by implementing the SAMOF System sampling approach of CONAFOR. First, a photointerpretation of sampled plots at the ISFL area, for the 2022 and 2023 monitoring periods will be implemented in 2024 by using very high, high and medium resolution satellite images and the Collect Earth tool. Databases with the information of the 2022 and 2023 photo-interpreted plots will be compiled and quality controls will be implemented by the MRV System Department of CONAFOR. Estimation of AD for 2022 and 2023 for the selected [3B] subcategories will be estimated during 2024. On the other hand, in a second period, a photointerpretation of sampled plots at the ISFL area for years 2024 and 2025 will be implemented during 2026. Databases with the 2024 and 2025 photo-interpreted information of plots will be compiled by the MRV System Department of CONAFOR and quality controls will be implemented. Estimation of AD

for years 2024 and 2025 for the selected [3B] subcategories will be estimated during 2026. Under the same logic, DA will be monitored every two years.

- **Emission Factors**. EF for five carbon pools and land-use conversions that will be used for two monitoring periods will be the same as those used for the baseline period (2009-2018)[64]. So, for selected [3B] subcategories, EF values for five carbon pools and land-use conversions will remain fixed during the monitoring periods. This applies for all [3B] subcategories, except 3B1bii and 3B1bi, where specific EF can be modified by the program's interventions.
- **Emissions/Removals**. For two monitoring periods, emissions/removals of selected [3B] subcategories will be estimated by the MRV System Department of CONAFOR. For years 2022 and 2023, emissions/removals will be estimated during 2025 once AD values are updated to 2023. On the other hand, for the years 2024 and 2025, emissions/removals will be estimated during 2027 once AD values are updated to 2025. Under the same logic, emissions/removals will be monitored every two years.
- **Emission Reductions**. Emissions reductions of selected [3B] subcategories will be estimated by the MRV System Department of CONAFOR for two monitoring periods. For years 2022 and 2023, emissions reductions will be estimated during 2025 once estimations of Emissions/Removals are updated to 2023. For years 2024 and 2025, emissions reductions will be estimated during 2027 once estimations of Emissions/Removals are updated to 2025. Emission Reductions Report, following the ISFL-ERPD Template, will be elaborated by the MRV System Department of CONAFOR. The Emission Reductions Report for the first monitoring period will be ready by 2025 and, the Emission Reductions Report for the second monitoring period will be ready by 2027. Under the same logic, emissions reductions will be monitored every two years.

4.5.2 Organizational structure for monitoring and reporting

Subcategories [3B1a] Forest Land Remaining Forest Land, [3B3bi], [3B2bi], [3B5bi] and [3B6bi] (Deforestation), [3B1bii] and [3B1bi] (Afforestation, Recuperation and Reforestation) and [3B2bii] Grassland converted to Cropland

The National Forest Monitoring System (SNMF) is aimed to collect, analyze, and disseminate data related to the forests of Mexico, including the production of information and knowledge that allows the monitoring of their changes at regular intervals. Operationally, the SNMF includes three interrelated components:

i. National Forest and Soil Inventory (INFyS): public policy instrument and information of national interest for compilation and generation of periodic and comparable field data on the state of forest ecosystems at the national level.

ii. Satellite System for Forest Monitoring (SAMOF): Set of processes, tools, inputs and definitions used to quantify changes in the country's forest cover, including the evaluation of deforestation, forest degradation and regeneration/reforestation rates; and

iii. National Monitoring, Reporting and Verification System (SNMRV): System to generate information on GHG emissions due to deforestation and forest degradation and removals by forest ecosystems, and other mitigation reports.

Legal and institutional framework

[64] Except for the pools that are included in bound plan and Annex 8. In these pools, we expect that EF will be improved with work plan.

The National Forest Monitoring System (SNMF) is created in compliance with Article 34 of the General Law of Sustainable Forest Development of Mexico (LGDFS). The legal and programmatic rationale for each component of the SNMRV is described below:

i. National Forest and Soil Inventory (INFyS): LGDFS (Arts. 46, 47 and 48), Law of the National System of Statistical and Geographical Information (LSNIEG), Organic Statute CONAFOR (Art. 18), National Forestry Program (PRONAFOR).

ii. Satellite Forest Monitoring System (SAMOF): LGDFS (Arts. 46 and 49), National REDD + Strategy (ENAREDD + Chapter 4, Line of Action 1.1), CONAFOR Organic Statute (Art. 17), National Forestry Program (PRONAFOR).

iii. National Monitoring, Reporting and Verification System (SNMRV): LGDFS (Art. 46), ENAREDD + (Chapter 4), CONAFOR Organic Statute (Art. 17), PRONAFOR National Forestry Program.

It is worth mentioning that the National Forest Monitoring System Department and the Technical Department of the Monitoring, Reporting and Verification System are administrative units formally recognized in the organic statute of CONAFOR (article 5, section VII). They are in charge of designing and implementing the three components of the SNMF that are recognized in article 18 (sections XVII, XVIII, XXXI, XXXII and XXXIII) of the same statute.

The REDD + regulatory framework is in line with existing regulations and does not violate or go against any existing regulations in the country.

Functions and responsibilities

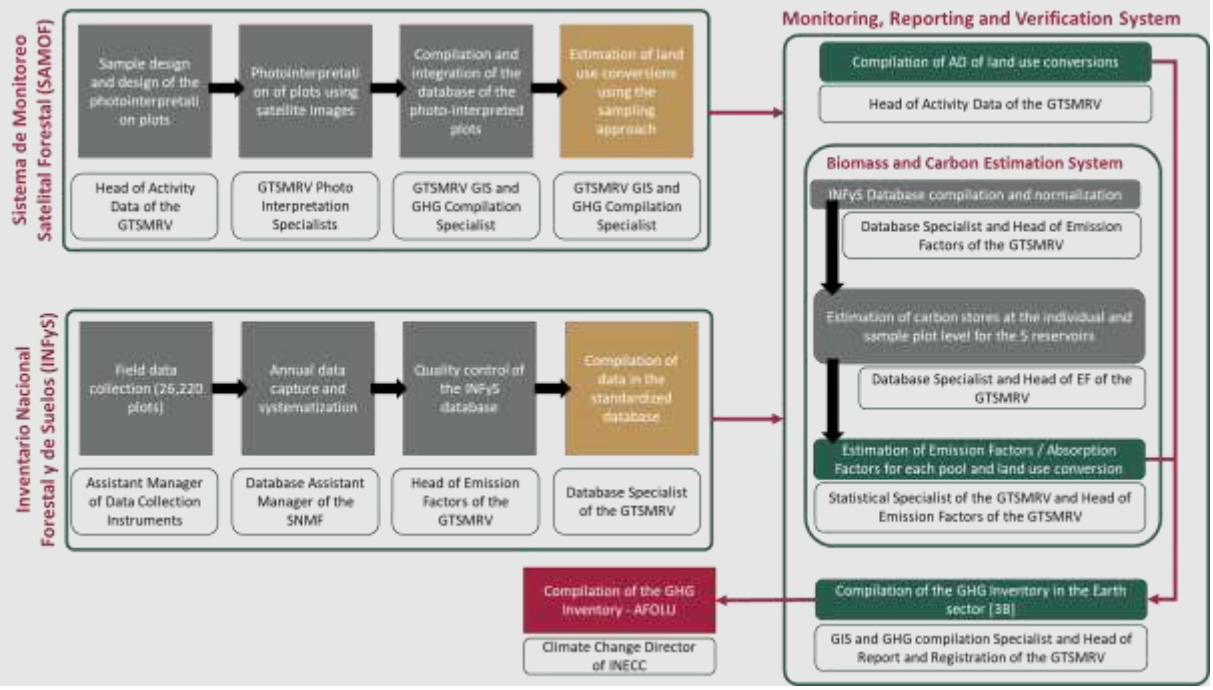
Each component of the SNMF (see Figure 13) generates products that will be used by the SNMRV to estimate the emissions that will be used for the monitoring of emission reductions:

i. INFyS: Three databases of field data from 26,220 plots in five-year survey cycles; periodic reports on the results of the INFyS and forest zoning,

ii. SAMOF: sampling mesh (systematic sampling of forest cover and land-use change).

iii. SNMRV: AD, EF and GHG inventory for category [3B] Land for the ISFL jurisdictional area.

Figure 13. Operational flow diagram of the monitoring system (and areas in charge) for estimating Emission Reductions for category [3B].



4.5.3 Uncertainty

Subcategories [3B1a] Forest Land Remaining Forest Land, [3B3bi], [3B2bi], [3B5bi] and [3B6bi] (Deforestation), [3B1bii] and [3B1bi] (Afforestation, Recuperation and Reforestation) and [3B2bii] Grassland converted to Cropland

As it was explained in section 4.5.1, AD for the monitoring periods were generated by implementing the sampling approach of the SAMOF System; while data from the two INFyS cycles was used to estimate EF for five carbon pools and land use conversions that were used for two monitoring periods are the same as those used for the baseline period. Taking into account these considerations, for this subcategory, AD is the only parameter monitored during the results period as described in Annex 10. A sample-based approach was used to estimate all land use conversion. Although a large number of sample plots (28,644) were used, in the estimation of the baseline period AD, there are some land-use conversions with high uncertainties in AD. This is because, for some subcategories, a small number of plots identify a specific land-use conversion. An increase in the sample size at specific hotspots of land use conversions in ISFL jurisdictional area . could reduce the uncertainties of AD. Nevertheless, the same sample size will be implemented to maintain consistency with the baseline period.

For the baseline period uncertainties have been estimated using simple error propagation (method 1 of IPCC); detailed procedures are described in annex 6 and 7, and SOP 17 has a general description approach and an example of error propagation.

The Uncertainty of emission reductions will be calculated with the Monte Carlo approach.

4.6 Estimation of the Emission Reductions

Mexico, as an active participant in global efforts to reduce emissions, presented its Nationally Determined Contribution (NDC), as a Party of UNFCCC. In this document, a specific goal of zero net deforestation by the year 2030, along with an increase in total biomass stock in sustainably managed forest ecosystems and the increase in carbon sinks in natural protected areas, is determined.

Aligned with the current national policies previously mentioned, the implementation of the Mexico's ISFL Emissions Reduction Program could be implemented for the 2022 - 2030 period. This Program contemplates a short-term goal of 30% reduction in deforestation related emissions, and a long-term goal of net-zero emissions by the year 2030 and follows nationally determined emission reduction goals included in Mexico's National Forestry Commission Institutional program for 2020 - 2024 (Programa Institucional de la Comisión Nacional Forestal 2020 - 2024).

The ER Program currently considers a reduction of the deforestation rates as a reduction in the loss in Forest land and Grassland (FL- L and GL - CL categories including conversions from FL-GL, FL-CL, FL - SL, FL - OL and GL to CL subcategories [3B3bi], [3B2bi], [3B5bi], [3B6bi], and [3B2bii] respectively) and an increase in carbon stock from forest management (FL remaining FL, subcategory [3b1a]) and an increase in carbon stock from afforestation, reforestation, and recuperation (L - FL, including subcategories [3B1bii] and [3B1bi]).

This estimation corresponds to a simplified Ex ante projection of the potential emission reductions that are possible given the projection of additional lands and reduction of deforestation rates is maintained throughout the ISFL ER program implementation period.

The potential of emission reductions projected for the year 2024, under the current administration, was determined as a 30% reduction of emissions compared to the 2009-2018 baseline scenario. If the NDC goal is met by the year 2030, this will allow a net-zero emission rate by the end of the project timeline.

The increase of areas under timber forest management and non-timber forest management is estimated as 20 and 10% respectively compared to the 2021 baseline scenario. These projected proportions were provided by the Forest Management department of CONAFOR. The periodic annual increment in carbon content in areas under Forest management was calculated based on carbon content data in cycles 1 and 2 of the national forest inventory (INFyS) for the project area.

Afforestation, reforestation, and recuperation areas were provided by the Forest Restoration management department in CONAFOR. The periodic annual increment for the restoration areas were determined by carbon content data from INFyS.

Emission reductions were calculated as the sum of emissions prevented from the reduction of deforestation and the total carbon gains from management and restoration of forests under additional projected areas for the year 2024.

Additionally, an average uncertainty set-aside factor of 0% was initially considered (aggregate uncertainty of emission reductions ≤ 15%). The results of Emission Reductions expected emissions under ISFL ER Program, and their associated uncertainties are reported in the following Table.

Table 21. Estimation of Emission Reductions

ERPA year	Baseline emissions (tCO2e yr -1)	Estimation of expected emissions under ISFL ER Program ($tCO_2e\ yr^{-1}$)	Estimation of expected set-aside to reflect the level of uncertainty associated with the estimation of ERs during the Term of the ERPA ($tCO_2e\ yr^{-1}$) (0%)	Estimated Emission Reductions (tCO2e yr -1)	Cumulative estimated Emissions Reductions (tCO_2e)
1	-12,388,580.05	-12,566,573.20	0	-177,993.14	-177,993.14

2	-12,388,580.05	-12,744,566.34	0	-355,986.28	-533,979.42
3	-12,388,580.05	-12,922,559.48	0	-533,979.42	-1,067,958.84
4	-12,388,580.05	-13,119,592.89	0	-731,012.83	-1,798,971.67
5	-12,388,580.05	-13,316,626.30	0	-928,046.24	**-2,727,017.91**
6	-12,388,580.05	-13,498,197.10	0	-1,109,617.05	-3,836,634.96
7	-12,388,580.05	-13,679,767.90	0	-1,291,187.85	-5,127,822.81
8	-12,388,580.05	-13,861,338.70	0	-1,472,758.65	-6,600,581.46
9	-12,388,580.05	-14,042,909.50	0	-1,654,329.45	-8,254,910.92
Total	-111,497,220.49	-119,752,131.40	0	8,254,910.92	

The simplified estimation of reduced emissions, shown in the previous table considers the effect of the implementation of actions to reduce CO2 emissions or increase carbon stock in selected subcategories for [3B]. The excel worksheet containing the estimation is available in "Emission reduction estimates".

4.7 Reversals

4.7.1 Assessment of the anthropogenic and natural risk of Reversals

This assessment focuses on the risks of anthropogenic and natural reversals in the four states of the jurisdiction.

The identified anthropogenic risks are associated with the lack of support from the relevant actors, possible land tenure conflicts, uncertainty about the institutional capacity (technical and economic) of the different levels of government involved, as well as the lack of a regulatory framework that enables the achievement of the objectives of the ER Program. Specifically, the following factors were recognized as potential risks and were used as specific indicators to be analyzed in the context of the Emissions Reduction Program (see annex 11):

- Low participation of relevant stakeholders in the ER Program design.
- Lack of co-responsibility of local stakeholders to reduce the main drivers of deforestation and forest degradation.
- Lack of accessible and effective grievance mechanisms.
- Lack of improvement of the income and/or production levels of the participants.
- Lack of adequate benefit sharing mechanisms.
- Lack of effective legal instruments and frameworks for the resolution of conflicts related to land ownership.
- Little experience in the development of policies and programs.
- Little experience in intersectoral cooperation.
- Little experience of collaboration between different levels of government.
- Lack of experience in decoupling deforestation and forest degradation from economic activities.

- Lack of relevant legal and regulatory environment conducive to addressing key drivers of deforestation and forest degradation.

It should be noted that to reduce the possibility of the occurrence or mitigate the impact of these reversals, some risk mitigation measures are being developed, such as ensuring the budget and intersectoral commitment to give continuity to the good practices implemented during the execution of the RE Program; formalization of legal instruments, such as specific coordination agreements to promote sustainable forestry development; develop Technical Annexes for execution, in which the design, formulation, and implementation of the ER Program are established; and ensuring that the government support on which the activities under the ER Program will depend are maintained for the consolidation of the proposed model, among others.

Regarding forest ecosystems within the jurisdiction of the Program, the main risks of reversion identified are natural causes such as forest fires, tropical cyclones, droughts, and pests. For example, from 2001 to 2018, there were 20,869 wildfires that affected 1,491,293 hectares in the four states of the jurisdiction. Regarding the propensity and vulnerability to tropical cyclones, it was identified that in the four states of the jurisdiction the effects occur indirectly, due to runoff in high areas. As for droughts, these are more severe in the states of the jurisdiction.

Therefore, to ensure the permanence of the emission reduced under the ISFL Program, it will be necessary to establish means to evaluate the implementation of the program and make the appropriate modifications, using the Reversal Risk assessment tool of the ISFL[65] as a guide, in such a way that: (i) it is possible to propose new measures to avoid reversals; and (ii) the percentage of emission reductions to be allocated to the reversal reserve might be periodically adjusted to adequately reflect the current level of risk (see Annex 11).

4.7.2 Assessment of the level of risk of Reversals

A reversion event occurs when, after the successful implementation of an Emissions Reduction Program, the captured carbon is returned to the atmosphere, as a result of situations generated by anthropogenic (premeditated human actions or inactions) or natural (fires, phenomena weather conditions, pests, etc.) causes.

With the Reversal Risk assessment tool, the following table was developed in order to determine the Reversal Risk Set-Aside Percentage.

Table 22. Factor risk of reversals

Risk Factors	Indicators	Reason	Reversal Set-Aside Percentage
Risk Factor A. Lack of long- term effectiveness in addressing the	A1.1 Relevant local actors participation in the ER Program design.	The risk is estimated to be low, since the ER Program will be supported by a participatory planning process.	**15%** Reversal Risk is considered high for some eligible

[65] See "ISFL Buffer Requirements. Version 2.0, April 2020", Available at https://www.biocarbonfund-isfl.org/sites/isfl/files/2020-04/ISFL%20Buffer%20Requirements_2020_Final.pdf

Risk Factors	Indicators	Reason	Reversal Set-Aside Percentage
key drivers of AFOLU Emissions and Removals.	A1.2 Co-responsibility of local stakeholders to reduce the main drivers of deforestation and degradation	The existence and operation of platforms for consultation, participation and decision-making in the ER Program jurisdiction, allows considering this risk as low.	subcategories and or context /low for others
	A1.3 Existence of accessible and effective grievance mechanisms.	The level of risk with respect to the existence of mechanisms to provide adequate responses and solutions to information requests, claims, complaints and suggestions is expected to be low.	
	A1.4 Maintenance or improvement of the income and/or production levels of the participants in the long term.	The risk is estimated to be medium due to the lack of analysis to be carried out regarding benefit sharing and other economic impacts and other studies that show the expected behavior of the participants' income over time.	
	A1.5 Existence of adequate benefit sharing mechanisms.	It is expected that the benefit-sharing agreements will be developed and validated through a consultative, transparent and participatory process, which allows considering this risk factor as low.	
	A2.1 Existence of effective legal instruments and frameworks for the resolution of conflicts related to land ownership.	The risk here is considered low, due to the existence and operation of the agrarian courts, and their continuous work resolving conflicts related to the tenure of ejidal, communal and small lands property.	
	A3.1 Experience in developing policies and programs.	Considering the current circumstances of the Federal and State Public Administration (significant need of arising awareness about the concept of territorial approach, availability of financial resources, and the diminished technical capacity to implement the activities of the program) the risk is considered medium.	
	A3.2 Experience in Intersectoral cooperation.	The current level of risk is medium because, although there are instruments and previous experiences of intersectoral cooperation, in practice the objectives are not fully achieved, either due to administrative issues or technical capacities.	
	A3.3 Experience of collaboration between different levels of	The level of risk is considered low since there is evidence of collaboration between the	

Risk Factors	Indicators	Reason	Reversal Set-Aside Percentage
	government	different levels of government involved in the Program.	
	A4.1 Experiences in decoupling deforestation and degradation from economic activities.	The risk associated with this indicator is considered medium, since several examples of decoupling of production and deforestation can be found through a variety of interventions (protected natural areas and/or community forest management and/or forest restoration and protection and/or payment for environmental services)	
	A5.1 Relevant legal and regulatory environment conducive to achieve Programs objectives.	The risk associated with this indicator is considered low, since legal frameworks have been established that promote emission reduction and climate change objectives.	
Risk Factor B. Exposure and vulnerability to natural disturbances.	B.1 Exposure and vulnerability to forest fires	Forest fires represent a high risk for Chihuahua, Coahuila, Durango and Nuevo León: from 2001 to 2018, 20,869 wildfires affected 1,491,293 hectares in the four states of the jurisdiction.	**10%** Reversal Risk is considered high for some subcategories and or medium /low for others
	B.2 Exposure and vulnerability to storms	It was identified that in the four states of the jurisdiction, the effects occur indirectly, by runoff in high areas, which leads to considering them as a risk categorized as low.	
	B3: Exposure and vulnerability to droughts	At the national level, in order of severity of the unfavorable effects of droughts are the states of Chihuahua, Coahuila, Durango, Nuevo León, so the risk is considered high.	
	B4: Forest Pests and Diseases	Durango, Chihuahua and Nuevo León are States with the largest areas affected by forest diseases. Coahuila presents low attention to affected surfaces (49%, SEMARNAT, 2019) and important areas affected by pests, so the risk is considered high	
Actual Reversal Risk Set-Aside Percentage = Result A (15%) + Result B (10%) = 25%			

Annex 1: Drivers of AFOLU Emissions and Removals

Greenhouse gas (GHG) emissions that are generated in the AFOLU sector correspond to agriculture, livestock and land use activities, within which emissions from deforestation and removals from forest lands are estimated.

At the national level, the main driver of gross deforestation in Mexico is the change of land from forest to pasture, generally used for extensive cattle ranching. In the period 2001-2019, an average annual conversion rate of 212,834 ha is calculated; in order of magnitude is followed by the change of forest land to agricultural land with 22%; and the conversion of land for urban areas growth with 4.2%. Gross deforestation in 2019 was 226,581 ha. An analysis of gross deforestation at the ecoregion level for 2019 allows us to identify that, in order of importance, the Rainforest ecoregion presented gross deforestation of 99,749 ha, equivalent to 44.0% of the total, followed by the Dry Forest ecoregion with 59,755 ha, equivalent to 26.4%, the Great Plains ecoregion with 15.7% (35,632 ha) and, finally, the Temperate Sierras ecoregion with 12.6% (28,555 ha).

The drivers or indirect drivers at national level of these land changes are associated with institutional factors such as the lack of alignment of national public policies for rural development, as we can find those that encourage agricultural production without considering their impact on deforestation and degradation processes; local socioeconomic factors such as the lack of cohesion and social organization within communities and ejidos, which own most of the country's forest area[66], poverty and social inequality[67], lack of environmental values and responsibility that encourage growth based on unsustainable production, lack of technical and managerial capacities within the public sector such as secretariats and agencies, difficulties in accessing sources of financing, insufficient technology transfer to improve productivity, lack of proactive transparency and information for decision making, as well as cross-cutting policies that promote forest land's management, conservation and use. All of the above-mentioned factors have created the conditions for production based on horizontal expansion to be the most practical option, causing loss of vegetation cover[68].

The preliminary identification of main direct and indirect drivers of deforestation and forest degradation consists of the analysis of hotspots of deforestation at the state level[69], which were classified by type of transition (see section *4. GHG Reporting and Accountability* for more information). In addition, a documentary review was conducted and interviews with relevant stakeholder (e.g., public officials, researchers, and members of non-governmental organizations) in each state were conducted to complement the initial analysis that would serve as a basis for the participatory planning process, in

[66] Madrid, L. & Núñez, Juan Manuel & Quiroz, Guiseeppe & Rodríguez, Y.. (2009). La propiedad social forestal en México. Investigación ambiental Ciencia y política pública. 1. 179-196.

[67] People living in poverty are forced to make sometimes disproportionate use of the natural resources at hand, which helps them temporarily to alleviate their most immediate needs. Also, income, land, and wealth inequality hinder the societal cooperation needed to protect forests, and could be that land use change is easier and cheaper when land ownership is concentrated in a few hands.

[68] CONAFOR. (2020c). Nivel de referencia de emisiones forestales de México (2007-2016). Disponible en https://redd.unfccc.int/files/nref_2007-2016_mexico.pdf

[69] This information was defined based on the information generated by CONAFOR and applying the methodology described in the document "Estimation of gross deforestation rates at the state level for the period 2001-2018 using the sampling method. Technical sheet." for the elaboration of maps of critical deforestation zones (hotspots) at the state level. This analysis was performed in ArcMap 10.3 software, in which maps of the location of sampling points and critical deforestation zones were generated for each state.

which relevant stakeholders confirmed the main drivers in their region (see section 3.2 *Description of stakeholder consultation process*).

In the states of Chihuahua and Durango, net emissions from the sector are negative due to the capture of carbon in the forest cover present in the mountains and jungles of the state. Removals from forest land are projected to increase in the states of Chihuahua and Durango, as a result of the implementation of activities such as payment for environmental services, community forest management, and forest restoration and protection, which are beneficial in reducing emissions by decreasing the occurrence of deforestation in areas where they are undertaken, keeping net emissions neutrality in the sector. In Nuevo Leon and Coahuila, emissions from livestock are the highest.

The main activities that generate emissions in the region are also the main drivers of deforestation. In the hotspots of deforestation in the four states, forest land converted mainly to grassland and cropland, and to settlements to a lesser extent. Accordingly, it is identified that intensive cattle rearing for milk production is one of the main direct drivers of deforestation in Chihuahua and the Laguna region located in the states of Coahuila and Durango. This is due to the growing need for forage, which represents the largest proportion of cropland. In Coahuila and Nuevo Leon, urbanization is also one of the main direct drivers of deforestation. Unregulated extensive cattle rearing has also caused deforestation in Durango, Nuevo Leon and Chihuahua where the unsustainable practices have generated problems of overgrazing in native grasslands. In addition, commercial agriculture is a direct driver of deforestation in all four states, due to increased demand for agricultural products for export. This activity is concentrated in certain regions of each state: Nuevo Casas Grandes in Chihuahua[70], Center-Desert in Coahuila[71] and the North, South and Citrus regions in Nuevo Leon[72].

Indirect drivers of deforestation mainly include institutional factors such as lack of coordination between agencies and levels of government that has generated a lack of mainstreaming in conservation and rural development policies; lack of law enforcement either due to lack of institutional capacity or corruption; poor governance that hinders the implementation of policies throughout the territory; the lack of training and low access to information on sustainable alternatives, as well as capacity and investment for applying those alternatives. In particular, the granting of concessions for the use of groundwater has been decisive for the expansion of croplands.

Other direct drivers of deforestation and forest degradation include illegal logging mainly in Chihuahua and Durango; mining in Chihuahua and Coahuila; and overexploitation of timber and non-timber resources in Coahuila, Durango and Nuevo Leon. In recent years there have been adverse weather conditions in the region that have generated drought conditions. As a consequence, forest fires of greater intensity and damage have occurred, as well as greater vulnerability to forest pests and diseases. According to projections of climate change scenarios, an increase in temperature and a reduction in precipitation are expected, increasing vulnerability to droughts and derived impacts.

[70] In particular, the region produces cotton, onions, apples, walnuts and peaches, which are mainly exported to the United States.

[7171] In the Central-Desert region, there has been an increase in the area used for irrigated crops such as fruit trees and pasture land.

[72] The North, South and Citrus regions in Nuevo Leon are known for the cultivation of potatoes, wheat and corn, oranges, lemons and grapefruit, and small orchards of walnuts, apples and peaches.

Please find the full report: Identification of direct and indirect drivers of loss of forest cover, forest degradation and greenhouse gas emissions from Agriculture, Forestry and other land uses in the state of Chihuahua, Coahuila, Durango and Nuevo León at: https://drive.google.com/file/d/1uOh8q-Axq1XBuEE5ptgANaDTjxJkIhBm/view?usp=sharing

Annex 2: Financing Plan for ISFL ER Program

Please include the summary financing plan according to the template below.

Section 3.1.3 briefly describes the Financing Plan to implement the Emissions Reduction Program. This annex presents a summary table according to the ISFL template.

The extensive Financing Plan, which contains financial and economic analysis, sensitivity analysis and allocation of the PRE financing budget, gaps and financing sources, can be consulted at the following link:

https://drive.google.com/drive/folders/17BpEd_I0PAx23yXjNHdOQPluDiSM34rY?usp=sharing

Summary of Financing Plan of an ER Program

S. no	Item	Sub-item	Activity	Financiamiento Categoría (donativo/ préstamo	A 1 (M USD)	A 2 (M USD)	A 3 (M USD)	A 4 (M USD)	A 5 (M USD)	Total	Remarks
1	**Costs**	**1(a) Implementation Costs**	Community Forest Management and Value Chains	Public resources	7.5	7.5	7.5	7.5	7.5	37.5	
			Micro-watershed Forest Restoration	Public resources	9.25	9.25	9.25	9.25	9.25	46.25	
			Environmental Services	Public resources	5.6	5.6	5.6	5.6	5.6	28	
			Forest Protection	Public resources	1.1	1.1	1.1	1.1	1.1	5.5	
			Agroforestry and Silvopastoral Systems	TBD	1.5	1.5	1.5	1.5	1.5	7.5	
			Commercial Forest Plantation	Public resources	0.46	0.46	0.46	0.46	0.47	2.31	
			State budget		2.95	2.95	2.95	2.95	2.95	14.75	
			Sub-total - Implementation Costs		**28.36**	**28.36**	**28.36**	**28.36**	**28.37**	**141.81**	
		1(b) Institutional Costs CONAFOR	Program administration costs in the 4 states (salaries)		6.03	6.03	6.03	6.03	6.03	30.15	
			Operating expenses in the		1	1	1	1	1	5	

S. no	Item	Sub-item	Activity	Financiamiento Categoría (donativo/ préstamo	A 1 (M USD)	A 2 (M USD)	A 3 (M USD)	A 4 (M USD)	A 5 (M USD)	Total	Remarks
			4 states								
			Training and capacity building		0.6	0.6	0.6	0.6	0.6	3	
			Stakeholder consultations and grievance resolution		0.05	0.05	0.05	0.05	0.05	0.25	
			SESA tool development, ESMF		0.03	0.03	0.03	0.03	0.03	0.15	
			Subtotal - Institutional costs		**7.71**	**7.71**	**7.71**	**7.71**	**7.71**	**38.55**	
		1(c) Transaction Costs	REL/ RL design costs		0.08	0	0	0	0	0.08	
			MRV costs		1.23	0.99	1.03	0.99	1.03	5.27	
			Subtotal - Transaction costs		**1.31**	**0.99**	**1.03**	**0.99**	**1.03**	**5.35**	
		Total costs: 1(a)+ 1(b) + 1(c)			**37.38**	**37.06**	**37.10**	**37.06**	**37.11**	**185.71**	
	Financing sources	**2(a) National**	National budget		26.84	26.84	26.84	26.84	26.85	134.20	
			State budget		2.95	2.95	2.95	2.95	2.95	14.75	
			Other public								
			Private								
			Subtotal - national		**29.79**	**29.79**	**29.79**	**29.79**	**29.80**	**148.95**	
		2 (b) International	Bilateral	Other (Donativo/ Préstamo)	0	0	0	0	0	0	
			Multilateral	Other (Donativo/ Préstamo)	0	0	0	0	0	0	
			Private	Source 1 (Donativo/ Préstamo)	0	0	0	0	0	0	
			Sub-total -internacional		0	0	0	0	0	0	

S. no	Item	Sub-item	Activity	Financiamiento Categoría (donativo/ préstamo	A 1 (M USD)	A 2 (M USD)	A 3 (M USD)	A 4 (M USD)	A 5 (M USD)	Total	Remarks
		2 (c) Revenue from products & services [73]	-	-	0	0	0	0	0	0	
			Subtotal: Revenues from products and services		0	0	0	0	0	0	
		2(d) Revenues from emissions reductions [74]	Revenues from emissions reductions - contracted		0	0	0	0	0	0	
		Total sources of financing: 2(a)+2(b)+2(c) +2(d)			**29.79**	**29.79**	**29.79**	**29.79**	**29.80**	**148.95**	
3	**Surplus/ gap**	**Total funding source - total costs**			**-7.59**	**-7.27**	**-7.31**	**-7.27**	**-7.31**	**-36.76**	
4	**Options to reduce gap**[75]	**4(a) Traditional sources – grants/ loans**	Option 1	IFAD, Adaptation Fund, GEF, other sources	**0**	**0**	**0**	**0**	**0**	**0**	
		4(a) Alternative sources - (e.g., guarantees/PES)	Option 1	-	**0**	**0**	**0**	**0**	**0**	**0**	
		Total of options for financing gap – 4(a)+4(b)	-	-	**0**	**0**	**0**	**0**	**0**	**0**	
5	**Sensitivity**	**+ 10% cost**			-3.1%	-3.1%	-3.1%	-3.1%	-3.1%	-3.1%	
		- 10% in financing			-3.6%	-3.6%	-3.6%	-3.6%	-3.6%	-3.6%	
		- 10% revenue			-3.6%	-3.6%	-3.6%	-3.6%	-3.6%	-3.6%	
		+ 20% cost			-5.8%	-5.8%	-5.8%	-5.8%	-5.8%	-5.8%	
		- 20% in			-7.9%	-7.9%	-7.9%	-7.9%	-7.9%	-7.9%	

[73] Income from products and services is obtained by the owners of the forest lands, as well as the residents of the forest areas, so it cannot be considered as an additional funding source for the emissions reduction program. However, the above does not limit the implementation of the Program.
[74] The income from the reduction emissions relies on the terms set in the ERPA, if applicable.
[75] The management of financing through credits or donations is not considered.

S. no	Item	Sub-item	Activity	Financiamiento Categoría (donativo/ préstamo	A 1 (M USD)	A 2 (M USD)	A 3 (M USD)	A 4 (M USD)	A 5 (M USD)	Total	Remarks
		financing									
		- 20% revenue			-8.0%	-8.0%	-8.0%	-8.0%	-8.0%	-8.0%	
		+ 30% cost			-8.2%	-8.2%	-8.2%	-8.2%	-8.2%	-8.2%	
		- 30% in financing			-13.2%	-13.2%	-13.2%	-13.2%	-13.2%	-13.2%	
		- 30% revenue			-13.3%	-13.3%	-13.3%	-13.3%	-13.3%	-13.3%	
		- 2% discount rate			-120%	-120%	-120%	-120%	-120%	-120%	
		+ 2% discount rate			96%	96%	96%	96%	96%	96%	
6	**Identification of financing risks**	Major risks affecting costs, revenues, financing, etc.	Labor shortages, non-internalized positive externalities, unstable public policies and budgets, lack of cooperation between public offices, uncertainty in the social benefits of restoration, lack of technical capabilities, etc.								
7	**Proposed measures**	Measures to address the funding/risk gap	Technical assistance, effective mechanism to offset positive externalities, inter-agency cooperation, improved selection criteria								

Annex 3: Assessment of Land and Resource Tenure in the Program Area

The Political Constitution of the United Mexican States (CPEUM, for its acronym in Spanish) establishes different types of land ownership in Article 27: the original property of the Nation, public property, and private property.

The ownership of the Nation expressly states that the ownership of the lands and waters included within the limits of the national territory corresponds originally to the Nation, which exercises the maximum power over them and may cede them to private individuals to constitute the private property, considering that, if applicable, it may dispose of them by the means provided for in the Supreme Law itself. Thus, although the ownership of lands and waters may be transferred to private parties, this does not imply that the dominion of the natural resources found therein is always transferred since the fourth and fifth paragraphs establish that the Nation has direct dominion over them, that is to say, only it may dispose of the resources or goods described in those paragraphs, but in use of that sovereignty, it authorizes the governed their exploitation and temporary use through a concession, except in the cases of exception provided in the sixth paragraph.

Public patrimony consists of the nation reserving direct dominion over the goods and resources, referring to the lands, waters and other resources that have not been transferred to private parties. The national patrimony is composed of public assets and private assets of the Federation, which are regulated by the General Law of National Assets (Ley General de Bienes Nacionales, LGBN).

State assets are governed by administrative law, mainly constituted by Articles 27, 42 and 132 of the Constitution, the General Law of National Assets and by other special laws that regulate specific national assets such as the Mining Law, the Federal Law of the Sea, the Regulatory Law of Article 27 of the Constitution on the Petroleum Industry, the Law of General Communication Roads, the Law of National Waters, the Regulatory Law of Article 27 of the Constitution on Nuclear Energy, the Law of Religious Associations and Public Worship, the Law of Ports, the Federal Law of Monuments and Archeological, Artistic and Historic Zones, among others.

Another property regime defined in this constitutional article is social property: *ejido* and communal property. In Mexico, the *ejido* is considered to include the land, forests and waters that were granted to the population centers through expropriation by the Federal Government.

The main characteristic of the ejidos is that they were granted in property to the beneficiary nuclei, being inalienable, imprescriptible, unsuitable and non-transferable, that is, they could not be alienated, assigned, leased, mortgaged, or encumbered in whole or in part, since their purpose was the support of the members of the nucleus, and they personally worked the land. The Constitution recognizes the legal and patrimonial personality of the ejidos or ejidal population nuclei, as well as their right of ownership over the lands that have been endowed to them or those acquired by any other title.

With the reform of Article 27 of the Constitution in 1992, the redistribution of land ownership was achieved, which implied the beginning of conflicts between ejidos, communities, and private landowners.

It should be noted that *ejido* lands may be the subject of any association or use contract entered into by the *ejido* population nucleus or by the *ejidatarios*, depending on whether the land is for common use or parceled, respectively. The duration of contracts for the use of *ejido* land by third parties will be in accordance with the corresponding productive project, will not exceed thirty years, and could be extended.

It should be noted that this ownership regime is replicated in the four states under the jurisdiction of the RE ISFL Program.

The modalities to the property referred to in the constitutional text imply: i) the power of the State to determine how the attributes of the property will be used, that is, the use, enjoyment and disposition of the same, following the public interest; ii) the modalities of the property may be given through limitations or privileges, in any case, it will be subject to the public interest.

The regulation of the use of natural resources susceptible of appropriation is reflected in the regulations issued for their application in matters concerning water (National Waters Law), forestry (General Law of Sustainable Forest Development), wildlife (General Law of Wildlife), fishing (General Law of Sustainable Fishing and Aquaculture), among others, where the requirements for a private individual to be able to dispose of his property are defined. In other words, the resources that may fall within the sphere of private property cease to have an absolute right and become a right limited by the public interest.

Concerning the regulation on the ownership of forest resources, Article 5 of the General Law of Sustainable Forest Development establishes that these resources correspond to the ejidos, communities, indigenous peoples and communities, individuals or legal entities, the federation, the Federal Entities, Municipalities and Territorial Districts of Mexico City that are owners of the land where they are located; however, due to their importance, the State establishes modalities among which is to provide the conditions for integral rural development of forestry activities for the correct use of the land.

Likewise, Article 7, Section XLVII of this law defines "forest resources" as the "vegetation of forest ecosystems, their services, products and residues, as well as the soil of forest and preferably forest lands".

The possible conflicts that could arise according to the trend of recent years could be the deterioration of the governance of the ejidos and communities in their forms of organization and decision-making processes, which has had repercussions on the levels of participation that impact their territories and the better performance of public policies aimed at the countryside. However, there are procedures for their resolution, through collaboration with the National Agrarian Registry (RAN, for its acronym in Spanish) or the Agrarian Procurator’s Office (PA, for its acronym in Spanish) who join in the resolution of conflicts of ejidos and communities with procedure established in the relevant legislation.

Annex 4: Current Version of the Benefit Sharing Plan for the ISFL ER Program

1. Introduction

The BioCarbon Fund's (BioCF) Sustainable Forest Landscapes Initiative (SFLI) aims to promote and incentivize the reduction of greenhouse gas emissions while enhancing carbon sequestration through improved land management strategies. These strategies encompass various aspects such as emission reduction from deforestation and forest degradation, climate-smart agriculture, and enhanced integrated and complementary land use planning and policies. By embracing a landscape-centric approach, the initiative strives to implement a comprehensive development strategy that is climate-inclusive, equitable, and productive, seeking positive environmental, social, and economic outcomes.

Mexico is poised to implement an ambitious emission reduction (ER) program that holds the potential to significantly curtail greenhouse gas (GHG) emissions. This endeavor offers the prospect of accessing economic resources to facilitate the attainment of these goals. The program's jurisdiction spans the states of Coahuila, Chihuahua, Durango, and Nuevo León. In the event of achieving payment for results, this segment presents the envisioned Benefit Sharing Plan (BSP) for Mexico's Emission Reduction Program under the ISFL framework. This plan outlines the mechanism for directing payment for the achieved outcomes to the geographical areas responsible for the emission reductions.

The proposed BSP aligns itself with international agreements signed by Mexico, as well as with constitutional and secondary legislative provisions.[76]

Particularly noteworthy are Articles 4 and 25 of the Political Constitution of the United Mexican States, which acknowledge every individual's entitlement to a healthy environment and underscore the pivotal role of national development in ensuring it. Additionally, the BSP takes into account the tenets of the General Law of Sustainable Forest Development, including Article 5 regarding forest resource ownership, Article 8 pertaining to the observance of safeguards and human rights, Article 138 bis concerning international cooperation agreements concerning emission reduction mechanisms in the forestry sector, and Article 139 relating to the Mexican Forest Fund's role as a financial instrument to bolster forest development and mitigate climate change's impact on forestry.

Likewise, the General Law on Climate Change, in Article 33 (Section II), emphasizes mitigation policies, while Article 34 (Section III) focuses on emission reduction and carbon capture within agriculture, forestry, and other land use sectors, and underscores the importance of preserving ecosystems and

[76] Indicator 33.1: The design and implementation of the Benefit Sharing Plan adhere to applicable laws, including national scope and legally binding obligations stipulated in international legislation.

biodiversity. The third transitory article, Section II, subsection a), specifically mandates the formulation of strategies, policies, measures, and actions to achieve a zero percent rate of carbon loss in original ecosystems.

2. Description of Institutional Arrangements for Benefit Sharing

The Benefit Sharing Plan serves as the pivotal instrument for establishing the mechanism through which the transfer of monetary resources takes place when payment is made for the results arising from the proven reduction of greenhouse gas emissions within the intervention areas of the ER Program in the states of Chihuahua, Coahuila, Durango, and Nuevo Leon.

This process is characterized by its participatory, transparent, and consensual nature, seeking to create localized frameworks for benefit sharing while adhering to the national legal framework, safeguards, and operational policies of the World Bank.

The intended recipients of these benefits are (individuals and legal) entities involved in the ER program's implementation within the identified intervention areas of the four federal entities. These recipients, as outlined in the Benefit Sharing Plan, have the potential to receive either monetary or non-monetary advantages when results trigger payment. Among the potential beneficiaries are individuals, communities, ejidos, women, youth, indigenous populations, producer groups, and other entities deemed by potential beneficiaries to benefit from emission reductions.

In the context of Mexico, the entitlement to receive economic benefits from emissions reduction payments lies with owners, possessors, users, and inhabitants who actively contribute to emissions reduction within the ER Program intervention areas, always respecting their right to complete and effective participation in devising benefit sharing mechanisms, as well as the autonomy to set local priorities (CONAFOR, 2017).

2.1 General Principles for Benefit Sharing

The principles for the distribution of benefits represent guiding and relevant values, so it is necessary to guarantee them and ensure their inclusion throughout the participation and design process. These principles are[77]:

1. Legality: Benefit sharing must align with the existing national legal framework while respecting property rights, indigenous rights, and all relevant legal provisions.
2. Legitimacy: Agreement on benefit sharing must involve the active participation of those with territorial rights within the identified areas of the ER Program, encompassing both their implementation and participation.
3. Effectiveness: Benefit sharing should actively contribute to achieving the emission reduction objectives outlined in the Mexico Program.

[77] Zuñiga and Deschamps, 2014 https://www.ccmss.org.mx/wp-content/uploads/2015/06/ESP-Revision-PEATREDD.pdf

4. Efficiency: The mechanism should incentivize and reward activities that yield emission reduction or removal at the lowest feasible transaction cost.
5. Equity: Fair distribution of monetary benefits should occur among all stakeholders engaged in local-level emission reduction actions, irrespective of cultural, social, and gender differences.
6. Additionality: Benefits should be attributed to actions that demonstrably lead to emissions reduction within forest landscapes and that would not have transpired without ER Program implementation.
7. Transparency: Transparent benefit sharing should enable ongoing monitoring and evaluation of resource management. This encompasses unfettered access to information, accountability, and clearly defined mechanisms for raising concerns.

3. Financial Architecture for Benefit Sharing

CONAFOR, entrusted with the implementation of the Emission Reduction (ER) Program, will receive resources from the payment by results via the Mexican Forest Fund. Once these resources are acquired, they will be equitably distributed among beneficiaries across the states within its jurisdiction. A specific set of guidelines will be employed to ensure the allocation of these payment by results resources. These guidelines will focus on directing the funds toward supporting activities identified and prioritized through a participatory construction process[78], involving communities and ejidos. The overarching goal of sharing benefits generated by the Emission Reduction Program is to fortify and sustain activities within intervention areas. Primarily, these efforts aim to support landowners and residents in regions actively addressing the root causes of deforestation and forest land degradation.

The concept of financial architecture pertains to the public institutions and regulations governing monetary and financial relationships on both national and international scales. In the context of the Sustainable Forest Landscapes Initiative (SFLI), its successful implementation necessitates robust, stable, and efficient financial mechanisms. These mechanisms must enable seamless resource transfers from payment for results to beneficiaries who have effectively executed emission reduction actions within the ER Program's intervention zones. Such mechanisms serve as a means of rewarding performance-based achievements (Vatn and Angelsen, 2010).

These financial structures must possess the capability to provide financing for designated activities and generate incentives, all while minimizing transaction costs. Additionally, they should incorporate measures to ensure accountability and transparency in resource utilization. Among their key responsibilities are[79]:

[78] The proposed methodology will undergo an internal consultation process with SEMARNAT, CONAFOR, INECC, and SADER, key institutions that have an impact on the ISFL territory. This methodology also indicates that the participatory process with communities for designing local benefit-sharing arrangements will commence once a defined payment agreement exists, and the RE Program is in implementation. The participatory construction process is explained in section 7 of this document.

[79] Vatn, A. and A. Angelsen, 2010. Options for REDD+ architecture at the national level in Angelsen, A. with Brockhaus, M., Kanninen, M., Sills, E., Sunderlin, W. D., and Wertz-Kanounnikoff, S. (eds.) 2010. Implementing REDD+: National strategy and policy options. CIFOR, Bogor, Indonesia. https://www.cifor.org/publications/pdf_files/Books/BAngelsen1001.pdf Accessed October 2022.

a) Holding the necessary legal, financial, operational, institutional, and fiduciary authority for efficient resource transfers;
b) Establishing dedicated sub-accounts to segregate funds sourced from payment by results from NPISHs (Non-Profit Institutions Serving Households) that can be disbursed over multi-year and long-term periods;
c) Facilitating the disbursement of resources to support policies, programs, and activities aligned with the ER Program's objectives;
d) Create systems for disbursing incentives or compensation to individuals and communities engaging in emissions reduction and carbon stock enhancement actions;
e) Ensure a just and legitimate distribution of the financial benefits stemming from payment for results.

Considering the foregoing, the proposed financial mechanism of choice is the Mexican Forest Fund (FFM)[80]. This selection is underpinned by the FFM's capacity to serve as a robust, efficient, and effective financial instrument. It facilitates the transparent, equitable, and fair reception and transfer of national and international resources. With clearly defined allocation rules, the FFM enables payment for effective emissions reduction outcomes, benefiting potential recipients across four federal entities due to ER Program activities and benefit-sharing mechanisms[81].

Consequently, the FFM will act as the conduit through which CONAFOR manages the resources obtained from payment by results for verified emissions reduction achieved during the ER Program's agreed reference period with the World Bank. The utilization of the FFM presents distinct advantages compared to other financial mechanisms (CONAFOR, 2017):

(i) Effective Allocation of Resources: The proficiency in assigning resources to execute actions addressing the primary drivers of deforestation and degradation is paramount.
(ii) Efficient Cost Management: Maximizing efficiency in order to minimize transaction costs while channeling funding towards more cost-effective actions is crucial.
(iii) Equitable Resource Allocation: Ensuring fairness in resource distribution, as well as monetary benefits and co-benefits, is a fundamental principle.

(iv) Promotion of Co-benefits: Promoting co-benefits, such as poverty reduction, establishment of alternative livelihoods, biodiversity protection, safeguarding landowners' and possessors' rights, climate change adaptation, is a pivotal aspect. This financial instrument enables not only the utilization of federal budget resources for forestry sector development but also the operation of

[80] Article 139 of the General Law for Sustainable Forest Development outlines the FFM as a pivotal instrument for promoting the conservation, sustainable usage, and restoration of forest resources. It facilitates access to financial services in the market, propels projects fostering the integration and competitiveness of the productive chain, and devises mechanisms for environmental goods and services collection and payment.
[81] The legal basis for benefit-sharing agreements rests on Article 138 Bis of the General Law for Sustainable Forest Development (LGDFS). This empowers SEMARNAT to engage in international cooperative emission reduction mechanisms in the forestry sector, with technical support from CONAFOR. CONAFOR, in turn, has the authority to collaborate with federal entity governments regarding their participation in such mechanisms. It mandates that resources derived from payment for results due to emissions reduction shall be allocated based on a Benefit Sharing Plan, aligned with the forestry policy's objectives and criteria established in the Law.

specialized mechanisms, like the Designated Beneficiary (DB), through a tailor-made guideline that complies with applicable regulations. Moreover, the FFM addresses medium-term conservation, restoration, protection, and forest management processes, vital to the forest sector's progression.

Concerning CONAFOR's patrimony composition, Article 17, Section II of the LGDFS enumerates its integration through donations, inheritances, contributions, and legacies from individuals or any public/private, national/international institution. The FFM, with its capacity to establish specific sub-accounts, facilitates identification, operation, and distribution of labeled resources from the Third Tranche of the BioCarbon Fund, for validated and verified issues. These resources are distinct from the federal budget, serving the operation of the Support Program for Sustainable Forestry Development. This streamlined administrative and financial approach eases benefits sharing, anchoring and earmarking resources to be disbursed through a dedicated program for emission reduction activities during the agreed implementation period across the four states.

3.1 Resource Transfer from Payment by Results

In line with the above considerations, the financial mechanism governing the transfer of resources from the WB to the FFM shall encompass the following essential operations:

1. Publication of Revised Emission Reduction Program: This step involves releasing the revised Emission Reduction Program, along with an advanced Draft Benefit Sharing Plan, constructed through a participatory approach. The advanced draft of the Benefit Sharing Plan should be made available to all parties involved in the ER program in both English and Spanish. It must be presented in a comprehensible format and language prior to the signing of the ERPA.
2. Payment Agreement with SEMARNAT and WB: If applicable, SEMARNAT and the World Bank will sign a payment agreement that outlines the target for reducing tCO2e emissions over a defined period. This agreement will be aligned with the Reference Level, reduction potential, and agreed-upon volume of emissions reduction.
3. Initial ER Program Activities: In the event of applicability, CONAFOR will execute the preliminary activities specified in the Emission Reduction Program across Durango, Chihuahua, Coahuila, and Nuevo Leon.
4. Participatory Methodology Implementation: SEMARNAT, supported by CONAFOR, will initiate the participatory methodology for designing and consulting on local benefit sharing arrangements. This process will involve prior, free, and informed consultation with stakeholders within the ER Program implementation areas. Special attention will be given to historically marginalized groups such as indigenous people, women, and young individuals.
5. Generation of Local Benefit-Sharing Agreements: Agreements concerning local arrangements for benefit sharing will be established, considering possible complementary activities. These agreements will be consensus-driven, respectful of safeguards[82], and compliant with the World Bank's Environmental and Social Framework.

[82] The mentioned safeguards refer to REDD+ safeguards, which for Mexico are covered by a REDD+ Safeguard Information System.

6. Emission Reduction Monitoring: CONAFOR will oversee the monitoring of greenhouse gas emissions reduction across the four participating states.
7. Preparation and Submission of Monitoring Report: CONAFOR will compile and present a report detailing the results of emissions reduction monitoring to the World Bank.
8. Emission Reduction Verification: The World Bank, relying on CONAFOR's report, will undertake the verification of emission reductions and evaluate adherence to environmental and social management procedures.
9. Payment Request: Once verified, CONAFOR will formally request payment for results from the World Bank, drawing upon information derived from the MRV (Measurement, Reporting, and Verification) process for the respective period.
10. Transfer of Payment for Results: The payment for results will be transferred from the World Bank to the Mexican Forest Fund (FFM).
11. FFM Resource Reception: The FFM will receive this payment in a designated concentrator account. The funds will then be deposited into a dedicated sub-account established for the ER Program, under the administration of CONAFOR. Direct payments to beneficiaries will be facilitated through this sub-account.
12. Publication of Operating Guidelines: CONAFOR will prepare and publish Operating Guidelines based on agreed local benefit sharing arrangements. These guidelines will outline the allocation of support for complementary activities aimed at reinforcing the ER Program.
13. Resource Distribution and Allocation: The resources will be distributed and labeled as follows: a) 20% for management and institutional support, and b) 80% to be allocated across the territory to final beneficiaries who actively participated in emissions reduction activities[83]. This allocation also extends to individuals considered beneficiaries as per local benefit-sharing arrangements.

4. Benefit sharing

4.1 Types of Benefits

The implementation of the Emission Reduction Program has the potential to yield two distinct types of benefits:

Carbon-associated benefits: Derived from greenhouse gas mitigation and corresponding to payments for results achieved through validated and verified emission reductions, as agreed with the World Bank, which can be either monetary or non-monetary.

Non-Carbon Benefits or Co-Benefits: While not directly tied to GHG mitigation, these benefits emerge from the ER Program's implementation and operation. They encompass a wide array of advantages such as biodiversity conservation, environmental services provision, soil and water preservation, enhanced technical capacities, social cohesion, gender inclusivity, improved local livelihoods, and strengthened governance, among others.

[83] The activities considered for payment for results must be complementary and agreed upon through the participatory process of local agreements with stakeholders. These activities must differ from the "initial activities" currently offered in the Sustainable Forest Development for Well-Being Program and other programs and subsidies that impact the territory annually.

The Proposed Design and Establishment of Benefit Sharing Guidelines (BSP) suggests the creation of specialized guidelines for distributing carbon benefits. The specific types of non-carbon benefits (co-benefits) and their respective measurement indicators are elaborated upon in greater detail in section 3.3 of the ER Program document.

In broad terms, local-level distribution of carbon benefits can manifest in two forms: monetary and non-monetary (goods or services). These distributions should be directly tied to ER Program implementation, designed to provide direct incentives to beneficiaries, and subject to objective, systematic, and transparent monitoring. The methodology for delivering benefits and the manner of distribution depend on program participants who, through participatory processes, define how they wish to receive benefits in accordance with agreed decision-making protocols.

Here is a succinct clarification of monetary and non-monetary benefits:

Monetary Benefits: These are quantifiable in economic terms and translate to cash payments directed to participants actively involved in emissions-reducing activities.

Non-Monetary Benefits: These are benefits not expressed in direct financial or monetary values to beneficiaries. Instead, they materialize as services or other provisions funded by payments. These offerings are intended to facilitate emissions reduction activities, such as training, technology transfer, technical assistance, seeds, seedlings, inputs, equipment, infrastructure, and the development of alternative livelihoods, among other possibilities.

The disbursement of these resources hinges on the demonstrated reduction, validation, and verification of emissions, and their accountability against an established baseline within the ER Program. The identification of potential beneficiaries, the mechanism for benefit sharing, and the timing are all delineated in the Benefit Sharing Plan, shaped by stakeholder agreements.

4.2 Mechanism for Benefit Sharing

Benefit sharing transpires upon receipt of payment for results and the subsequent transfer of resources from the World Bank to the Mexican Forest Fund (FFM). The financial infrastructure established within the FFM ensures traceability, enabling direct channeling of benefits (monetary and non-monetary) from the FFM to beneficiaries[84], thereby minimizing transaction costs. CONAFOR assumes the responsibility of managing and operating these resources through spatial guidelines, with state governments acting as program facilitators, but without direct intervention in the allocation of payment for results-derived resources.

Executing the ER Program and the BSP necessitates various costs encompassing execution, technical support, monitoring, and reporting. These costs are essential for the program's effective implementation. To address these expenses, CONAFOR designates a portion of up to 20% from the total

[84] In this case, it can be understood within local arrangements that there may be collective benefits that could bring advantages to the entire community and improve the quality of life for individuals who may not directly participate in activities, such as children, the elderly, people with disabilities, women, and youth without access to land, among others.

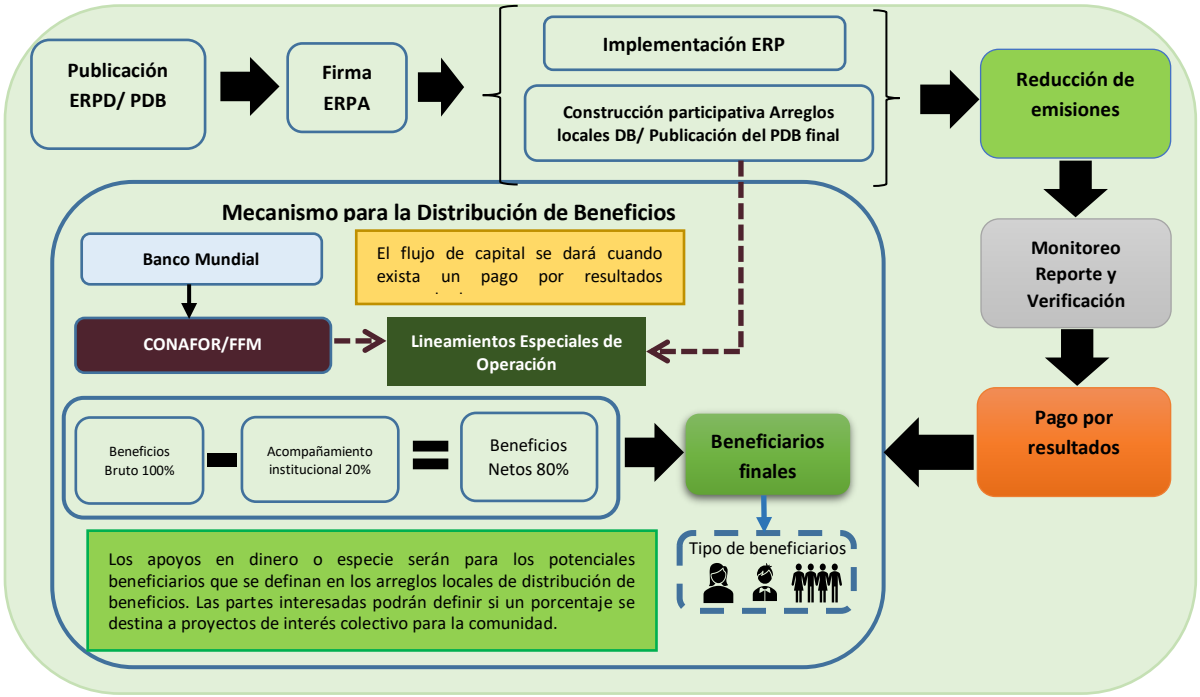
payments received from the World Bank. This allocation caters to cover these essential operational elements.

These resources are allocated for the costs of institutional and technical support operations, including the engagement of technical and social specialists in the headquarters or the Commission's Forestry Development Promotion Offices (state and local) across Chihuahua, Coahuila, Durango, and Nuevo Leon. It's pertinent to note that CONAFOR possesses its own resources to sustain its programs, thus operations will remain unaffected, as CONAFOR can make an initial investment for the ER Program's initiation[85].

In this manner, the resources accessible to ultimate beneficiaries will encompass up to 80% of the resources garnered from emissions reduction, as the establishment of a contingency fund is not under consideration. The plan revolves around a payment for results solely in territories where verified emissions reduction has been demonstrated.

Hence, gross benefits encompass the payments Mexico receives for total validated and verified emissions reduction throughout the agreed program period. Net benefits encompass the sum distributed as benefits (both monetary and non-monetary) to final beneficiaries who participated in the program's implementation, with technical support costs deducted from this sum.

Image 1. Benefit sharing process



[85] In addition, CONAFOR has resources to operate the Sustainable Forest Development for Well-Being Program, from the resources approved in the Federal Expenditure Budget for the corresponding fiscal year; operating expenses will be provided for in the budget allocated for the Program itself and for CONAFOR. These expenses may be used for the hiring of consultants, technical assistance and associated travel expenses for promotion, reception, follow-up, control and supervision; as well as statistical, geographic and computer services, studies, evaluations, research and basic services for the operation of service windows".

4.3 Guidelines for Benefit Sharing

Beneficiaries under the RE Program may receive two categories of benefits: monetary (cash) and non-monetary (in-kind), the specifics of which are established in local benefit-sharing agreements. Additionally, beneficiaries possess the flexibility to allocate a portion of their payment for results to communal projects that foster the collective welfare of their communities. These projects contribute to enhancing livelihoods and expanding benefits to populations residing within eligible zones of the four federal entities. This provision is particularly beneficial for groups such as children, seniors, women, youth, indigenous communities, and individuals facing certain limitations. It's vital that these local arrangements transpire through participatory and transparent processes.

4.3.1 Initial Activities

These encompass actions executed during the Emission Reduction Program's (ERP) implementation, utilizing fiscal resources allocated via the Rules of Operation. These activities are integral to the ER Program intervention plan and receive substantial support from CONAFOR's Sustainable Forest Development for Well-Being Program. This program is categorized into five components:

1) Community Forest Management and Value Chains
2) Commercial Forestry and Agroforestry Plantations
3) Forest Restoration of Micro Watersheds and Strategic Regions
4) Environmental Services
5) **Forest Protection**

These activities serve as a foundational step towards ER Program implementation. They encompass a diverse array of actions designed to curtail emissions. The success of these activities hinges upon the initiation of an initial payment for results. This step enables the activation of complementary actions, funded through Special Operating Guidelines.

Additionally, plans are underway to promote agroforestry and silvopastoral systems, involving both producers and the private sector.

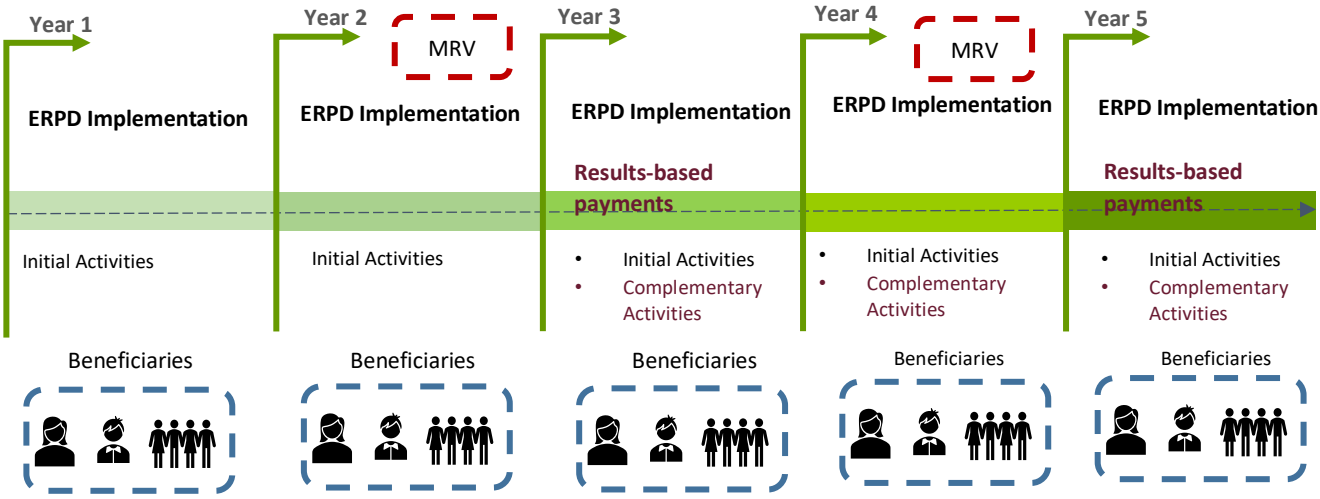
4.3.2 Complementary Activities

These actions will leverage resources potentially derived from ERP results, to be outlined in the formulation of local benefit-sharing agreements. The aim of these actions is to bolster the ERP's intervention and implementation model. Complementary activities are offered through a Special Operating Guideline.

These guidelines, designed and validated through local benefit-sharing arrangements, are exclusively applicable within ER Program implementation areas. Activation of these activities occurs after the allocation of resources from the World Bank to the Mexican Forest Fund[86].

These projects should be consulted, modified and adjusted, according to the observations and suggestions of stakeholders during the implementation of the ER-Program and follow-up of the BSP.

Figure 2: ERPD implementation period



4.3.3 General Benefit Sharing Criteria

In the equitable sharing of benefits, adherence to overarching principles is imperative, ensuring alignment with the World Bank's Environmental and Social Framework standards[87]. Particular emphasis is placed on the Environmental and Social Standards (EAS): EAS-7 (Indigenous Peoples) and EAS-10 (Stakeholder Engagement and Information Disclosure).

EAS-7 seeks to ensure respect for indigenous peoples and their rights, striving to enhance their quality of life by integrating activities that uphold their customs and practices, thereby alleviating poverty and social disparities. EAS-10 emphasizes robust stakeholder involvement, inclusivity, transparency, and

[86] The number of projects to be executed will depend on the demand and the budget ceiling of the resources received by the FFM for that cycle during the implementation period. It is expected that this process will occur every two years, given that MRV reports are conducted biennially.

[87] There are 10 environmental and social standards that must be applied to all projects financed by the World Bank to identify and manage environmental and social risks that may arise from project implementation financed by the Bank. In the case of the Sustainable Forest Landscapes Initiative of the RE Program, most of the standards pose low or no risks. However, it is important to consider them as they cover aspects such as labor safety, child labor, land tenure, displacement of productive activities, cultural heritage, biodiversity conservation, sustainable use of natural resources, pollution, pesticide use, waste management, health, financial structures, respect for indigenous peoples, and processes of stakeholder participation and consultation. Compliance with these standards should be integrated into all instruments generated and accompanied by various plans and systems required by the Bank, such as the Environmental and Social Commitment Plan (PCAS), the Environmental and Social Management System (SGAS), and a Stakeholder Participation Plan (PPPI), among others.

gender sensitivity. The framework facilitates participation of women and youth, with clear mechanisms for communication and grievance redressal, accommodating diverse cultural and linguistic identities.

As the ER Program's payment for results hinges on emission reduction performance (measured in tCO2e), CONAFOR's Monitoring, Reporting, and Verification System (SMRV) generates biennial reports based on the baseline, considering Chihuahua, Coahuila, Durango, and Nuevo Leon. Given this context, payment by results resource distribution criteria for these entities are as follows:

1) Proportional Distribution: Payment by results is proportionally distributed based on the magnitude of the eligible or priority area within each of the four ER Program entities, facilitated by Special Operating Guidelines.

These guidelines establish priority criteria to ensure inclusion of women, youth, indigenous peoples, and communities. Leveraging CONAFOR's extensive experience in formulating such criteria through the Sustainable Forest Development for Well-Being Program, the design of Special Operating Guidelines for payment by results distribution will incorporate these insights. The criteria align with general principles, World Bank standards, and social and environmental safeguards outlined by the LGDFS. The criteria's final form will be agreed upon and integrated into the ultimate BSP.

4.4 Benefit Sharing Scenarios

Throughout ER Program implementation, various circumstances may impact emissions reduction goals, necessitating consideration of potential scenarios and alternatives for achieving mitigation objectives. Two scenarios are outlined below:

Scenario 1: The results period witnesses attainment of the agreed-upon goal, with emissions reduction relative to the baseline resulting in a 100% payment for results within the intervention area. In such an instance, benefits are distributed among states proportionally, based on the size of the eligible or priority area for each ER Program entity, in accordance with the BSP.

Escenario 2: The results period yields fewer verified emissions reductions, with certain states underperforming. In response to lower performance, additional measures would be implemented for benefit sharing. In cases where underperformance is attributed to external factors beyond stakeholder control (e.g., extreme drought, non-human-caused fires, pests), potential considerations include:

a) Payment by results would persist, respecting the chosen proportionality among states through a solidarity-oriented approach, recognizing that unforeseen externalities can impact performance.
b) In scenarios where a federative entity records no verified emission reductions and externalities aren't influencing this outcome, payment by results would not be applicable.

4.5 Categories of Potential Beneficiaries

The ensuing categories of potential beneficiaries are identified for the allocation of benefits within this BSP

i. Owners or Possessors of Forest Lands or Groups: This pertains to legal entities or individuals possessing properties under private or social arrangements, encompassing ejidos and

communities[88].

ii. Indigenous Peoples and Communities with Forest Lands: Encompassing indigenous peoples, communities, and ejidos that self-identify as indigenous and acknowledge this status.

iii. Legal Usufructuaries of Forest Lands: Involves groups or individuals recognized by ejido and communal assemblies, or with agreements established alongside ejido and communal landholders. This category extends to tenants of private properties.

iv. Avecindados: Constituting Mexican adults who have resided for one year or longer within ejidal population nucleus lands, as recognized by the ejidal assembly or competent agrarian court.

v. Users: This encompasses individuals inhabiting ejido and communal lands without formal ownership titles. It includes women or groups of women producers, young people, migrants, and other inhabitants of communal or ejido lands.

vi. Persons and Groups Engaged in Non-Forest Activities: Specifically, those possessing properties involved in non-forest activities within the rural landscape, particularly in the agrifood sector such as livestock and agriculture.

5. Monitoring Arrangements for Benefit Sharing Plan Implementation

Throughout ER Program implementation, CONAFOR will spearhead operational oversight and general monitoring of the project. Leveraging its robust capacities, CONAFOR's monitoring of the Benefit Sharing Plan (BSP) will leverage existing mechanisms, including:

- National Forest Information System: A comprehensive system that captures, organizes, updates, and disseminates forest-related data
- National Forest Monitoring System: Offering insight into the status and trends of forest resources.
- Safeguards Information System: Providing details on the adherence to and respect for social and environmental safeguards, alongside compliance with the Environmental and Social Framework's 10 standards.
- Mechanism for Citizen Service: This avenue addresses citizen queries, complaints, grievances, and suggestions, ensuring effective communication and solutions.
- Payment Tracking: Utilizing CONAFOR's Integrated Support Information System (SIIAC) for tasks such as registration, selection, agreement approval, and the Payment Management System (SIDPA) for monitoring and controlling payments to CONAFOR program beneficiaries. Both systems are versatile, allowing for disaggregation by community/ejido/private rural landowner, and offer insights into gender representation, indigenous group participation, and beneficiary count within forest communities.
  - The SIIAC and SIDPA systems will be utilized to oversee initial activities in accordance with operating rules. These rules encompass processes such as activity selection and evaluation, agreement signing, and beneficiary registration. This process will be revisited for the

[88] "Ejidatarios," "comuneros," possessors, and "avecindados" are individuals who are understood to have at least a parcel certificate (RAN, 2021).

creation of specific guidelines pertaining to complementary activities arising from payments by results.

Annex 5: Design Process for Benefit Sharing Arrangements for the ISFL ER Program

Participatory Methodology for the Construction of Local Benefit Sharing Arrangements

The participatory methodology for the construction of local benefit sharing arrangements considers methodological tools and recommendations that seek to reduce those barriers that prevent effective participation at the local level. For this reason, the participation processes to be developed will be over adequate periods of time to ensure the greatest possible scope with the different parties involved, be adaptive in terms of the socio-cultural and territorial characteristics, be inclusive and differentiated in their design for the attention of youth, women and indigenous people, have mechanisms for monitoring, adaptation and evaluation, and have a communication system that facilitates the participation of all interested parties in the design of local arrangements for benefit sharing.

The participatory process for the construction of local benefit sharing arrangements for the ER Program in forest landscapes in the four states will be defined and guided by SEMARNAT with the support of CONAFOR, in accordance with the provisions of Article 138 bis of the LGDFS.

In addition, respect for CONAFOR safeguards and the World Bank's Environmental and Social Framework linked to the ERP are considered in order to protect people and the environment from possible adverse impacts that could be generated, in compliance with the ten Environmental and Social Standards[89] (ESS) designed to support the borrowers' management of environmental and social risks[90]. The ESMF of the ER Program developed under the WB's ESS 1 contains principles, standards, guidelines, and procedures for assessing environmental and social risks and impacts. It provides measures and plans to prevent, reduce, mitigate, or offset risks and adverse impacts, as well as information on the agencies responsible for addressing environmental and social management, on the jurisdictional area and potential environmental and social vulnerabilities (CONAFOR, 2023). The ESMF also includes generic guidelines for the Program's Environmental and Social Management Plans (ESMPs), as well as the Stakeholder Participation Plan (PPPI), which should allow for the development of ESMPs in accordance with the requirements of the ESMF and national regulations.

The advanced draft of the Benefit Sharing Plan published with the Emissions Reduction Program will be reviewed and will consider a consultation with the institutions involved: firstly, with CONAFOR; secondly, with SEMARNAT; and thirdly, with SADER, INPI, the state governments and the State Forest

[89] To learn more about the 10 Environmental and Social Standards, go to https://projects.bancomundial.org/es/projects-operations/environmental-and-social-framework/brief/environmental-and-social-standards

[90] The Borrower is responsible for ensuring that the project is prepared and executed to comply with all applicable requirements of the ESS within the manner and timeframe agreed with the Bank. The Borrower will verify that any entity involved in the implementation of the project will support all Borrower's obligations and commitments in accordance with the requirements of the ESS and the specific terms of the legal agreement, which includes the Environmental and Social Commitment Plan (ESCP). Contractors appointed by or acting on behalf of the Borrower or an implementing agency are considered to be under the Borrower's direct control.

Councils[91]. It is important to note that the consultation with CONAFOR has been held on March 30, 2023, and the agreements on the proposed Benefit Sharing Plan are included in this document.

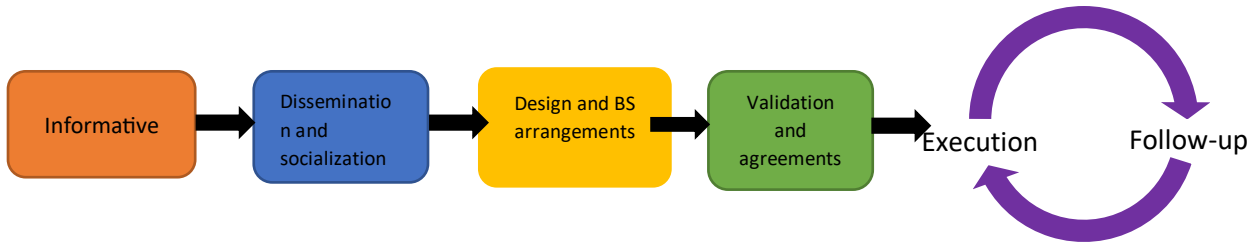
Once the ERPA has been signed and the implementation of the ER Program has been initiated, the participatory methodology for the design of local benefit sharing arrangements with stakeholders will be developed in parallel.

A participatory consultation process will be carried out with local stakeholders in the territory (ejidos, communities, indigenous peoples, women, youth, small landowners, and inhabitants in the rural areas of implementation), to agree on local benefit sharing arrangements, which will define the complementary activities to be included in the Special Operating Guidelines, through which possible resources from a results-based payment will be distributed.

The following phases are considered for the implementation of the participatory methodology for agreeing on local benefit sharing arrangements:

1) Informative
2) Dissemination and Socialization
3) Design and benefit sharing arrangements
4) Validation and Agreements
5) Implementation and Follow-up

Figure 3: Stages of the Process of Participatory Construction of Benefit Sharing Arrangements



Key Actors in the Participatory Process

The parties involved in the implementation of the ERP are key actors for the implementation of the participatory methodology as their input will enable a meaningful and inclusive process to be carried out, since it will be based on the recognition of minorities (for example women and youth), indigenous cultural relevance, among others. It is essential to identify key actors who can be local allies and who will assist in the participatory process, especially in communication at the local level, as they are known locally and have generated networks of trust in the communities where they are present and can be

[91] Based on the provisions of Article 153 of the General Law of Sustainable Forest Development, SEMARNAT and CONAFOR, together with the governments of the Federal Entities, will form the State Forest Councils, in which the participation of representatives of forest communities, indigenous peoples, academia, forestry professionals, forest industry, civil society, youth, women, and the Federal Government will be guaranteed at all times, thus being in an illustrative, not exhaustive manner.

spokespersons for the ER Program information and benefit sharing. It is recommended that CONAFOR's promoters are responsible of identifying, accompanying, and conducting this process with key actors and stakeholders. On the other hand, local coordination with other relevant institutions in the territory is fundamental, such as: SADER, SEMARNAT, INPI, INMUJERES, INJUVE, BIENESTAR, state, municipal agencies, and other relevant actors at the local level.

A The following are some characteristics to identify key actors in the territory:

- Having knowledge and experience in the local territory.
- To be locally recognized.
- Understanding the local socio-political context.
- To be familiar with communication channels and institutional links.
- Have knowlege of the local language, particularly in the case of indigenous peoples, as they will be potential translators and spokespersons.
- Be sensitivity to work under a gender perspective, particularly withyoung people, women, and indigenous people.
- Have knowledge of the type of projects that are already in progress and that would implementations within the ER Program.

Table 1. Potential key stakeholders for the participatory process

Public actors	• Federal (SEMARNAT, SADER, CONAFOR, INPI, INMUJERES). • State (Secretariats directly linked to the environmental, forestry and agricultural sectors). • Municipal (H. City Councils).
Local actors	• Local and community authorities • Ejidal authorities • NGOs • Women and youth groups • Opinion leaders • Local and community forestry and agrifood promoters • Members of productive agricultural, livestock and forestry sectors • Private initiative • Forestry and agrifood technicians • Academy and technical schools
Traditional community actors	• Traditional authorities • Councils of elders • Traditional leaders

Concerning the aforementioned stakeholders, it is paramount that CONAFOR provides comprehensive training, ensuring a thorough understanding of the information disseminated. This pre-emptive measure safeguards against misunderstandings that might arise from unfamiliar terminology, thus averting any potential confusion among the intended audiences regarding benefit sharing. Once the stakeholders and participants have been identified, the consultation call will be issued.

Call for proposals

The objective of this participatory process is to engage stakeholders who will be involved in the Emission Reduction Program and how the benefits will be shared upon receipt of payment for results.

For the call for proposals, it is advisable to draw upon the experience gained from the ER Program socialization workshops conducted by CONAFOR, as well as other projects in the country. These workshops have identified and obtained the effective participation of diverse stakeholders capable of contributing to the formulation of benefit-sharing arrangements. These calls should foster and encourage participation to obtain broad community support and consensus for the development and definition of equitable, efficient, and effective benefit-sharing arrangements.

Throughout the process of establishing local benefit-sharing arrangements, a minimum of four calls will be held in accordance with the distinct methodological phases[92] proposed for their construction.

The calls should include the following considerations:

- To be inclusive. Therefore, each workshop should invite women, youth, residents, indigenous populations, and other stakeholders to attend.
- The invitation should be made in advance, considering community times related to the harvest season, festivities, academic or daily activities.
- Consider the relevant stakeholders (ejidos, communities, small landowners), as well as the stakeholders who participated in the development of these instruments.
- Present all materials in clear and culturally appropriate language.
- Use conventional means of invitation, but also include traditional and/or local means (e.g., loudspeaker announcements or *perifoneo*).
- Calls, in the case of the indigenous population, should consider the cultural and linguistic relevance of the territory, ensuring the presence of interpreters to support the participatory and translation process, for which there should be coordination with INPI.
- Uses and customs, as well as local governance structures, should always be respected.
- The use of information technologies and social networks for the calls for proposals should be considered and designed according to the type of audience (e.g. youth, women, indigenous people, etc.).

[92] The phases include the Information and Socialization phase, Discussion and Arrangements, Feedback and Validation, and the Follow-up phase.

- Consideration should be given to those organized groups with a presence in the territory, livestock associations, farmers, foresters, women's groups, among others.
- Include civil society, academia and other relevant stakeholders in the territory in specific feedback workshops, which will strengthen the transparency and validation of the participatory methodology and benefit sharing arrangements.
-

The following is a description of the phases for the development of the participatory methodology for agreeing on local benefit sharing arrangements.

Phase 1 Informative: The objective of this phase is to provide the necessary information to stakeholders on the implications that the implementation of the ER Program will have on their territory. This will include the following:

- Identifying the profile of the population where the intervention process will take place.
  - Call of proposals according to local conditions.
  - Prepare communication materials appropriate to regional conditions, identifying key messages and information.
  - Planning of the information sessions, developing a didactic and logistical strategy.
  - Systematization of the resulting information.
-

Phase 2 Dissemination and Socialization: The objective is to promote and encourage the participation of key stakeholders and communities for the development of benefit sharing arrangements. The following will be considered for this purpose:

- Dissemination and socialization through previously identified allied actors.
  - Identification of dissemination and socialization channels in the ejidos and communities for the design of a local strategy.
  - Implementation of the local dissemination strategy with key ejidos and communities.
  - Production and distribution of materials according to linguistic characteristics and local media.
  - Inform and raise awareness about the potential impacts on their localities and livelihoods; create alliances to support, participate and be positively motivated by the implementation of the ER Program in their territory.
-

Phase 3 Benefit Sharing Arrangements: T This phase will consider the information generated in the previous phases to promote dialogue and contrast of arguments, collecting the input from stakeholders. For this purpose, a participatory workshop is proposed for the definition of benefit sharing arrangements, which will consider the following:

- Call for proposals according to local conditions.
  - Planning of the participatory workshop, elaborating the didactic strategy and logistics.

- Design of educational materials presenting the complementary activities of the first and second stages and submit them for review and redesign.
- Define the complementary activities in a participatory manner that will be integrated through CONAFOR's special operating guidelines.
- Explain the channeling and implementation of resources coming from a results-based payment, whether they are considered monetary or non-monetary benefits.
- Define the pertinent control and follow-up mechanisms at the territorial level.
- Systematization of the information obtained from the workshop.

- **Phase 4 Validation and Agreements:** In this stage, the results from the inputs are transferred to the final document of the local benefit sharing arrangements and the mechanism for its implementation is disclosed to all stakeholders who participated in the participatory process. At this stage, final inputs to the document can be made during a defined public consultation period and the Benefit Sharing Plan can be validated with all stakeholders. Planning of the workshop meetings; elaboration of the didactic strategy and logistics.
  - Presentation of the benefit sharing arrangements, resulting from the previous phase workshops, through didactic exercises that guarantee the understanding of the participants.
  - Validation and agreement process with the workshop participants.
  - Systematization of the information obtained in the workshop.

Phase 5 Execution and Follow-Up: In this stage, the proposed activities for the implementation of the ER Program are reviewed, adjustments are made if necessary, and the progress and results of the Benefit Sharing Plan are presented and evaluated.

- Implementation of the benefit sharing plan: Review of proposed activities during its implementation process.
- Review of benefit sharing arrangements at the local level, identifying control and follow-up mechanisms.
- Analysis by the implementing agents to review the progress of the implementation process.
- Carry out periodic meetings to evaluate the development of the Plan and decide on its long-term focus and sustainability.

Annex 6: GHG inventory of all AFOLU categories, subcategories, gases and pools in the Program Area

Executive summary

Average of annual emissions	-12,388,580.05ton CO_2e/year
Reference period	Historical average 2009-2018
Application of adjustment for national circumstances	Does not apply
Spatial scale (ISFL Program area)	Jurisdiction of 4 states of Mexican Republic: Coahuila, Chihuahua, Durango and Nuevo Leon (536,890 km2)
Categories included	[3A] Livestock [3B] Land [3C] Aggregated sources
Pools included (For 3B category)	Aboveground biomass, belowground biomass, dead wood, litter and Soil Organic Carbon.
Gases included	Carbon dioxide (CO_2), methane (CH4) and nitrous oxide (N2O)
Forest definition	Forest Lands with canopy cover greater than 10%, with woody species over 4 meters high, or capable of reaching that high, and with a minimum area of 1 ha.
Consistency with latest GHG inventory	Methodological changes, but no contradictions between the two reports are identified.
Description of relevant policies and plans	- National Climate Change Strategy - National REDD+ Strategy - Forest and Climate Change Project - National Forestry Program 2019-2024 - National Community Forest Management Strategy
Description of assumptions on future changes to domestic policies	Does not apply
Identification of future technical improvements	Specific chapter is presented, and future technical improvements are identified throughout the document

National Forest Commission (CONAFOR, for its acronym in Spanish) serves as a focal point for the preparation and implementation of REDD+ in Mexico. The LGDFS mandates this institution to generate information on the reduction of emissions from Land Use, Land Use Change and Forest (LULUCF), which should be based on the National Monitoring, Reporting and Verification System (SNMRV) (art. 46). In addition, the organic statute of CONAFOR grants it the authority to establish, operate and maintain the National Forest Monitoring System (SNMF).

General Law on Sustainable Forest Development (LGDFS, by its acronym in Spanish) (art. 46) also establishes a mandate for CONAFOR to quantify the area of forest land and its location through the application of its forest policy instruments, to integrate its statistical information and mapping, and the dynamics of forest vegetation change, enabling the identification and assessment of deforestation rates and degradation or disruption rates.

The SNMF is a forest policy instrument (art. 34 of the LGDFS) that aims to collect, analyze and disseminate data related to Mexico's forests, including the production of information and knowledge at regular intervals that allow monitoring of their changes. The design and implementation of the SNMF is the responsibility of CONAFOR (art. 10 and art. 4 of the LGDFS). This system is composed of three pillars or subsystems (Table 6.1), which fulfill the monitoring functions and are closely related to each other.

Table 6.1 Structure of National Forest Monitoring System (SNMF)

Pillars of the SNMF	Description/objective	Legal and programmatic basis	Main products
Satellite System for Forest Monitoring (SAMOF)	Set of processes, tools, inputs and definitions to quantify changes in the country's forest cover, including assessment of deforestation, forest degradation and regeneration /reforestation rates.	➢ LGDFS (Arts. 46 y 49) ➢ ENAREDD+ (C4, LA1.1) ➢ Organic Statute CONAFOR (Art. 17) ➢ National Forest Program (PRONAFOR)	❖ Maps of forest cover and changes in forest cover ❖ Reference mesh (systematic sampling of forest cover)
National Forest and Soil Inventory (INFyS) (INFyS)	Forest public policy and information tool of national interest for the collection in the field and generation of regular and comparable information on the state of forest ecosystems at the national level.	➢ LGDFS (Arts. 46, 47 y 48) ➢ National Statistical and Geographical Information System Act (LSNIEG) ➢ Organic Statute CONAFOR (Art. 17) ➢ PRONAFOR	❖ Databases of 3 five-year field survey cycles ❖ Periodic reports on INFyS results ❖ Forest zonification
National Monitoring, Reporting and Verification System	System to generate information on GHG emissions from deforestation and forest degradation and removals by forest ecosystems, and other mitigation reports.	➢ LGDFS (Art. 46) ➢ ENAREDD+ (C4) ➢ Organic Statute CONAFOR (Art. 17) ➢ PRONAFOR	❖ National Inventory of Greenhouse Gas Emissions for Sector 3B. Land. ❖ Forest Emissions Reference Level (National) ❖ Forest Emissions Reference Level (Subnational-FCPF) ❖ Forest Sector Mitigation Reports (including baseline and NDC monitoring)

Description of subcategories

All included subcategories are described in detail in section 4.1.1 Short description of the Program GHG Inventory. Summary of the Program GHG Inventory, some categories do not occur and other subcategories were not calculated due to a lack of data (absence of EF).

Subcategories that did not occur: Land-use transitions that were not identified by the SAMOF system.

- 3B3biii. Wetlands converted to Grassland
- 3B5bv. Other Land converted to Settlements
- 3B2bv. Other Land converted to Cropland
- 3B3bv. Other Land converted to Grassland
- 3B6biv. Wetlands converted to Other Land

- 3B2biv. Settlements converted to Cropland
- 3B4ai. Peatlands Remaining peatlands
- 3B5biv. Wetlands converted to Settlements
- 3B4bi. Land converted for peat extraction
- 3B1biii. Wetlands converted to Forest Land
- 3B1biv. Settlements converted to Forest Land
- 3B1bv. Other Land converted to Forest Land
- 3B2biii. Wetlands converted to Cropland
- 3B6bv. Settlements converted to Other Land
- 3B3biv. Settlements converted to Grassland

Subcategories that were not included: There are Activity Data but there are no emission factors (the magnitude of activity data is irrelevant)

- 3B4aii. Flooded land Remaining flooded land
- 3B5a. Settlements Remaining Settlements
- 3B6a. Other Land Remaining Other Land

General approach

For 3A and 3C categories, the Program GHG Inventory was developed in line with the IPCC quality indicator: transparency, completeness, consistency, comparability, and accuracy. The AFOLU inventory for the ISFL jurisdictional area in Mexico (states of Chihuahua, Coahuila, Durango, and Nuevo León) was elaborated applying the 2006 IPCC Guidelines for National Greenhouse Gas Inventories and the 2019 Refinement to the 2006 IPCC Guidelines using the same inputs, assumptions, and methodologies used in the GHG inventory for the Third Biennial Updated Report (BUR3) which is expected to be submitted to the UNFCCC by the 2022.

The general approach used for compiling the GHG Inventory for [3B] Land consists of the following: To estimate emissions/removals information on the change of carbon stocks and rates for each land use (AD), and carbon stock before and after each type of change using emission factors was obtained.

The general procedure for compiling the GHG Inventory for [3B] Land consists of the next main steps:

1. To obtain annual estimates of Activity Data (AD) for each land-use conversion and Level 1 or 2 ecoregions according to the area proportion approach described in IPCC 2006 good practices. Activity data are obtained through the SAMOF system according to the following substeps:
    a. Sampling grid design: The systematic sampling grid consists of 70,220 squared 1 ha (100 by 100 m) plots of which 26,220 were established in the same locations as the INFyS plots. The rest was nested from the INFyS systematic sampling grid to cover the whole country area.
    b. Photointerpretation: of plots with the sampling method of the Forest Monitoring Satellite System (SaMoF): The interpretation of each plot was made according to the inputs, methods, visual photointerpretation criteria described in detail in SOP 3 "Photointerpretation" (http://file.cnf.gob.mx/sop/SOP_03_Fotointepreacion.pdf), as

well as the construction of the IPCC land-use classes for each year in the period 2000 - 2018 (see Table 6.4 in Annex 6).

c. Calculation of the area for each category: the proportion of area for each land use and subcategory is calculated by dividing the number of plots identified for each specific land-use conversion by the total number of sampled plots in each ecoregion. The estimated area for each land conversion is obtained by multiplying the proportion of each specific conversion and the total ecoregion area.

2. To obtain estimates of emission factors (EF) for each land-use conversion and Level 1 or 2 ecoregions and for each carbon pool using the first and second cycles of the National Forest Inventory (INFyS for its acronym in Spanish). In particular, the emission factors were obtained from the SEBC using tree dimension data from the INFyS. The estimation of EF was done according to the following substeps:
    a. Database compilation: data from INFyS is integrated and stored in annual databases (Access 2000) under a SQL server structure. For the standardization of the annual databases an integrative database is used, in which the information from all the INFyS cycles is standardized and systematized.
    b. Quality control: to ensure the results are reliable and complete an exhaustive revision of the INFyS is made including the following activities: i) Standardization of the names of tables, catalogs, and fields for the INFyS database (homogenization of criteria used to name the variables, and tables); ii) Filtering the catalog content (name corrections, synonyms and table joins); and iii) Quality tests (quantitative and qualitative) at the plot, site and observation levels.
    c. Biomass and carbon model determination: Biomass for each individual was estimated using allometric models which allow volume, biomass or carbon estimations by using the measurements of the dimensions for each structural component such as trunk diameter and total tree height. The allometric models are bibliographic compilations from the consultancies in the Mexico-Norway project (2012 – 2016).
    d. Wood density and carbon fraction determination: wood density values were determined to estimate the carbon in belowground biomass and deadwood (standing, stumps, and coarse woody debris for several size categories). Carbon fractions were determined from mean values for the individual (including stump, trunk, branches, leaves, flowers and seeds) for each species.
    e. Carbon density estimation: Carbon densities were estimated at the observation, site, plot, substrata and strata level and for each land use[93].
3. To obtain estimates from GHG emissions/removals for each land use conversion Level 1 or 2 ecoregions and each carbon pool. Afterward, add the national level GHG emissions/removals for each [3B] subcategory. The general procedure consists of:

[93] En el Inventario Nacional Forestal y de Suelos Procedimientos de muestreo (https://www.conafor.gob.mx/apoyos/docs/externos/2022/DocumentosMetodologicos/2019/ANEXO_Procedimientos_de_muestreo_2019.pdf). Se describe el diseño de la parcela y el procedimiento operativo para la medición de las variables que posteriormente dan lugar a la estimación de Carbono.

a. Compilation of the AD and EF for each of the five carbon pools (Level 1 or 2 ecoregions) for each land-use conversion.
b. Estimation of the emissions/removals for each pool.
c. Estimation of the total national-level emissions/removals (for each of the five carbon pools) for each [3B] subcategory.

4. Perennial Cropland (with woody crops) emission factors were taken from the scientific literature on annual carbon increases of avocado, coffee, cocoa, orange mango and lemon to establish the national emission factor of perennial crops (CONAFOR, 2012; FAO, 2002; Fernando et al., 2019a; José et al., 2016; Paz & Velázquez 2019; Tobías-Baeza et al., 2019)94. Thus, the average annual increase value of these crops was considered in the entire area identified under the category of perennial crops.
5. To combine the uncertainty of AD and EF to obtain the uncertainty for the national level GHG emissions/removals for each [3B] subcategory. The combination of uncertainty is implemented through the error propagation approach in IPCC (2006).

   The procedure to calculate uncertainty is implemented in two levels:

   a. Estimation of uncertainty associated with the AD and EF sampling errors.
   b. Estimation of the uncertainty of the emission/absorptions for each land-use conversion and pool through the combination of uncertainty from AD and EF using the IPCC (2006) uncertainty propagation method.

Sources of information and methods for estimation of Activity Data

For 3A and 3C categories description of data sources and emissions factors are presented in table 6.3 below. For more information about the AFOLU sector and the national GHG inventory is available in the MS Excel spreadsheets were used for estimating GHG emissions from 3A and 3C categories. The National Institute of Ecology and Climate Change (INECC) is the national institution in charge of the inventory compile and oversee.

[94] Emission factors were obtained from the NIR (https://unfccc.int/documents/512232):
CONAFOR. (2012). Establecimiento de Sistemas Agroforestales. https://www.conafor.gob.mx/apoyos/docs/externos/2023/UC/manual_sistemas_agroforestales.pdf

FAO. (2002). Captura de carbono en los suelos para un mejor manejo de la tierra. In Informe sobre recursos mundiales de suelos No. 96. http://books.google.es/books?hl=es&lr=&id=OKZt9agfRksC&oi=fnd&pg=PR3&dq=CAPTURA+DE+CARBONO+EN+LOS+SUELOS+PARA+UN+MEJOR+MANEJO+DE+LA+TIERRA&ots=5xOjDqvtWf&sig=c9-6h5Q4W_qU0xBHudD4IqchYyc

Fernando, P., Martin, H., Ramon, S., & Alma, R. (2019b). Estado del Ciclo del Carbono en Mexico, Agenda Azul y Verde.

Jose, M., Calzada, E., Jorge, M., Narvaez, A., & Mayor, O. (2016). Agenda Tecnica Argicola.

Paz, F., & Velazquez y, R. (2019). Estado Actual del Conocimiento del Ciclo del Carbono y sus Interacciones en Mexico: Sintesis a 2019 (F. Paz & R. Velazquez (eds.)). http://pmcarbono.org/pmc/publicaciones/sintesisn.php

Tobias-Baeza, A., Salvador Morales, P., Sanchez-Hernandez, R., Ruiz-Acosta, S. D. C., Arrieta-Rivera, A., & Andrade-Prado, H. (2019). Composicion floristica y carbono en la vegetacion arborea de un area periurbana enTabasco, Mexico. Ecosistemas y Recursos Agropecuarios, 6(17), 369. https://doi.org/10.19136/era.a6n17.2009

Global Warming Potential from the Fifth Assessment Report of the IPCC were used[95]

Table 6.2 Global Warming Potential, Fifth Assessment Report of the IPCC

Common Name or Chemical Name	Chemical Formula	GWP
		100 years
Carbon dioxide	CO_2	1
Methane	CH_4	28
Nitrous oxide	N_2O	265

Source: IPCC, AR5

[95] https://www.ipcc.ch/site/assets/uploads/2018/02/WG1AR5_Chapter08_FINAL.pdf

Table 6.3 Summary of categories, category definitions (from 2006 IPCC GL or national definitions), data sources and Tiers applied for 3A and 3C categories

IPCC Code	Categories	Category definition	CO2		CH4		N2O		Data source
			Method	Emission Factor	Method	Emission Factor	Method	Emission Factor	
3.	**Agriculture, Forestry, and Other Land Use**	Emissions and removals from forest land, cropland, grassland, wetlands, settlements, and other land. Also includes emissions from livestock and manure management, emissions from managed soils, and emissions from liming and urea application. Methods to estimate annual harvested wood product (HWP) variables are also covered in this category	T1	D	T1, T2*, NO, NA	D, CS*, NO, NA	T1, T2*, NO, NE	D, CS*, NO, NE	
3.A.	**Livestock**	Livestock category includes methane emissions from enteric fermentation [3A1], and methane and nitrous oxide emissions from manure management [3A2].			T1, T2*, NO, NA	D, CS*, NO, NA	T1, NO	D, NO	
3.A.1.	Enteric fermentation	Methane emissions from herbivores as a by-product of enteric fermentation. Ruminant animals are major sources with moderate amounts produced from non-ruminant animals			T1, T2*, NO, NA	D, CS*, NO, NA			
3.A.1.a.	Cattle	Methane emissions from dairy cows and other cattle			T2*	CS*			AD: Annual Statistics of Agricultural and Livestock Production of the Agrifood and Fisheries Information Service (SIAP) of the Secretariat of Agriculture and Rural Development (SADER) EF: 41 national research papers
3.A.1.a.i.	Dairy cows	Methane emissions from cattle producing milk for commercial exchange being grown for dairy purposes			T2*	CS*			
3.A.1.a.ii.	Other cattle	Methane emissions from all non-dairy cattle including: cattle kept or grown for meat production, draft animals, and breeding animals			T2*	CS*			
3.A.1.b.	Buffalo	Methane emissions from buffalo			NO	NO			
3.A.1.c.	Sheep	Methane emissions from sheep			T1	D			AD: Annual Statistics of Agricultural and Livestock Production of SIAP-SADER EF: the IPCC 2006 Guidelines, the 2019 Refinement to the IPCC 2006 Guideline
3.A.1.d.	Goats	Methane emissions from goats			T1	D			
3.A.1.e.	Camels	Methane emissions from camels			NO	NO			
3.A.1.f.	Horses	Methane emissions from horses			T1	D			AD: Annual Statistics of Agricultural and Livestock Production of SIAP-SADER EF: the IPCC 2006 Guidelines, the 2019 Refinement to the IPCC 2006 Guideline
3.A.1.g.	Mules and asses	Methane emissions from mules and asses			T1	D			
3.A.1.h.	Swine	Methane emissions from swine			T1	D			
3.A.1.i.	Poultry	Methane emissions from poultry			NA	NA			
3.A.1.j.	Other (please specify)	Methane emissions from other livestock (e.g. alpacas, llamas, deer, reindeer, etc.)			NO	NO			
3.A.2.	Manure management	Methane and nitrous oxide emissions from the decomposition of manure under low oxygen or anaerobic conditions and on-farm co-digestates combined with manure in on-farm biogas plants. These conditions often occur when large numbers of animals are managed in a confined area, where manure is typically stored in large piles or disposed of in lagoons and other types of manure management systems			T1, T2*, NO	D, CS*, NO	T1, T2*, NO	D, CS*, NO	
3.A.2.a.	Cattle	Methane and nitrous oxide emissions from the decomposition of manure from cattle			T2*	CS*	T2*	CS*	AD: Annual Statistics of Agricultural and Livestock Production of SIAP-SADER, and the National Water Commission (CONAGUA) EF: 41 national research papers
3.A.2.a.i.	Dairy cows	Methane and nitrous oxide emissions from the decomposition of manure from dairy cows			T2*	CS*	T2*	CS*	
3.A.2.a.ii.	Other cattle	Methane and nitrous oxide emissions from the decomposition of manure from other cattle			T2*	CS*	T2*	CS*	
3.A.2.b.	Buffalo	Methane and nitrous oxide emissions from the decomposition of manure from buffalo			NO	NO	NO	NO	
3.A.2.c.	Sheep	Methane and nitrous oxide emissions from the decomposition of manure from sheep			T1	D	T1	D	AD: Annual Statistics of Agricultural and Livestock Production of SIAP-SADER, and CONAGUA EF: the IPCC 2006 Guidelines, the 2019 Refinement to the IPCC 2006 Guideline
3.A.2.d.	Goats	Methane and nitrous oxide emissions from the decomposition of manure from goats			T1	D	T1	D	
3.A.2.e.	Camels	Methane and nitrous oxide emissions from the decomposition of manure from camels			NO	NO	NO	NO	
3.A.2.f.	Horses	Methane and nitrous oxide emissions from the decomposition of manure from horses			T1	D	T1	D	AD: Annual Statistics of Agricultural and Livestock Production of SIAP-SADER, and CONAGUA

IPCC Code	Categories	Category definition	CO2		CH4		N2O		Data source
3.A.2.g.	Mules and asses	Methane and nitrous oxide emissions from the decomposition of manure from mules and asses			T1	D	T1	D	EF: 41 national research papers (swine), the IPCC 2006 Guidelines, the 2019 Refinement to the IPCC 2006 Guideline
3.A.2.h.	Swine	Methane and nitrous oxide emissions from the decomposition of manure from swine			T2*	CS*	T2*	D	
3.A.2.i.	Poultry	Methane and nitrous oxide emissions from the decomposition of manure from poultry including chicken, broilers, and turkeys			T1	D	T1	D	
3.A.2.j.	Other (please specify)	Methane and nitrous oxide emissions from the decomposition of manure from other livestock (e.g. alpacas, llamas, deer, reindeer, fur-bearing animals, ostriches, etc.)			NO	NO	NO	NO	
3.C.	**Aggregate sources and non-CO_2 emissions sources on land**	Includes emissions from activities that are likely to be reported at very high aggregation land level or even country level	T1	D	T1, T2*, NO	D, CS*, NO	T1, T2*, NO, NE	D, CS*, NO, NE	
3.C.1.	Emissions from biomass burning	Emissions from biomass burning that include N2O and CH4. CO2 emissions are included here only if emissions are not included in 3B categories as carbon stock changes			T1, T2*, NO	D, CS*, NO	T1, T2*, NO	D, CS*, NO	
3.C.1.a.	Biomass burning in forest lands	Emissions from biomass burning that include N2O and CH4 in forest land. CO2 emissions are included here only if emissions are not included in 3B1 categories as carbon stock changes			T1	D	T1	D	AD: the National Forestry Commission (CONAFOR) EF: the IPCC 2006 Guidelines, the 2019 Refinement to the IPCC 2006 Guideline
3.C.1.b.	Biomass burning in croplands	Emissions from biomass burning that include N2O and CH4 in cropland. CO2 emissions are included here only if emissions are not included in 3B2 categories as carbon stock changes.			T1, T2*	D, CS*	T1, T2*	D, CS*	AD: Annual Statistics of Agricultural and Livestock Production of SIAP-SADER EF: national and international literature, the IPCC 2006 Guidelines, the 2019 Refinement to the IPCC 2006 Guideline
3.C.1.c.	Biomass burning in grasslands	Emissions from biomass burning that include N2O and CH4 in grassland. CO2 emissions are included here only if emissions are not included in 3B3 categories as carbon stock changes			T1	D	T1	D	AD: CONAFOR EF: the IPCC 2006 Guidelines, the 2019 Refinement to the IPCC 2006 Guideline
3.C.1.d.	Biomass burning in all other land	Emissions from biomass burning that include N2O and CH4 in settlements, wetlands and other land. CO2 emissions are included here only if emissions are not included in 3B6 categories as carbon stock changes			NO	NO	NO	NO	
3.C.2.	Liming	CO2 emissions from the use of lime in agricultural soils, managed forest soils or lakes	T1	D					AD: the National Institute of Statistics and Geography (INEGI) EF: the 2019 Refinement to the IPCC 2006 Guideline
3.C.3.	Urea application	CO2 emissions from urea application	T1	D					AD: International Fertilizer Industry Association (IFADATA) EF: the 2019 Refinement to the IPCC 2006 Guideline
3.C.4.	Direct N_2O emissions from managed soils	Direct N2O emissions from managed soils from the synthetic N fertilizers application; organic N applied as fertilizer (e.g. animal manure, compost, sewage sludge, rendering waste); urine and dung N deposited on pasture, range and paddock by grazing animals; N in crop residues (above and below ground), including from N-fixing crops and from forages during pasture renewal; N mineralization/immobilization associated with loss/gain of soil organic matter resulting from change of land use or management of mineral soils; and drainage/management of organic soils (i.e., histosols)					T1, NO, NE	D, NO, NE	
3.C.4.a.	Synthetic fertilizers						T1	D	AD: SIAP-SADER, INEGI, and FAOSTAT EF: the IPCC 2006 Guidelines, the 2019 Refinement to the IPCC 2006 Guideline
3.C.4.b.	Animal manure applied to soils						NO	NO	
3.C.4.c.	Crop residues						T1	D	AD: SIAP-SADER, INEGI, and FAOSTAT EF: the IPCC 2006 Guidelines, the 2019 Refinement to the IPCC 2006 Guideline
3.C.4.d.	Pasture, range and paddock manure						T1	D	
3.C.4.e.	Mineralization/immobilization associated with loss/gain of soil organic matter						NE	NE	
3.C.4.f.	Cultivation of organic soils						NE	NE	
3.C.5.	Indirect N_2O emissions from managed soils	Indirect N2O emissions from: (1) the volatilization of N (as NH3 and NOx) following the application of synthetic and organic N fertilizers and /or urine and dung deposition from grazing animals, and the subsequent deposition of the N as ammonium (NH4+) and oxides of N (NOx) on soils and waters, and (2) the leaching and runoff of N from synthetic and organic N fertilizer additions, crop residues, mineralization /immobilization of N associated with loss/gain of soil C in mineral soils through land use change or management practices, and urine and dung deposition from grazing animals, into groundwater, riparian areas and wetlands, rivers and eventually the coastal ocean					T1	D	AD: SIAP-SADER, and INEGI EF: the IPCC 2006 Guidelines, the 2019 Refinement to the IPCC 2006 Guideline
3.C.6.	Indirect N_2O emissions from manure management	Indirect N2O emissions from manure management (activity data amount of nitrogen in the manure excreted)					T1	D	AD: SIAP-SADER, and INEGI EF: the IPCC 2006 Guidelines, the 2019 Refinement to the IPCC 2006 Guideline

IPCC Code	Categories	Category definition	CO2		CH4		N2O		Data source
3.C.7.	Rice cultivations	Methane (CH4) emissions from anaerobic decomposition of organic material in flooded rice fields. Any N2O emissions from the use of nitrogen-based fertilizers in rice cultivation should be reported under N2O emissions from managed soils			NO	NO			
3.C.8.	Other (please specify)	Other sources of CH4 and N2O emissions on land							
3.D.	**Other**								
3.D.1.	Harvested Wood Products	CO2 net emissions or removals resulting from Harvested Wood Products							
3.D.2.	Other (please specify)								

T1: Tier 1

T2: Tier 2

NO: Not occur

NA: Not applicable

NE: Not estimated

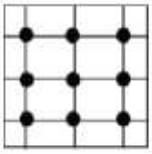
D:

CS:

For 3B category, it was not necessary to estimate forest land area or its transitions to estimate the emissions of the technical annex; however, it is in the country's interest to generate these estimations to support public policies within the sector. In addition, the estimation of forest land and its change has been used to provide context and characterize the forestry sector in Mexico.

In Mexico, Method 3: representation of land from 2006 IPCC guidelines is followed. Annual area of use and land cover was obtained through the area proportions approach according to 2006 IPCC guidelines (Figure 3). Based on the total area of analysis or "accounting area" and the results of sampling it is possible to estimate the area of different land use categories.

TABLE 3A.3.1
EXAMPLE OF AREA ESTIMATION VIA PROPORTIONS

Sampling procedure	Estimation of proportions	Estimated areas of land-use category	Standard error
	$p_i = n_i / n$	$A_i = p_i \cdot A$	$s(A_i)$
	$p_1 = 3/9 \cong 0.333$	$A_1 = 300$ ha	$s(A_1) = 150.0$ ha
	$p_2 = 2/9 \cong 0.222$	$A_2 = 200$ ha	$s(A_2) = 132.2$ ha
	$p_3 = 4/9 \cong 0.444$	$A_3 = 400$ ha	$s(A_3) = 158.1$ ha
	Sum = 1.0	Total = 900 ha	

Where:

A = total area (= 900 ha in the example)

A_i = estimated area of land-use category i

n_i = number of points located in land-use category i

n = total number of points

Estimates of land-use conversion areas can be made by introducing categories of the type A_{ij} where land use is converted from category *i* to category *j* between successive surveys.

Figure 3. Area estimation through the method based on proportions.

The table 6.4 shows a detail description of inputs, methods and outputs to estimate activity data in ISFL area program for category 3B Land.

Table 6.4 Data input and methods for the calculation of activity data for 3B Land category.

<table>
<tr><th colspan="4">Activity data from the Land Use and Land Use Change and Forestry (USCUSS) sector, which involves all land use categories and conversions between them.</th></tr>
<tr><th>Inputs</th><th>Methods</th><th>Results</th><th>Reference Standard Operating Procedures (SOP)</th></tr>
<tr><td>Main inputs
- Collect Earth format
- Sampling Design
- Sample Repository
- INFyS
- Sample Plots
- Definitions and conversions of Land Uses
- Spatial Inputs:
INEGI Land Use and Vegetation Vector shapefile</td><td>i. With the defined photointerpretation criteria, the INEGI vegetation class was analyzed and interpreted in each sample plot, for the 2000 - 2018 period.
ii. Conversion of INEGI classes using a correlation table to the IPCC classes.
iii. Generation of the IPCC multi-temporal matrix for the period 2000-2018.</td><td>- Database containing the results of photointerpreted plots at the INEGI class level in Collect Earth, for the period 2000-2018. Available here DatosCollectEarth
- IPCC multi-temporal matrix database for 2000-2018. Available here Matriz Multitemporal IPCC 00-18</td><td>http://file.cnf.gob.mx/sop/SOP_02_Enfoque_Gral_Rep_Coher_Tierra.pdf
http://file.cnf.gob.mx/sop/SOP_03_Fotointepreacion.pdf</td></tr>
<tr><td colspan="4">Area estimation by stratum (sampling intensity and ecoregion N1)</td></tr>
<tr><th>Input</th><th>Methods</th><th>Results</th><th>Reference SOP</th></tr>
<tr><td>Main inputs
- IPCC multi-temporal matrix database for 2000-2018.
- Activity Data Tool</td><td>- Plot count: the number of plots is counted by sampling intensity, by year and by transition, and by ecoregion with an R script.
- In the Activity Data Tool, the counting spaces are filled according to each sampling intensity, by year, by transition and by ecoregion.
- The method for estimating the area at the i-th (5x5, 10x10 and 20x20 km) sampling intensity of the j-th ecoregion of the k-th year, is estimated according to the following equation:
$\widehat{AT}_{ij} = \frac{n_{ij}}{N_{ij}} \times AT_{ij}$
Where:
$\widehat{AT}_{ij}$: estimated land area at</td><td>- R script for plot counting by sampling intensity, by year and by transition and by ecoregion. Available here Transiciones_ISFL_2021
- An Excel file with Activity Data estimates and their respective uncertainties, by Level 1 ecoregion. Available here DatActNacionalEcorreg</td><td>http://file.cnf.gob.mx/sop/SOP_04_Metodo_Superficie_Propociones.pdf</td></tr>
</table>

Activity data from the Land Use and Land Use Change and Forestry (USCUSS) sector, which involves all land use categories and conversions between them.			
Inputs	**Methods**	**Results**	**Reference Standard Operating Procedures (SOP)**
	ecoregion sampling intensity, n_i: number of plots in "Land" class by sampling intensity within the ecoregion, N_{ij}: total number of sampled plots in the i-th sampling intensity of the j-th ecoregion and AT_{ij} total area of i-th sampling intensity of the i-th ecoregion. NOTE: It is important to perform a quality assessment at the end of the estimation for each of the files, ensuring that all cells are calculated correctly. Additionally, it is necessary to ensure that the final sums and estimates have values and are not replaced by cell calculation errors. Uncertainty was estimated according to the following equation: $$U(\widehat{AT}_{ij}) = \frac{Z_{\frac{\alpha}{2}} * s(\widehat{AT}_{ij})}{\widehat{AT}_{ij}} * 100$$ Where: $Z_{\frac{\alpha}{2}}$ is the 95% percentile of the empirical distribution model that fits to the data, $$s(\widehat{AT}_{ij}) = AT_{ij} * \sqrt{\frac{p_{ij}(1-p_{ij})}{N_{ij}-1}}$$ y $s(\widehat{AT}_{ij})$ is the standard deviation of the area of forest land estimated in the sample intensity i-th ecoregion obtained previously with the previously defined inputs $p_{ij} = \frac{n_{ij}}{N_{ij}}$ When grouping or aggregating different subcategories or strata is intended, uncertainties need to be propagated through method 1 in accordance with the IPCC good practice guide. - Estimation of the "Land" at the national level		

Activity data from the Land Use and Land Use Change and Forestry (USCUSS) sector, which involves all land use categories and conversions between them.			
Inputs	**Methods**	**Results**	**Reference Standard Operating Procedures (SOP)**
	$\widehat{ATN_k} = \sum_{j=1}^{7} \sum_{i=1}^{3} \widehat{AT_{ij}}$ Where: $(\widehat{ATN_k})$ is the área of "Land" at National level for year k, $= \frac{U(\widehat{ATN_k})}{\sqrt{(U(\widehat{AT}_{11}) * \widehat{AT}_{11})^2 + (U(\widehat{ATF}_{12}) * \widehat{ATF}_{12})^2 + \cdots + (U(\widehat{ATF}_{37}) * \widehat{AT}}}{\lvert\widehat{ATFN_k}\rvert}$ Where: $U(\widehat{ATN_k})$ is the uncertainty in "Forest Land" at national level for year k, $U(\widehat{AT_{ij}})$ y $\widehat{AT_{ij}}$ were previously defined.		

Data sources and methods for the carbon contents and parameters

The emissions reported were obtained from the difference between "total carbon contents at the national level", which required the estimation of "carbon contents for each carbon pool for each year in the 2000-2016 period". Carbon pools considered in this report are Aboveground Biomass (AB), belowground biomass (BB), deadwood (DW), litter (L) y and Soil Organic Carbon (SOC).

The main data source for this information is the National Forest Inventory (INFyS for its acronym in Spanish), which began in the year 2004. This survey provides cartographic and statistical information of forest ecosystems and soils in Mexico, to support sustainable forest development policies and the development of forestry sector activities with quality information.

Presently two cycles of INFyS field data are available: 1) Sampling (2004-2007), with AB information and, partial information for dead organic matter; and 2) Resampling (2009-2014), with information for all pools.

The INFyS has a systematic stratified sampling design, based on a sampling grid where plot locations are equidistant for different intensities according to the ecosystem characteristics and the vegetation category (5 x 5 km, forests; 10 x 10 km, semiarid communities; y 20 x 20 km, arid communities). The INFyS sampling grid covers non-forest areas (except for urban settlements) identified with a specific "land use".

The sampling grid consists of conglomerates or Primary Sampling Units (PSU) of four plots spanning 1 ha located in a North facing “Y” shaped arrangement. The plots are circular, within these sites, the majority of the structure and tree dimension information is collected characterizing three strata: tree, shrub and herbaceous.

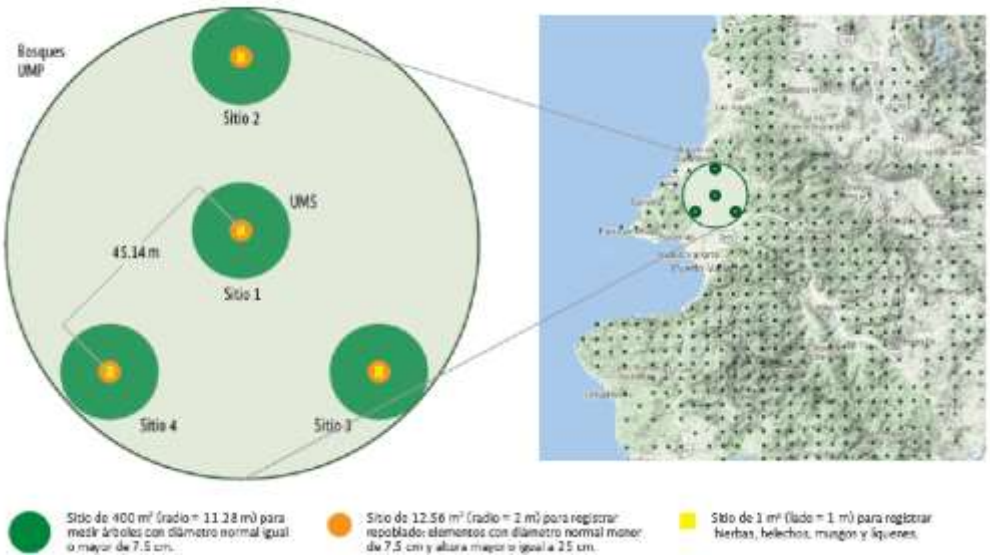


Figure 4. Size and shape of INFyS sampling plot locations.

The litter and dead organic matter data for the deadwood pool were collected and registered in plot 3 (Sitio 3) when accessible, otherwise in plots 4, 2 or 1.

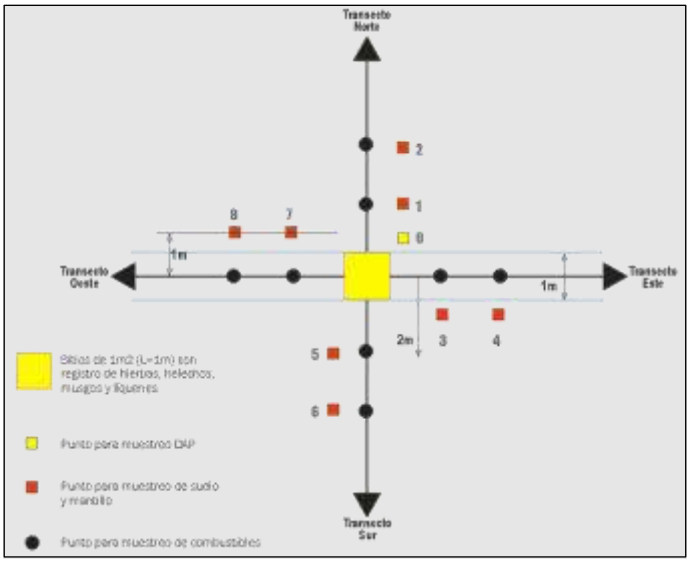


Figure 5. Subplots for the acquisition of litter and dead organic matter data.

In table6.5 the specific data input, methods and results for each pool are presented.

Table 6.5 Specific data inputs, methods, and results for each pool.

Aboveground biomass: Live woody vegetation that is distributed above the ground (including trunk, stems, bark, seeds and canopy). Based on INFyS data, the AB corresponds to all individuals whose branches or stems are equal or greater than 7.5 cm in diameter at 1.30 m from the base.			
Input and systems	**Methods**	**Results**	**Reference SOP**
Main input: - Tree dimension information from INFyS: Sampling (2004-2007) and resampling (2009-2014) Complementary input: - INFyS floristic catalogue containing names of plants - Allometric model database for estimating Aboveground biomass - Wood density data - Carbon fractions Spatial input: - Land use and vegetation INEGI - Ecoregions of Mexico Systems Aboveground biomass and carbon estimation system (SEByC), is a system that contains the input of data for estimating carbon where an algorithm is implemented to assign the model for calculating carbon in biomass for each record in the database.	1. Compilation of annual information from INFyS in an integrating, homogenized database. 2. Quality control for the integrating database. 3. Determination of the allometric models based on a sensitivity analysis (ASMA), which allows the identification of the most adequate model according to ecological, spatial and statistical information. 4. Determination of wood density: differential assignment according to the available taxonomic identification (genus, species) 5. Determination of a carbon fraction to estimate the carbon contents according to the available taxonomic identification	1. Database with carbon contents at the observation (or record) level: The database consists of 1,173,503 and 1,382,043 records or observations for stems and branches from INFyS Sampling and Resampling respectively, and the necessary variables for the estimation (cycle, year, type, conglomerate number, ecoregion, vegetation type, living condition, standardized normal diameter. Standardized total height and scientific name), carbon contents in kg. Notably, 2,555,549 records correspond to the records used for the estimation of biomass and carbon and are available here: http://file.cnf.gob.mx/isfl_2021/Factores_emision/BD_Contenidos_Ca_Reservorios/Contenidos_carbono_sitios_INFyS/ and http://file.cnf.gob.mx/FREL_modificado/Insumos/ContenidodeCarbono_MultitemporalClaseIPCC/ 2. Database for the estimation of site-level carbon contents values are in tonnes per hectare based in carbon contents for each accessible site and the number of site for the 26220 conglomerates (Available here: tC_BA_BS_R_MyRM.xlsx).	http://file.cnf.gob.mx/sop/SOP_07_Estima_Carbono_BA.pdf

	(genus, species) 6. Sum of carbon from all live records for each site to obtain the carbon in site-level AB 7. Extrapolation of the carbon contents per site, at the conglomerate level.		
Belowground biomass: composed of all fine and coarse roots, equal or greater than 2 mm in diameter. Those smaller than 2 mm are excluded from this stock because they cannot be distinguished from dead organic matter or litter.			
Data input and systems	**Methods**	**Results**	**Reference SOP**
Main input: - Aboveground biomass carbon Complementary input - Same as for aboveground biomass Belowground/aboveground biomass relationship (R) Systems - **Biomass and carbon estimation system (SEByC)**	1. Estimation of aboveground biomass (tons) per hectare per INFyS site (Table 4.4 of IPCC 2006 input) 2. Correspondence of each INFyS plots to a specific land use or vegetation category from INEGI series V (INEGI, 2013) 3. Emission factors for belowground/aboveground biomass (R) for vegetation classes in Mexico for each ecoregion or ecosystem type. For all values without correspondence, the median of all forest types was used. 4. Determination of	1. Database with the estimation of carbon at the individual record level in Sampling and Resampling cycles: Estimacion_C_BA_BS_MP_Toc_ReMuestreo.csv y Estimacion_C_BA_BS_MP_Toc_Muestreo.csv) 2. Database for carbon and belowground biomass for each site in sampling (2004-2007) and resampling (2009-2014) of the INFyS (available in tC_BA_BS_R_MyRM.xlsx) 3. Database containing belowground biomass and carbon for 26,220 CGL (Note: BB data are included in the same file as AB data, as for a third element, total biomass which consists of the sum of AB and BB) (available in tC_BA_BS_R_MyRM.xlsx)	http://file.cnf.gob.mx/sop/SOP_08_Estima_Carbono_BS.pdf

	the relationship factor (R) for each INFyS site for obtaining belowground biomass and carbon per site. 5. Estimation of belowground biomass per site. 6. Calculation of the site level carbon by multiplying belowground biomass by its carbon fraction 0.48 (mean value calculated from known fractions for Mexican species).		
Deadwood: dead woody biomass, standing dead wood, dead wood from stumps and coarse woody debris (which is not included in the litter). For Mexico, deadwood is comprised of three sub-stocks: a) standing dead wood, b) stumps y c) coarse woody debris (CWD)			
Standing deadwood sub-stock.			
Data input and systems	**Methods**	**Results**	**Reference SOP**
Main input: - INFyS Sampling database (2004-2007) and resampling (2009-2014) Complementary input - Same as for aboveground biomass Systems - **Biomass and carbon estimation system (SEByC)**	Standing dead trees sub stock: 1. Identification of the assignment and selection criteria: quality control and standardization similar to the ones implemented in the branches and stems records, as for the fit of regression models from diameter at 1.30m and basal diameter (DN/DB) 2. Determination of	1. Database containing the estimation of biomass and carbon at the record level for dead standing trees in sampling (2004-2007) and resampling (2009-2014) (available in Estimacion_C_BA_BS_MP_Toc_ReMuestreo.csv y Estimacion_C_BA_BS_MP_Toc_Muestreo.csv) 2. Database containing the estimation of biomass and carbon in dead standing trees for each sampling site (available in tC_MM_RM.xlsx)	http://file.cnf.gob.mx/sop/SOP_09_Estima_Carbono_MM.pdf

	simple conical volume models for obtaining the biomass for each of the records of standing dead trees (estimated from the equation of a cone V=((π×r^2×h))⁄3 by base diameter (DB) and corresponding height (h)) 3. Determination of wood density. For the species level identified records a mean wood density record was assigned based on a species-level average. 4. Determination of a carbon fraction. At the species level, or a mean value for records without taxonomic identification. 5. Estimation of the site level carbon contained in dead trees. 6. Estimation of the carbon in dead trees at the conglomerate level (t/ha) extrapolating from the sampling surface of 0.16 ha when all four plots were considered.		
Stumps sub-stock.			

Data input and systems	**Methods**	**Results**	**Reference SOP**
Main input: - Database from INFyS sampling (2004-2007) and resampling (2009-2014) Complementary input - Same as for aboveground biomass Systems - Biomass and carbon estimation system (SEByC)	1. Assignment and selection criteria identification: quality controls and standardization to facilitate the assignation of cylindrical models, wood densities and carbon fractions. 2. Determination of simple cylindrical models using diameter at 1.30 m and total height. V=((d^2×h))⁄4π) 3. Determination of wood densities: the methods used were similar to the ones used for standing dead trees. Wood density was weighted by the putrefaction state recorded during fieldwork: minimal putrefaction was assigned 5/6 of wood density, increased level of putrefaction was assigned 1/6 of wood density. 4. Determination of carbon fraction: The methods used were similar to the ones used for standing dead trees. 5. Estimation of site-level carbon adding up all stumps in one site. 6. Estimation of carbon from stumps at the conglomerate level (t/ha) extrapolating to the sampling area of 0.16 ha when all four plots are considered in the conglomerate.	1. Database of biomass and carbon for all stumps in the Sampling (2004-2007) and Resampling (2009-2014) (available in Estimacion_C_BA_BS_MP_Toc_ReMuestreo.csv y Estimacion_C_BA_BS_MP_Toc_Muestreo.csv) 2. Database with the estimation of biomass and carbon in stumps per each conglomerate (available in tC_MM_RM.xlsx)	http://file.cnf.gob.mx/sop/SOP_09_Estima_Carbono_MM.pdf
Woody debris sub stock (and integration of the deadwood stock)			

Data input and systems	**Methods**	**Results**	**Reference SOP**
Main input: - **INFyS sampling (2004-2007) and resampling (2009-2014) database** **Complementary input** - **Same as for aboveground biomass** **Systems** **- Biomass and carbon estimation system (SEByC)**	The estimation of the carbon contained in woody debris was done directly at the conglomerate level (tC/ha) through the count of particles categorized by diameter in specific transects: -Fine: <= 0.5 cm (l = 20 m) -Regular: 0.51 – 2.5 cm (l = 20 m) -Median: 2.51 – 7.5 cm (l = 60 m) - Coarse: > 7.5 cm (l = 60 m) Per hectare carbon was calculated through the following expression: OBJ where: C: Dead organic matter of woody debris (t ha-1) k: Constant (1.234) SG: Specific gravity d_i: Diameter per each intercepted piece i n: Number of intercepted pieces along the transect L: Transect length c: slope correction from a horizontal base where: c=√(1+((% slope)/100)^2)	1. Database for Woody debris at the conglomerate level (tC/ha) (available in tC_MM_RM.xlsx) 2. Conglomerate level carbon and biomass database (tC / ha) the three sub stock from dead wood	http://file.cnf.gob.mx/sop/SOP_09_Estima_Carbono_MM.pdf
Litter: includes two subcomponents: a) leaf litter (HO) and b) fermentation layer (F). **The HO subcomponent is the top layer from the organic horizontal level of the soil which results from leaves and aciculae recently befallen with minimal decomposition which mostly preserves their original structure.** **Subcomponent F is located underneath the HO layer, where the organic matter has lost its original structure and is now in different states of decomposition.**			

Data input and systems	**Methods**	**Results**	**Reference SOP**
Main input: **- INFyS database for sampling (2009-2014)** **Complementary input:** **- Samples of leaf litter and fermentation layer from the years 2011 and 2012** **Systems** **- Biomass and carbon estimation system (SEByC)**	1. Obtain the constant dry weight of leaf litter and fermentation layer (Wsf) from the INFyS database (Wsh) considering the weight of the sample, by drying the samples (Wth y Wtf) in an oven until constant weight is reached. 2. Recording leaf litter constant weight (Wfh) and the ferementation layer (Wff) considering total weight as: Wfh = Wth * (Wsh / Wmh) Wff = Wtf * (Wsf / Wmf) 3. Estimation of apparent leaf litter density and fragmentation through the following equations: Dah = (Wfh) / ((Eho/10) * 900)) Daf = (Wff) / ((Efe/10) * 900)) 4. Estimation of total carbon in the litter pool at the sample level adding up the apparent leaf litter density, weighted by carbon fraction	1. Database containing 133,608 records with carbon contents in the litter (available in Estimacion_C_Mantillo_OBS.csv) 2. Database containing 16,419 records of carbon content in the litter (available in tC_Mantillo_26220.xlsx)	http://file.cnf.gob.mx/sop/SOP_10_Estima_Carbono_Mantillo.pdf

	(0.48). 5. Application of quality controls to identify the sites with values of zero and inconsistencies in areas that were not considered to estimate apparent densities. 6. Adjustments and calculations for special cases (conglomerate levels only were registered as wet weight, conglomerates with values of zero for 8 subsites, etc) five special cases were found. 7. Database with average percent moisture for each vegetation class, which is used for calculating dry weight from the conglomerates with a wet weight value for the same vegetation class.		

Soil organic carbon (SOC): Soil organic carbon at 30 cm depth (standard value) is included and reported for the 2000 – 2016 time series. Fine root, live and dead and dead organic matter that are located in the soil and that are less than the minimum diameter threshold (2 mm) for roots and dead organic matter are included with dead organic matter when it is not possible to distinguish them from the latter.

Data input and systems	**Methods**	**Results**	**Reference SOP**
Main input: **-Soil Organic Carbon map (kg/m²) generated by Delaware University (Guevara et al., 2020 a,b). 0-30 cm depth, pixel 250m,**	1. A 2 km buffer was applied and used to crop the raster of the SOC map in order to work with information	1. Database with carbon contents (tC/ha) at the conglomerate level (available in tC_COS_Delaw.xlsx)	http://file.cnf.gob.mx/sop/SOP_11_Estima_Carbono_COS.pdf

1991-2010 period, available in: SOC_30cm_mx_conus_250m_iscn_inegi_1991_2010.tif **Complementary input** **- INFyS reference grid with 26,220 points** **- Geostatistical data frame (MG) information of vectors represents the geostatistical division of the national territory in different aggregation levels: national, state, and municipal.**	corresponding to Mexico. 2. Production of a polygon shapefile with circular 1 ha plot with central points corresponding to the INFyS plot locations. 3. Obtaining the SOC contents for each conglomerate by extracting the mean value of the pixels that are included in the circular polygons. 4. Special cases: conglomerates near bodies of water or the coastal line (for these cases an indirect value was obtained through the assignment of the SOC of the nearest point).		

Emission factors and their uncertainties for each particular stock were obtained according to the following:

1. Emission factors (EF) and their uncertainties for each intensity and ecoregion (category)
    a. Obtaining the emission factor for the subcategory

The EF refers to the mean carbon content (tC/ha) from the subcategory in the *i*-th sampling intensity of the *j*-th ecoregion for the year k. Once the EF is obtained it is weighted by the area of the i-th sampling intensity of the j-th ecoregion to obtain the level 1 INEGI ecoregion EF.

The EF of the *j*-th ecoregion was obtained through the following equation:

$$\widehat{FE}_j = \frac{\sum_{h=1}^{N_{ij}} c_{hij}}{\sum_{h=1}^{N_{ij}} a_{hij}}$$

Where:

$\widehat{FE}_{ij}$: EF for the subcategory in the i-th sampling intensity of the j-th ecoregion

c_{hij}: Carbon content (t C / sampled area) of the h-th plot of the i-th sampling intensity of the j-th ecoregion

N_{ij}: Number of plots in the i-th sampling intensity of the j-th ecoregion

a_{hij}: Sampling intensity of the h-th plot of the i-th sampling intensity of the j-th ecoregion

b. Estimation of the EF uncertainty

Uncertainty in the EF was obtained through the following equation:

$$U\left(\widehat{FE}_j\right) = \frac{Z_{\frac{\alpha}{2}} * s\left(\widehat{FE}_j\right)}{\widehat{FE}_j} * 100$$

Where:

$U\left(\widehat{FE}_j\right)$: uncertainty of $\widehat{FE}_j$

$Z_{\frac{\alpha}{2}}$: is the 95% percentile of the empirical distribution model that is fit to the data

$$s\left(\widehat{FE}_j\right) = \sqrt{\frac{N_j}{N_j - 1} \frac{\sum_{h=1}^{N_{ij}} c_{hij}^2 - 2\,\widehat{FE}_{ij} \sum_{h=1}^{N_{ij}} c_{hij} a_{hij} + \widehat{FE}_{ij} \sum_{h=1}^{N_{ij}} c_{hij}^2}{\left(\sum_{i}^{N_i} a_{hij}\right)^2}}$$

Table 6.6 Specific emission factors by transitions

POOL	TRANSITION	OUTPUT[96]
AGB	DEFORESTATION	DEFORESTACION_FL_AGB
	LOSS OF GRASSLAND	Tabla_FE_PERDIDA_P_AGB_22jul
	FOREST LAND REMAINING FOREST LAND	TablaFE_Cam_FL_AGB_E3
	GRASSLAND REMAINING GRASSLAND	TablaFE_Cam_GL_AGB_E3
	FOREST RECOVERY	Tabla_FE_RECU_FL_AGB
	GRASSLAND RECOVERY	6_Tabla_FE_RECU_GL_AGB_E3
BGB	DEFORESTATION	DEFORESTACION_FL_BGB
	LOSS OF GRASSLAND	Tabla_FE_PERDIDA_P_BGB_22jul
	FOREST LAND REMAINING FOREST LAND	TablaFE_Cam_FL_BGB_E3
	GRASSLAND REMAINING GRASSLAND	TablaFE_Cam_GL_BGB_E3
	FOREST RECOVERY	Tabla_FE_RECU_FL_BGB
	GRASSLAND RECOVERY	6_Tabla_FE_RECU_GL_BGB_E3
MM	DEFORESTATION	3_FE_MM_DEFORESTACION_FL
	LOSS OF GRASSLAND	4_FE_MM_PERDIDA_P
	RECOVERY	RECUPERACION MM_MAN_2022
MAN	DEFORESTATION	3_FE_MAN_DEFORESTACION_FL
	LOSS OF GRASSLAND	4_FE_MAM_PERDIDA_P
	RECOVERY	RECUPERACION MM_MAN_2022
SOC	DEFORESTATION	RAFAEL_MAYORGA_SAUCEDO_Matriz COS para BUR3_V2
	LOSS OF GRASSLAND	RAFAEL_MAYORGA_SAUCEDO_Matriz COS para BUR3_V2
Other TROS		FE_ISFL_2021
		FE_ISFL_2021_2

[96] All ouputs are available at http://file.cnf.gob.mx/isfl_2021/Factores_emision/BD_Contenidos_Ca_Reservorios/

2. Estimation of EF and its uncertainty for the category at the ecoregion level

    a. Estimation of the EF, for example:

The EF for the permanence of the *j*-th was obtained by weighing the $\widehat{FE}_{ij}$ by the area of the *i*-th sampling intensity of j-th ecoregion w_{ij}:

$$\widehat{FE}_j = w_{ij} \cdot \widehat{FE}_{ij}; \qquad \sum_{i}^{N_i} \quad w_{ij} = 1$$

b. Estimation of EF uncertainty

Uncertainty is estimated by combining uncertainties through the Addition and Subtraction method 2 in IPCC 2006 (described in detail in SOP 17).

Methods for the estimation of emissions/removals

The estimation of emissions/removals for the ISFL jurisdiction area was weighted by multiplying AD x EF. The calculations for DA and EF were described in the previous sections.

Table 6.7 Compilation of the GHG-Land inventory [3B]

Compilation of the GHG-Land inventory [3B]			
Input	**Methods**	**Results**	**Reference SOP**
Inputs - **Activity data (DA) estimates by conversion, by year and by ecoregion 1 and their respective uncertainties.** - **Emission Factor (EF) database for the five pools (Aboveground Biomass, Underground Biomass, Litter, Dead Wood and Soil Organic Carbon) by conversion and their respective uncertainties.**	- Estimation of GHG emissions/removals for each pool, land-use conversion, and ecoregion level one or two by multiplying their respective DA by their EF and ensuring the implementation of a set of criteria for annualization of emissions/removals. - Estimated total emissions/removals (for the five carbon pools) at the national level and reported for each of the subcategories of [3B].	- Database with estimated GHG emissions/removals in the subcategory Land [3B] for the period 2000-2018 and each of the land-use conversions of the IPCC categories and each of the BA, BS, MM, SOC, and Litter carbon pools, reported at both national and ecoregion levels.	http://file.cnf.gob.mx/sop/SOP_01_Enfoque_INEGyCEI.pdf http://file.cnf.gob.mx/sop/SOP_14_Dise%c3%b1o_Gral_INEGyCEI.pdf http://file.cnf.gob.mx/sop/SOP_15_Dise%c3%b1o_Estima_INEGyCEI.pdf http://file.cnf.gob.mx/sop/SOP_16_Compilacion_INEGyCEI.pdf http://file.cnf.gob.mx/sop/SOP_17_Estima_Propaga_Incert.pdf

	Uncertainties - Emission uncertainty at the ecoregion level was calculated using equation 3.2 to combine uncertainties using method 1. (Addition and subtraction) $U_{Total} = \frac{\sqrt{(U_1 * x_1)^2 + (U_2 * x_2)^2 + \ \ldots \ + (U_n * x}}{\lvert x_1 + x_2 + x_3 + \ \ldots \ + x_n \rvert}$ - Emissions estimates are grouped at the IPCC 3.B reporting sub-category level for NPIs with their respective annual propagated uncertainties for the period 2000-2018. In accordance with the IPCC (2006) guidelines, for grouping categories, the addition method was used and for Emissions calculation the multiplication method was used.	Uncertainties database at subcategory level.	

Table 6.8 Inputs, methods parameters and inputs are described in detail in their respective Standard Operational Procedures[97])

Component	ID_SOP	File name	Description
General approach	SOP_01	SOP_01_Enfoque_INEGyCEI	GHGI- Land general accounting approach for IPCC categories conversion, pools and gases
Coherent Representation of Lands	SOP_02	http://file.cnf.gob.mx/sop/SOP_02_Enfoque_Gral_Rep_Coher_Tierra.pdf	General Approach to Coherent Land Representation
	SOP_03	SOP_03_Fotointepreacion	Photo interpretation
	SOP_04	SOP_04_Metodo_Superficie_Propociones	Area estimation methodology by proportion
Emission Factors	SOP_05	SOP_05_Enfoque_Gral_FE	EF estimation approach
	SOP_06	SOP_06_Insumos	Inputs for EF estimation

[97] All SOPs are available in http://file.cnf.gob.mx/sop/

Component	ID_SOP	File name	Description
	SOP_07	SOP_07_Estima_Carbono_BA	Estimation of AGB carbon (individual level, site and Plot)
	SOP_08	SOP_08_Estima_Carbono_BS	Estimation of BGB carbon (individual level, site and plot)
	SOP_09	SOP_09_Estima_Carbono_MM	Estimation of DW carbon (individual level, site and plot)
	SOP_10	SOP_10_Estima_Carbono_Mantillo	Estimation of litter carbon (individual level, site and plot)
	SOP_11	SOP_11_Estima_Carbono_COS	Estimantion of SOC carbon (individual level, site and plot)
	SOP_12	http://file.cnf.gob.mx/sop/SOP_12_Estima_Carbono_Cult_Perenn.pdf	Perennial crops
	SOP_13	SOP_13_Estimación_FE	EF estimation (quality control of domain definition *)
	SOP_14	SOP_14_Diseño_Gral_INEGyCEI	GHGI design
Emissions compilation	SOP_15	SOP_15_Diseño_Estima_INEGyCEI	Estimation design
	SOP_16	SOP_16_Compilacion_INEGyCEI	GHGI compilation
	SOP_17	SOP_17_Estima_Propaga_Incert	Estimation and uncertainty propagation
Baseline	SOP_18	SOP_18_Linea_Base	Estimation of Baseline

Intermediate results for remake estimations

Table 6.9 Intermediate results.

Component	ID SOP	File name	Description	Input / output	Name	Link
General approach	SOP_01	SOP_01_Enfoque_INEGyCEI	GHGI on Land sector general accounting approach for NPIs (IPCC category conversions, pools and gases)	Input	Dasometric database of the first and second cycle of the National Forest and Soil Inventory	http://file.cnf.gob.mx/isfl_2021/Factores_emision/INFyS/
				Input	Complementary databases (Biomass Allometric Model Database, Carbon Fractions, Wood Densities and Catalogue of Scientific Plant Names)	http://file.cnf.gob.mx/isfl_2021/Factores_emision/SEByC/modelos.xlsx
				Input	Database with the results of the photo-interpretation of the plots analyzed with satellite images in the period 2000-2018 using the Collect Earth tool.	http://file.cnf.gob.mx/isfl_2021/Representacion_coherente_tierras/Fotointerpretacion/DatosCollectEarth/
				Input	Database with AD estimates for each conversion of the IPCC categories reported at ecoregion level	http://file.cnf.gob.mx/isfl_2021/INGEYEI-tierra/Compilacion_INGEYEI-Tierra/INEGEyEI_ISFL/01. DATOS DE ACTIVIDAD/03.ResultadosDActividad2000-2019/00.DatActNacionalEcorreg_2000_2019_Junio14.xlsx

Component	ID SOP	File name	Description	Input / output	Name	Link
				Input	Database containing the calculations for AD for the 2000 – 2018 period for each IPCC land use conversion for each ecoregion	http://file.cnf.gob.mx//isfl_2021/INGEYEI-tierra/Compilacion_INGEYEI-Tierra/INEGEyEI_ISFL/01.DATOS DE ACTIVIDAD/
				Input	Databases containing the EF estimation process for each IPCC land use conversion for each ecoregion	http://file.cnf.gob.mx/isfl_2021/INGEYEI-tierra/Compilacion_INGEYEI-Tierra/INEGEyEI_ISFL/02.%20FACTORES%20DE%20EMISION/
				Output	Database with the estimation of EFs for each of the land-use conversions of the IPCC categories and each of the carbon pools of the AGB, BGB, DW, SOC, reported at the ecoregional level	http://file.cnf.gob.mx/isfl_2021/Factores_emision/BD_Integrada_FE_Reservorio_subcategoria_IPCC.xlsx
				Output	Database with estimated GHG emissions/removals in the subcategory Land [3B] for the period 2000-2018 and for each of the land-use conversions of the IPCC categories and each of the AGB, BGB, DW, SOC carbon pools, reported at both global and ecoregional levels	http://file.cnf.gob.mx/isfl_2021/INGEYEI-tierra/Compilacion_INGEYEI-Tierra/INEGEyEI_ISFL/03.INEGyCEI/03.InventarioGEI_Tierras_ISFL.xlsx

Component	ID SOP	File name	Description	Input / output	Name	Link
				Output	Databases containing the calculation process for GHG emissions/removals in subcategory [3B] for the 2000 – 2018 perdiod. Including all the IPCC land use categories and carbon pools (AGB, BGB, DW, SOC) for each ecoregion.	http://file.cnf.gob.mx/isfl_2021/INGEYEI-tierra/Compilacion_INGEYEI-Tierra/INEGEyEI_ISFL/
Coherent Representation of Lands	SOP_02	SOP_02_Enfoque_Gral_Rep_Coher_Tierra	General Approach to Coherent Land Representation	Input	INEGI Geostatistical Framework, 2016	https://www.inegi.org.mx/contenidos/Ouputs/prod_serv/contenidos/espanol/bvinegi/Ouputs/geografia/marc_geo/702825217341_s.zip
				Input	Terrestrial ecoregions of Mexico	http://www.conabio.gob.mx/informacion/gis/maps/geo/ecort08gw.zip
				Input	Vector Land Use and Vegetation Data 1:250 000, Series II	https://www.inegi.org.mx/contenidos/Ouputs/prod_serv/contenidos/espanol/bvinegi/Ouputs/geografia/tematicas/uso_suelo/1_250_000/serie_II/702825007021_s.zip
				Input	National stratification Ecorregiones_equidistancias_estados	http://file.cnf.gob.mx/isfl_2021/Representacion_coherente_tierras/Enfoque_general/Ecoreg_Equidis_MGM16_nal_densificada_ISFL.rar
				Input	ISFL ERP Estratification Ecorregiones_equidistancias_estados_ISFL ERP	http://file.cnf.gob.mx/isfl_2021/Representacion_coherente_tierras/Enfoque_general/Eco_Equi_edos_ISFL_ERprogram.rar
				Input	National Forest and Soil Inventory	http://file.cnf.gob.mx/isfl_2

Component	ID SOP	File name	Description	Input / output	Name	Link
					Information (InFyS)	021/Factores_emision/INFyS/
				Input	INEGI vegetation classification system	https://www.inegi.org.mx/contenidos/Ouputs/prod_serv/contenidos/espanol/bvinegi/Ouputs/geografia/tematicas/uso_suelo/1_250_000/serie_VI/889463598459_s.zip
				Input	INEGI vegetation classification system Guia	http://file.cnf.gob.mx/isfl_2021/Representacion_coherente_tierras/Enfoque_general/Guia_INEGI.pdf
				Input	Vegetation INEGI-IPCC	http://file.cnf.gob.mx/isfl_2021/Representacion_coherente_tierras/Enfoque_general/Tabla_deCorrespondenciaVegetacionIPCC.xlsx
				Input	National Sampling design in shape file	http://file.cnf.gob.mx/isfl_2021/Representacion_coherente_tierras/Enfoque_general/Malla_nal_den_denISFL_CONAFOR.rar
				Input	ISFL Sampling design in shape file	http://file.cnf.gob.mx/isfl_2021/Representacion_coherente_tierras/Fotointerpretacion/SHP%20DistribucionMallaMuestreo_ISFL/
				Output	Sampling design	http://file.cnf.gob.mx/isfl_2021/Representacion_coherente_tierras/Enfoque_general/7768Documento%20tecnico%202020%20Deforestacion

Component	ID SOP	File name	Description	Input / output	Name	Link
						%20Bruta%20Final.pdf
				Output	Plot design	http://file.cnf.gob.mx/isfl_2021/Representacion_coherente_tierras/Enfoque_general/7768Documento tecnico 2020 Deforestacion Bruta Final.pdf
	SOP_03	SOP_03_Fotointepreacion	Photointerpellation (interpretation)	Input	Sample plots	http://file.cnf.gob.mx/isfl_2021/Representacion_coherente_tierras/Fotointerpretacion/Distribucion_de_Parcelas_de_Muestreo_ISFL.csv
				Input	Spatial data for the ISFL sampling grid	http://file.cnf.gob.mx/isfl_2021/Representacion_coherente_tierras/Fotointerpretacion/SHP%20DistribucionMallaMuestreo_ISFL/
				Input	Survey	http://file.cnf.gob.mx/isfl_2021/Representacion_coherente_tierras/Fotointerpretacion/Cuestionario_CollectEarth_analisis_de_deforestacion_en_mexico_2000_2020_2021-05-12.cep
				Input	Collect Earth	https://openforis.org/tools/collect-earth/#Download

Component	ID SOP	File name	Description	Input / output	Name	Link
				Input	Repositorio de imágenes	
				Input	Capas de coberturas de Suelo y vegetación	https://www.inegi.org.mx/contenidos/productos/prod_serv/contenidos/espanol/bvinegi/productos/geografia/tematicas/uso_suelo/1_250_000/serie_VI/889463598459_s.zip
				Input	NFI	http://file.cnf.gob.mx/isfl_2021/Factores_emision/INFyS/
				Input	NDVI	
				Output	Completed survey	http://file.cnf.gob.mx/isfl_2021/Representacion_coherente_tierras/Fotointerpretacion/Cuestionario_CollectEarth_analisis_de_deforestacion_en_mexico_2000_2020_2021-05-12.cep
				Output	Photointerpreted database	http://file.cnf.gob.mx/isfl_2021/Representacion_coherente_tierras/Fotointerpretacion/DatosCollectEarth/
				Output	Multitemporal database	http://file.cnf.gob.mx/isfl_2021/Representacion_coherente_tierras/Fotointerpretacion/Matriz Multitemporal

Component	ID SOP	File name	Description	Input / output	Name	Link
						IPCC 00-18
	SOP_04	SOP_04_Metodo_Superficie_Proporciones	Area estimation methodology by proportion	Input	IPCC multitemporal class data matrix for all plots included in the quantification	http://file.cnf.gob.mx/isfl_2021/Representacion_coherente_tierras/Fotointerpretacion/Matriz Multitemporal IPCC 00-18
				Input	List of IPCC subcategory combinations (49 different combinations)	http://file.cnf.gob.mx/isfl_2021/INGEYEI-tierra/Compilacion_INGEYEI-Tierra/INEGEyEI_ISFL/01.%20DATOS%20DE%20ACTIVIDAD/01.CalculoMallaDensificada_Nal01-18/1.%20INSUMOS/Transiciones49_Class.csv
				Input	Included in a R script, to quantify the plots by subcategory type. This process can also be done in Excel	http://file.cnf.gob.mx/isfl_2021/INGEYEI-tierra/Compilacion_INGEYEI-Tierra/INEGEyEI_ISFL/01.%20DATOS%20DE%20ACTIVIDAD/01.CalculoMallaDensificada_Nal01-18/1.%20INSUMOS/Script%20de%20Conteo%20por%20transiciones_ISFL_2021_.R

Component	ID SOP	File name	Description	Input / output	Name	Link
				Input	Archivo shapefile de los limites del Área del Programa ISFL Shapefile of the ISFL program area	http://file.cnf.gob.mx/isfl_2021/Representacion_coherente_tierras/Enfoque_general/Eco_Equi_edos_ISFL_ERprogram.rar
				Input	The file of areas by stratum type (in this example is considered ecoregion and equidistance)	http://file.cnf.gob.mx/isfl_2021/INGEYEI-tierra/Compilacion_INGEYEI-Tierra/INEGEyEI_ISFL/01.%20DATOS%20DE%20ACTIVIDAD/01.CalculoMallaDensificada_Nal01-18/1.%20INSUMOS/Ecoreg_Equidist_MGM16_Superficie.xlsx
				Input	El archivo shapefile por tipo de estratos (ejemplo, Estados, Ecorregiones y Equidistancias) del área del programa ISFL. Shapefile for each stratum (e.g. state, ecoregion, equidistance) in the ISFL program area	http://file.cnf.gob.mx/isfl_2021/Representacion_coherente_tierras/Enfoque_general/Eco_Equi_edos_ISFL_ERprogram.rar
				Output	BD with DA estimates	http://file.cnf.gob.mx/isfl_2021/INGEYEI-tierra/Compilacion_INGEYEI-Tierra/INEGEyEI_ISFL/01.%20DATOS%20DE%20ACTIVIDAD/03.ResultadosDActividad2000-2019/00.DatActNacionalEcorreg_2000_2019_Junio14.xls

Component	ID SOP	File name	Description	Input / output	Name	Link
						x
				Output	BD with the estimation of DA uncertainties	http://file.cnf.gob.mx/isfl_2021/INGEYEI-tierra/Compilacion_INGEYEI-Tierra/INEGEyEI_ISFL/01. DATOS DE ACTIVIDAD/03.ResultadosDActividad2000-2019/00.DatActNacionalEcorreg_2000_2019_Junio14.xlsx
Factores de Emisión	SOP_05	SOP_05_Enfoque_Gral_FE	EF estimation approach	Input	IPCC Multitemporal Matrix (see SOP 3)	http://file.cnf.gob.mx/isfl_2021/Representacion_coherente_tierras/Fotointerpretacion/Matriz Multitemporal IPCC 00-18
				Input	National Forest and Soil Inventory (see SOP 6)	http://file.cnf.gob.mx/isfl_2021/Factores_emision/INFyS/
				Input	Soil Organic Carbon Estimates for 30-cm Depth, Mexico and Conterminous https://daac.ornl.gov/cgi-bin/dsviewer.pl?ds_id=1737	https://daac.ornl.gov/cgi-bin/dsviewer.pl?ds_id=1737
				Output	Emission Factors Database (integrated) for each of the pools by IPCC category and subcategory.	http://file.cnf.gob.mx/isfl_2021/Factores_emision/BD_Contenidos_Ca_Reservorios/Contenidos_carbono_sitios_INFyS/

Component	ID SOP	File name	Description	Input / output	Name	Link
	SOP_06	**SOP_06_Inputs**	Inputs for FE estimation	Input	Dasometric, ecological, floristic information of INFyS	http://file.cnf.gob.mx/isfl_2021/Factores_emision/INFyS/
				Input	Field location (coordinates) of INFyS conglomerates	http://file.cnf.gob.mx/isfl_2021/Factores_emision/INFyS/Sitios.xlsx
				Input	INFyS Results Report 2004-2009	https://snigf.cnf.gob.mx/resultados-2004-2009/
				Input	INFyS Results Report 2009-2014	https://snigf.cnf.gob.mx/resultados-2009-2014-resultados-que-recaba-los-principales-indicadores-forestales-generados-a-partir-del-analisis-estadistico-de-las-variables-levantadas-en-campo/
				Input	References of allometric biomass and carbon models	http://file.cnf.gob.mx/isfl_2021/Factores_emision/SEByC/modelos.xlsx
				Input	References of wood densities	http://file.cnf.gob.mx/isfl_2021/Factores_emision/SEByC/modelos.xlsx
				Input	References of carbon fractions	http://file.cnf.gob.mx/isfl_2021/Factores_emision/SEByC/modelos.xlsx
				Input	IPCC Guidelines 2006	https://www.ipcc-nggip.iges.or.jp/public/2006gl/spanish/index.html
				Output	Standardized database of woodland and major vegetation records of sampling and re-sampling of INFyS at observation level	http://file.cnf.gob.mx/isfl_2021/Factores_emision/INFyS/

Component	ID SOP	File name	Description	Input / output	Name	Link
					(branch or stem)	
				Output	Database of Allometric Biomass and Carbon Models	http://file.cnf.gob.mx/isfl_2021/Factores_emision/SEByC/modelos.xlsx
				Output	Database of Wood Densities	http://file.cnf.gob.mx/isfl_2021/Factores_emision/SEByC/modelos.xlsx
				Output	Database of Wood Fractions	http://file.cnf.gob.mx/isfl_2021/Factores_emision/SEByC/modelos.xlsx
				Output	INFyS plant name catalogue	http://file.cnf.gob.mx/isfl_2021/Factores_emision/INFyS/Nombres_de_plantas.xlsx
	SOP_07	SOP_07_Estima_Carbono_BA	Carbon estimation of BA (individual level, site and cgl,)	Input	Databases of the National Forest and Soils Inventory, identifying variables as the scientific name, normal diameter, total height, condition (live)	http://file.cnf.gob.mx/isfl_2021/Factores_emision/INFyS/
				Input	Database of allometric biomass models	http://file.cnf.gob.mx/isfl_2021/Factores_emision/SEByC/modelos.xlsx
				Input	Carbon fractions	http://file.cnf.gob.mx/isfl_2021/Factores_emision/SEByC/modelos.xlsx
				Input	Densities of the wood	http://file.cnf.gob.mx/isfl_2021/Factores_emision/SEByC/modelos.xlsx
				Input	Catalog of scientific plant names	http://file.cnf.gob.mx/isfl_2021/Factores_emision/INFyS/Nombres_de_plantas.xlsx

Component	ID SOP	File name	Description	Input / output	Name	Link
				Output	Carbon content database of aerial biomass at observation level (stem, branch), in kilograms	http://file.cnf.gob.mx/isfl_2021/Factores_emision/SEByC/Estimacion_24_observacion.zip
				Output	Biomass and carbon content database of aerial biomass at site level of 400 m2, in tonnes	http://file.cnf.gob.mx/isfl_2021/Factores_emision/SEByC/Estimacion_24_sitios.xlsx
	SOP_08	SOP_08_Estima_Carbono_BS	Carbon estimation of BS (individual level, site and cgl)	Input	Databases of the National Forest and Soils Inventory, identifying the variables as scientific name, normal diameter, total height, condition (living, dead, stump)	http://file.cnf.gob.mx/isfl_2021/Factores_emision/INFyS/
				Input	Database of allometric biomass models	http://file.cnf.gob.mx/isfl_2021/Factores_emision/SEByC/modelos.xlsx
				Input	Carbon fractions	http://file.cnf.gob.mx/isfl_2021/Factores_emision/SEByC/modelos.xlsx
				Input	Densities of the wood	http://file.cnf.gob.mx/isfl_2021/Factores_emision/SEByC/modelos.xlsx
				Input	Catalogue of scientific plant names	http://file.cnf.gob.mx/isfl_2021/Factores_emision/INFyS/Nombres_de_plantas.xlsx
				Output	BGB carbon content database	http://file.cnf.gob.mx/isfl_2021/Factores_emision/SEByC/Estimacion_24_sitios.xlsx
	SOP_09	SOP_09_Estima_Carbono_MM	Carbon estimation of MM (individual level, site and	Input	Databases of the National Forest and Soil Inventory, identifying variables as scientific name, normal diameter, total height, condition (dead standing, stump), degree of decomposition, diameter category	http://file.cnf.gob.mx/isfl_2021/Factores_emision/INFyS/

Component	ID SOP	File name	Description	Input / output	Name	Link
			cgl)	Input	Simple model of cone and cylinder volume	http://file.cnf.gob.mx/isfl_2021/Factores_emision/SEByC/modelos.xlsx
				Input	Carbon fractions	http://file.cnf.gob.mx/isfl_2021/Factores_emision/SEByC/modelos.xlsx
				Input	Wood densities	http://file.cnf.gob.mx/isfl_2021/Factores_emision/SEByC/modelos.xlsx
				Output	Database of carbon content of the standing dead and stumps, at observation level (kilograms). It is part of the database of the aboveground biomass pool for the same level (see SOP-NIR7 Ouput 1)	http://file.cnf.gob.mx/isfl_2021/Factores_emision/SEByC/Estimacion_24_observacion.zip
				Output	Database of biomass and carbon contents of DW	http://file.cnf.gob.mx/isfl_2021/Factores_emision/SEByC/Estimacion_24_sitios.xlsx
				Output	Site-level stumps of 400 m2 (tonnes). It is part of the database of the aerial biomass pool for the same level (see SOP-NIR7 Output 2)	
				Output	Biomass and carbon content database of standing dead and stumps at 1-hectare level (tonnes)	
				Output	Biomass and carbon content database of fallen wood material at 1-hectare level (tonnes)	

Component	ID SOP	File name	Description	Input / output	Name	Link
	SOP_10	SOP_10_Estima_Carbono_Mantillo	Estimation of litter carbon (individual level, site and cgl)	Input	Integrated carbon content database of deadwood (dead standing, stumps and fallen wood material) at 1-hectare level	http://file.cnf.gob.mx/isfl_2021/Factores_emision/INFyS/
				Input	Databases of the National Forest and Soil Inventory, identifying variables such as scientific name, normal diameter, total height, condition (live)	http://file.cnf.gob.mx/isfl_2021/Factores_emision/SEByC/modelos.xlsx
				Input	Database of allometric biomass models	http://file.cnf.gob.mx/isfl_2021/Factores_emision/SEByC/modelos.xlsx
				Input	Wood densities	http://file.cnf.gob.mx/isfl_2021/Factores_emision/SEByC/modelos.xlsx
				Input	Percentage of humidity per ecoregion and/or vegetation type	
				Output	Biomass and carbon content database of litter at hectare level, obtained from wet and dry weight recording conglomerates	
				Output	Database with biomass and carbon content of mulch at hectare level, obtained from conglomerates with wet weight record and estimated moisture percentage of Output 1	
	SOP_11	SOP_11_Estima_Carbono_COS	Estimation of SOC (individual level, site and cgl)	Input	Field location (coordinates) of INFyS conglomerates	
				Input	National Geostatistical Framework	https://www.inegi.org.mx/contenidos/Ouputs/prod_serv/contenidos/espanol/bvinegi/Ouputs/geografia/marcogeo/889463776079_s.zip

Component	ID SOP	File name	Description	Input / output	Name	Link
				Input	Carbon map: Soil Organic Carbon Across Mexico and the Conterminous United States (1991-2010) https://daac.ornl.gov/cgi-bin/dsviewer.pl?ds_id=1737	https://daac.ornl.gov/cgi-bin/dsviewer.pl?ds_id=1737
				Output	Soil organic carbon content database for the first 30 cm per hectare for the 26,220 INFyS clusters	http://file.cnf.gob.mx/isfl_2021/Representacion_coherente_tierras/Fotointerpretacion/Base_de_datos_multitemporal_SFL.csv
	SOP_12	**SOP_12_Estima_Carbono_Cult_Perenn**	permanent crop	Input	Review of scientific literature for identification of dasometric related information	
				Output	Contents of carbon in biomass, volume and other variables of increase of the main perennial crops of Mexico	
	SOP_13	SOP_13_Estimación_FE	FE estimation (quality control of domain definition*)	Input	Carbon content database ton of C(ha) and exchange rates (ton of C/ha/year). Database link	http://file.cnf.gob.mx/isfl_2021/Factores_emision/BD_Contenidos_Ca_Reservorios/
				Output	Emission Factors Database (integrated) for each of the pools by IPCC category and subcategory.	http://file.cnf.gob.mx/isfl_2021/Factores_emision/BD_Integrada_FE_Reservorio_subcategoria_IPCC.xlsx
INGEYEI-Tierra para ISFL e Incertidumbres	SOP_14	SOP_14_Diseño_Gral_INEGyCEI	INGEYEI-Earth design for ISFL	Input	Normative/ methodological provisions applicable to the GHG inventory being developed	http://file.cnf.gob.mx/isfl_2021/INGEYEI-tierra/Disenio_INGEYEI-Tierra/
				Output	Inventory parameters reported	http://file.cnf.gob.mx/isfl_2021/INGEYEI-tierra/Compilacion_INGEYEI-

Component	ID SOP	File name	Description	Input / output	Name	Link
						Tierra/INEGEyEI_ISFL/03. INEGyCEI/03.InventarioGEI_ Tierras_ISFL.xlsx
	SOP_15	SOP_15 _Diseño _Estima _INEGyCEI	INGEYEI-Earth estimation design for ISFL	Input	Results of the SOP SOP 14 GHG-Earth Inventory Design	http://file.cnf.gob.mx/isfl_2021/INGEYEI-tierra/Compilacion_INGEYEI-Tierra/INEGEyEI_ISFL/03. INEGyCEI/03.InventarioGEI_ Tierras_ISFL.xlsx
				Output	Declared estimation(s) parameters(s)	http://file.cnf.gob.mx/isfl_2021/INGEYEI-tierra/Compilacion_INGEYEI-Tierra/INEGEyEI_ISFL/03. INEGyCEI/03.InventarioGEI_ Tierras_ISFL.xlsx
	SOP_16	SOP_16 _Compil acion_I NEGyCEI	INGEYEI-Earth compilation for ISFL	Input	Databases with AD estimates (derived from information generated with the approach	http://file.cnf.gob.mx//isfl_2021/INGEYEI-tierra/Compilacion_INGEYEI-Tierra/INEGEyEI_ISFL/01. DATOS DE ACTIVIDAD/ http://file.cnf.gob.mx/isfl_2021/INGEYEI-tierra/Compilacion_INGEYEI-Tierra/INEGEyEI_ISFL/03.%20INEGyCEI/03.InventarioGEI_Tierras_ISFL.xlsx

Component	ID SOP	File name	Description	Input / output	Name	Link
				Input	Sampling approach of the Forest Monitoring Satellite System (SAMOF) for the different subcategories	http://file.cnf.gob.mx/isfl_2021/Factores_emision/BD_Integrada_FE_Reservorio_subcategoria_IPCC.xlsx
				Output	of [3B]	http://file.cnf.gob.mx/isfl_2021/INGEYEI-tierra/Compilacion_INGEYEI-Tierra/INEGEyEI_ISFL/03.INEGyCEI/03.InventarioGEI_Tierras_ISFL.xlsx
	SOP_17	SOP_17_Estima_Propaga_Incert	Estimation and spread of uncertainties	Input	Databases with EF estimates (obtained from information generated with the System	http://file.cnf.gob.mx/isfl_2021/INGEYEI-tierra/Estimacion_y_propagacion_de_incertidumbres/Matriz_DA_2000_2018.xlsx
				Input	Biomass and Carbon Estimation -SEByC) of carbon pools of BA, BS, MM, Mulch and	
				Output	SOC for the different subcategories of [3B]	http://file.cnf.gob.mx/isfl_2021/INGEYEI-tierra/Compilacion_INGEYEI-Tierra/INEGEyEI_ISFL/03.INEGyCEI/03.InventarioGEI_Tierras_ISFL.xlsx

Component	ID SOP	File name	Description	Input / output	Name	Link
Línea Base	SOP_18	SOP_18_Linea_Base	Estimation of Baseline	Input	Annual emissions inventory of subsector 3B. Land spanning the entire project area. The time series of this emission inventory shall include at least the baseline period and indicate the pools and reported gases	http://file.cnf.gob.mx/isfl_2021/INGEYEI-tierra/Compilacion_INGEYEI-Tierra/INEGEyEI_ISFL/03.INEGyCEI/03.InventarioGEI_Tierras_ISFL.xlsx
				Input	Annual emission inventory for subsectors 3A and 3C, The time series of this emission inventory shall include at least the baseline period as well as indicate the pools and reported gases	http://file.cnf.gob.mx/isfl_2021/Linea_base/
				Input	Inventory of GHG emissions for all categories and subcategories of the AFOLU sector, gases and pools in the Program Area (Program GHG Inventory)	http://file.cnf.gob.mx/isfl_2021/INGEYEI-tierra/Compilacion_INGEYEI-Tierra/INEGEyEI_ISFL/03.INEGyCEI/03.InventarioGEI_Tierras_ISFL.xlsx
				Output	Eligible Subcategories of the ISFL Program	http://file.cnf.gob.mx/isfl_2021/Linea_base/Tool_ISFL_Baseline_v_1.0_-_151021.xlsx
				Output	Baseline of the ISFL Program	http://file.cnf.gob.mx/isfl_2021/Linea_base/Tool_ISFL_Baseline_v_1.0_-_151021.xlsx

Emission reductions results

The following tables show annual emissions (and their respective uncertainty) of all AFOLU categories[98], subcategories, gases and pools in the Program Area for the 2000 – 2018 period.

Table 1. Annual emissions (tCO_2e) for sector 3B Land

Id	Conversion	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
3B 1a	FL-FL	-13,574,430	-13,574,430	-13,573,560	-13,570,520	-13,566,990	-13,564,540	-13,557,840	-13,554,150	-13,549,760	-13,548,030	-13,527,490	-13,502,750	-13,492,970	-13,483,430	-13,474,730	-13,471,550	-13,460,890	-13,453,290	-13,448,200
3B 1bi	CL-FL	-80	-170	-250	-330	-420	-500	-580	-670	-750	-830	-920	-1,000	-1,080	-1,170	-1,250	-1,330	-1,420	-1,500	-1,580
3B 1bii	GL-FL	-3,000	-5,990	-8,990	-11,990	-14,980	-17,980	-20,980	-23,980	-26,970	-29,970	-32,970	-35,960	-38,960	-41,960	-44,950	-47,950	-50,950	-53,940	-56,940
3B 1biii	WL-FL	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3B 1biv	SL-FL	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3B 1bv	OL-FL	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3B 2a	CL-CL	-623,670	-623,670	-623,670	-623,670	-623,670	-623,670	-623,670	-623,670	-623,670	-623,670	-623,670	-492,700	-538,420	-637,380	-721,720	-721,720	-721,720	-721,720	-721,720
3B 2bi	FL-CL	67,610	67,690	170	170	170	170	170	90,610	370	370	68,010	490	242,320	47,750	86,230	2,820	2,820	141,920	3,880
3B 2bii	GL-CL	-	-	75,540	4,960	95,700	97,880	174,640	114,620	333,070	216,860	132,890	353,990	267,210	108,990	356,710	105,590	461,460	224,350	138,110
3B 2biii	WL-CL	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3B 2biv	SL-CL	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3B 2bv	OL-CL	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

[98] Presently available results for subsector [3B] Land

Id	Conversion	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
3B 3a	GL-GL	-963,250	-963,250	-963,040	-963,170	-963,410	-963,870	-963,770	-964,290	-963,370	-963,150	-963,220	-963,780	-965,270	-964,460	-964,240	-965,370	-964,140	-965,860	-965,130
3B 3bi	FL-GL	67,610	67,690	45,360	361,690	252,940	227,290	999,400	139,070	335,510	52,400	641,050	1,876,850	772,290	1,219,330	1,017,420	320,320	919,530	910,520	338,220
3B 3bii	CL-GL	-	-	-	-180	-530	-610	-610	-610	-610	-900	-1,730	-2,070	-2,070	-2,070	-2,210	-2,290	-3,120	-3,360	-3,360
3B 3biii	WL-GL	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3B 3biv	SL-GL	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3B 3bv	OL-GL	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3B 4ai	WL-WL	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3B 4aii	WL-WL	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3B 4bi	WL-WL	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3B 4bii	F-WL	-	-	-	45,560	450	450	450	450	450	450	450	450	450	450	450	450	450	450	450
3B 5a	SL-SL	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3B 5bi	FL-SL	-	-	-	-	-	-	-	67,600	80	47,720	47,800	48,200	3,080	3,080	3,080	70,690	3,170	3,170	94,550
3B 5bii	CL-SL	-	-	-	-	-	-	-	-	-	-		430,020							
3B 5biii	GL-SL	-	-	-	-	-	-	-	-	-	-	18,870	74,160	52,440	7,980	7,980	7,980	7,980	27,010	10,430
3B 5biv	WL-SL	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3B 5bv	OL-SL	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3B 6a	OL-OL	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3B 6bi	FL-OL	-	-	-	-	-	-	-	45,220	100	100	100	100	100	100	67,700	180	180	180	180
3B 6bii	CL-OL	-	-	-	-	-	-	-	-	-	-	-	-	28,160	-	-	-	-	-	-

Id	Conversion	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
3B 6biii	GL-OL	-	-	-	-	-	4,860	150	150	150	150	150	150	150	150	18,250	620	83,830	16,390	16,390
3B 6biv	WL-OL	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3B 6bv	SL-OL	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		-15,029,210	-15,032,130	-15,048,440	-14,757,480	-14,820,740	-14,840,520	-13,992,640	-14,709,650	-14,495,400	-14,848,500	-14,240,680	-12,213,850	-13,672,570	-13,742,640	-13,651,280	-14,701,560	-13,722,820	-13,875,680	-14,594,720

Table 2. Emissions uncertainty (%) for sector 3B Land

Id	Conversion	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
3B1a	FL-FL	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	8
3B1bi	CL-FL	496	351	295	259	234	217	203	192	184	176	170	165	160	156	152	149	146	143	141
3B1bii	GL-FL	213	151	123	107	95	87	81	75	71	67	64	62	59	57	55	53	52	50	49
3B1biii	WL-FL	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3B1biv	SL-FL	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3B1bv	OL-FL	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3B2a	CL-CL	76	76	76	76	76	76	76	76	76	76	76	89	81	74	70	70	70	70	70
3B2bi	FL-CL	135	135	140	140	140	140	140	102	115	115	134	100	99	122	108	108	108	98	91
3B2bii	GL-CL	-	-	144	196	121	118	78	103	99	74	89	93	61	545	75	51	70	58	52
3B2biii	WL-CL	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3B2biv	SL-CL	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3B2bv	OL-CL	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3B3a	GL-GL	214	214	214	214	214	214	214	214	214	214	214	214	213	213	213	213	213	213	213
3B3bi	FL-GL	135	135	128	58	68	70	124	93	77	112	53	33	40	34	36	58	42	37	55
3B3bii	CL-GL	-	-	-	390	287	252	252	252	252	258	321	276	276	276	259	250	244	233	233
3B3biii	WL-GL	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3B3biv	SL-GL	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3B3bv	OL-GL	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3B4ai	WL-WL	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3B4aii	WL-WL																			
3B4bi	WL-WL																			
3B4bii	F-WL	-	-	-	128	196	196	196	196	196	196	196	196	196	196	196	196	196	196	196
3B5a	SL-SL	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3B5bi	FL-SL	-	-	-	-	-	-	-	135	198	122	122	121	163	163	163	129	159	159	98

Id	Conversion	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
3B5bii	CL-SL	-	-	-	-	-	-	-	-	-	-	-	196	-	-	-	-	-	-	-
3B5biii	GL-SL	-	-	-	-	-	-	-	-	-	-	119	146	130	126	126	126	126	87	108
3B5biv	WL-SL	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3B5bv	OL-SL	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3B6a	OL-OL	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3B6bi	FL-OL	-	-	-	-	-	-	-	129	225	225	225	225	225	225	135	152	152	152	152
3B6bii	CL-OL	-	-	-	-	-	-	-	-	-	-	-	-	196	-	-	-	-	-	-
3B6biii	GL-OL	-	-	-	-	-	123	198	198	198	198	198	198	198	198	123	177	109	192	192
3B6biv	WL-OL	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3B6bv	SL-OL	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

The results are available at: http://file.cnf.gob.mx/isfl_2021/INGEYEI-tierra/Compilacion_INGEYEI-Tierra/INEGEyEI_ISFL/

Annex 7: Review of the available data and methods for the subcategories from the initial selection against the quality and baseline setting requirements for ISFL Accounting

Data sources and methods for activity data

Categories 3A y 3C

Livestock category includes methane emissions from enteric fermentation [3A1], and methane and nitrous oxide emissions from manure management [3A2]. Originally, the GHG inventory developed by INECC for BUR3 was estimated annually for 1990-2019 (which cover the 2000-2018 period) and for each one of the 32 federal entities (which include ISFL jurisdictional area). The livestock inventory was developed using the 2006 IPCC Guidelines and the 2019 Refinement to the 2006 IPCC Guideline.

Tier 1 method was applied for all animal categories using default emissions factors mixed with national activity data and parameters; however, Mexico used country specific emission factors for cattle at the national level, which could not be representing the ISFL jurisdictional area circumstances, therefore, for ISFL purposes, it should be considerate such as an adapted Tier 1 method for cattle. Activity data (animal population) was provided by the Secretariat of Agriculture and Rural Development (SADER). Country specific emission factors were obtained from 41 national research papers for 25 of 32 federal entities. The following animal categories were included: dairy cows [3A1ai], other cattle [3A1aii], sheep, [3A1c], goats [3A1d], horses [3A1f], mules and asses [3A1g], and swine [3A1h].

Manure management [3A2]: methane and nitrous oxide emissions from the decomposition of manure under low oxygen or anaerobic conditions and on-farm co-digestates combined with manure in on-farm biogas plants. These conditions often occur when large numbers of animals are managed in a confined area, where manure is typically stored in large piles or disposed of in lagoons and other types of manure management systems. Tier 2 method was applied for cattle and swine using national parameters (volatile solid, annual average N excretion, and fraction of managed manure nitrogen for livestock) while Tier 1 method was applied for other animal categories using default emission factors mixed with national activity data and parameters (i.e., average temperature, typical animal mass, fraction of managed manure nitrogen for livestock, etc.). Mostly activity data was provided by SADER, while annual average temperature data was provided by the National Water Commission (CONAGUA). Country specific emission factors were obtained from 41 national research papers for 25 of 32 federal entities. The following animal categories were included: dairy cows [3A2ai], other cattle [3A2aii], sheep [3A2c], goats [3A2d], camels [3A2e], horses [3A2f], mules and asses [3A2g], swine [3A2h], and poultry [3A2i].

For Aggregate sources and non-CO2 emissions sources on land [3C] category, emissions from biomass burning [3C1]: emissions from biomass burning that include nitrous oxide and methane in forest land [3C1a], croplands [3C1b], and grasslands [3C1c]. CO2 emissions were included in 3B categories as carbon stock changes. Tier 1 method was applied for forest land and grassland using default emission factors and activity data from the National Forestry Commission (CONAFOR), while Tier 1 and Tier 2 methods

were applied for cropland using country specific emission factor for corn, sorghum, wheat, barley and sugarcane and default emission factors for other crops and activity data from SADER. Emissions from biomass burning were estimated by strata at the national level, therefore, forest land and grassland burnt areas by federal entity were used as proxies to desegregate emissions at the federal entities level and cultivated area was used as proxy to desegregate emissions from cropland.

Category 3B

As indicated in Annex 6, for 3B Category a sampling based approach of Method 3 of land representation of the 2006 IPCC Guidelines is followed. The annual areas of land use and land cover were obtained by using proportions according to the 2006 IPCC Guidelines. Based on the total area of the ISFL programit is possible to estimate the areas of the different land use categories.

The choice of this approach was based on: (i) cost-effectiveness of the systematic sampling method, (ii) satisfactory results of a pilot test to estimate deforestation rates at the national level, (iii) the avoidance of classical uncertainties and biases related to extrapolations from mapping-based methods, (iv) the lessons learned from the wall-to-wall approach and (v) the recommendations for the use of this method by FAO and the World Bank.

The annual areas of land use and land cover were obtained by estimating areas using the proportions method. According to the IPCC (2006), to apply this approach you must first know the total area of the analysis area or "Accounting Area". With this information, it is possible to estimate the areas of the different land use categories based on assessments of the surface proportions. When this method is applied, the area of analysis is covered by a certain number of sample points and the land use is determined for each point. The proportion of each land use category is then calculated by dividing the number of points located in the specific category by the total number of points sampled. The area estimates for each land use category are obtained by multiplying the proportion of each category by the total area. Table 3A.3.1 of the IPCC Guidelines (2006) (Figure 7.1) provides an example of this procedure.

Accounting area and sampling mesh

The accounting area of the ISFL program has a subnational scale, is formed by the jurisdictional area of four states: Durango, Chihuahua, Coahuila y Nuevo Leon, and amounts to 58,652,760 ha (see section 2.1.1).

The sampling mesh for the ISFL program is integrated by two components:

i. Sampling mesh based on NFI: Mexico's NFI has a systematic sampling grid design based on a stratification that establishes three distances between sampling units according to the major groups of vegetation under study: 5x5 km for forests and jungles, 10x10km for semi-arid communities and low deciduous forest, and 20x20km for arid communities.
ii. Complementary mesh: To intensify the sample, increase the precision and decrease uncertainty in activity data estimation, new plots were placed nested into sample mesh based on NFI

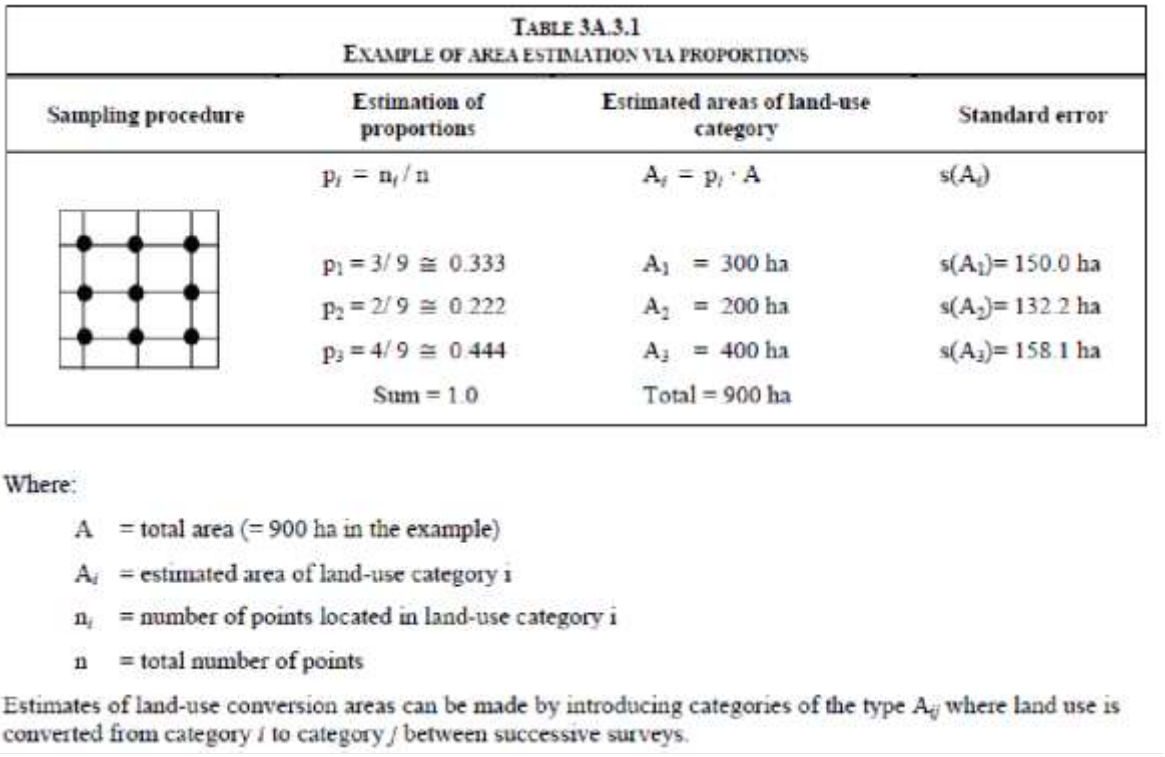


TABLE 3A.3.1
EXAMPLE OF AREA ESTIMATION VIA PROPORTIONS

Sampling procedure	Estimation of proportions	Estimated areas of land-use category	Standard error
	$p_i = n_i / n$	$A_i = p_i \cdot A$	$s(A_i)$
	$p_1 = 3/9 \cong 0.333$	$A_1 = 300$ ha	$s(A_1) = 150.0$ ha
	$p_2 = 2/9 \cong 0.222$	$A_2 = 200$ ha	$s(A_2) = 132.2$ ha
	$p_3 = 4/9 \cong 0.444$	$A_3 = 400$ ha	$s(A_3) = 158.1$ ha
	Sum = 1.0	Total = 900 ha	

Where:

A = total area (= 900 ha in the example)

A_i = estimated area of land-use category i

n_i = number of points located in land-use category i

n = total number of points

Estimates of land-use conversion areas can be made by introducing categories of the type A_{ij} where land use is converted from category *i* to category *j* between successive surveys.

Figure 7.1 Example of area estimation by proportions approach

Both components make a sampling mesh with 28,644 plots into ISFL program area. The figure 7.1 shows the geographical distribution of the sample.

Table 7.1 Sample size by strata and substrata into ISFL Program area

Strata		Substrata(equidistance)	Sample size
Ecorregion I	Ecorregion II		
Desiertos de America del Norte	Desiertos Calidos	10km	2,588
		2.5km	916
		5km	536
Elevaciones Semiaridas Meridionales	Cuerpos de agua	10km	6
	Piedemonte de la Sierra Madre Occidental	10km	773
		2.5km	1,404
		5km	129
Grandes Planicies	Planicie semiarida de Tamaulipas-Texas	10km	309
		2.5km	171
		5km	1,478
Selvas Calido-Humedas	Planicies y Lomerios del Occidente	2.5km	2
Selvas Calido-Secas	Planicie Costera, Lomerios y	10km	11

Strata		Substrata(equidistance)	Sample size
Ecorregion I	Ecorregion II		
	Canones del Occidente	2.5km	690
		5km	364
Sierras Templadas	Sierra Madre Occidental	10km	184
		2.5km	17,417
		5km	306
	Sierra Madre Oriental	10km	33
		2.5km	1,204
		5km	123
Total General			28,644

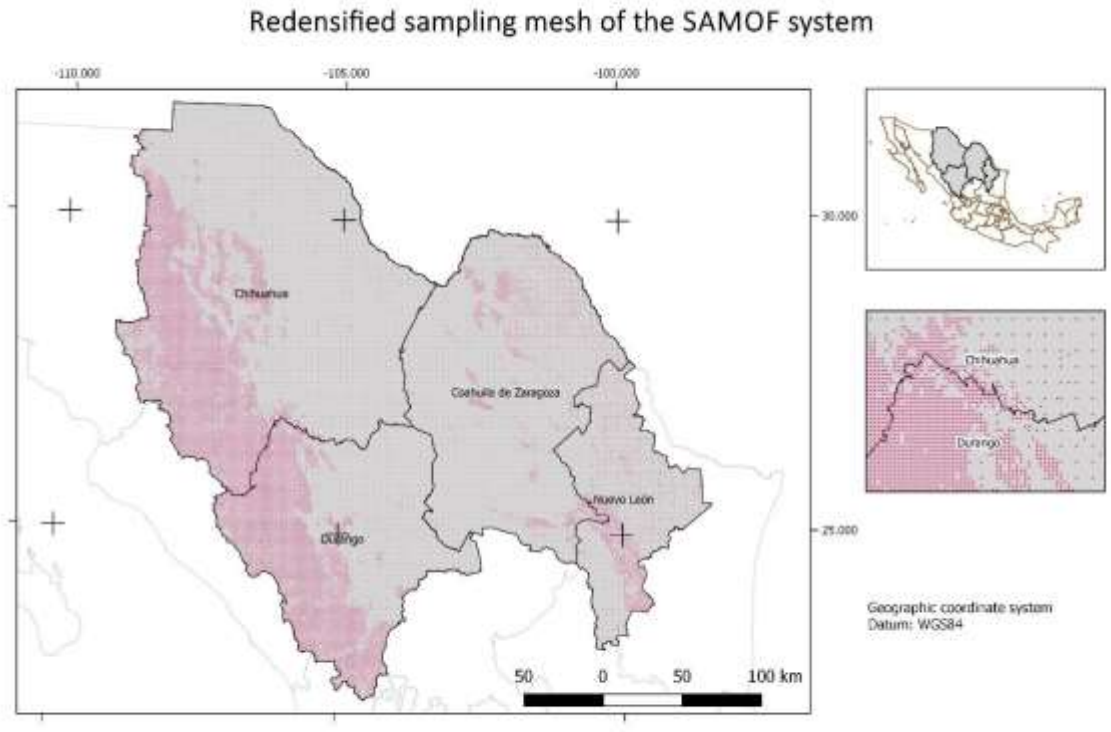


Figure 7.1 Spatial distribution of intensified sample grid

Plot design

Each plot has an area of 1 ha (100x100 m) with the center in the coordinates of the sampling grid, in turn, within each plot 25 equidistant points are distributed systematically, separated at 20 m (Figure 7.2). Based on this reference, the interpreter counted the points that intersected with each element, using them as a guide to evaluating the percentage of coverage of each element within the plot.

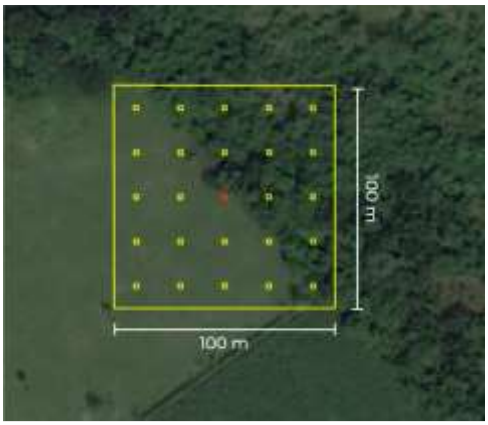


Figure 7.2 Design of sampling units (plots).

Photointerpretation

In each of the 28,644 plots, as a first step, the class of Land Use and Vegetation Type defined by INEGI (2015 and 2017b), called "INEGI Class", was identified for 2016, using high- and very high-resolution images as main inputs (Bing Maps, Yandex Maps, Google Earth Engine Code Editor and Google Earth Engine Explorer) and floristic and dasometric INFyS information. In addition, with the INEGI class identified in 2016 and with a multitemporal analysis of medium (Landsat) images, high and very high resolution, the INEGI class was identified in 2000. As part of the multitemporal analysis, the year of change was also identified in plots where the INEGI class changed between 2000 and 2016, the year of change was determined in the cases when the coverage of the satellite image (for a given INEGI class) at plot level changed by more than 50% to another INEGI class. All this information was captured in a form designed in the Collect Earth tool (http://www.openforis.org/tools/collect-earth.html). The information captured in this survey was stored in the "Photointerpretation Database".

The inputs, assumptions, criteria and specific methodology used for the visual interpretation of the 28,644 plots, as of 2016, 2000, and the respective years of change, using satellite images are described in detail in SOP_03_Fotointepreacion.

Integration of the INEGI Class Matrix and IPCC Class Matrix

The INEGI Class Multitemporal Matrix refers to a rectangular data table in which the rows contain the identifier of 28,644 plots and in the columns the INEGI classes of each plot for each year of the period 2000-20018. The matrix has 28,644 rows and 20 columns; the rows corresponding to each of the sampled plots; in column 1 the Id of each sampled plot was stored and in column 2 to 20 the INEGI class of each year (2000-2018) was stored for each sampled plot.

Once the Multitemporal Matrix of INEGI Classes was integrated, the INEGI Classes were translated into IPCC classes in order to produce the "IPCC Category Multi-Time Matrix".

Estimation of areas and their uncertainties

Based on the information from the "Multitemporal Matrix of IPCC Categories" as input to characterize for each specific year the IPCC Categories of a systematic sample distributed at the national level and following the area estimation approach using proportions, the forest areas of a particular year were estimated according to the sampling intensity (or distance of 20x20 km, 10x10 km or 5x5 km) in each of the 7 ecoregions that make up the accounting area.

In particular, the forest area at the i-th (5x5, 10x10 and 20x20 km) sampling intensity of the k-th ecoregion of the k-th year was estimated according to the following equation:

$$\widehat{ATF_{ij}} = \frac{n_{ij}}{N_{ij}} \times AT_{ij}$$

Where:

$\widehat{ATF_{ij}}$: area of forest land estimated at the i-th sampling intensity of the j-th ecoregion,

n_i: number of plots in the "Forest Land" and "Degraded Forest Land" class at the i-th sampling intensity of the j-th ecoregion,

N_{ij}: total number of plots sampled at the ith sampling intensity of the ith ecoregion and

AT_{ij} total area of the i-th sampling intensity of the j-th ecoregion.

The uncertainty of the $\widehat{ATF_{ij}}$ was estimated according to the following equation::

$$U\left(\widehat{ATF_{ij}}\right) = \frac{Z_{\frac{\alpha}{2}} * s\left(\widehat{ATF_{ij}}\right)}{\widehat{ATF_{ij}}} * 100$$

Where:

$Z_{\frac{\alpha}{2}}$ is the 95% percentile of the empirical distribution model that adjusts data,

$$s\left(\widehat{ATF_{ij}}\right) = AT_{ij} * \sqrt{\frac{p_{ij}(1-p_{ij})}{N_{ij}-1}}$$

$s\left(\widehat{ATF_{ij}}\right)$ is the standard deviation of the area of forest land estimated at the i-th sampling intensity of the j-th ecoregion previously obtained from the inputs already defined and

$$p_{ij} = \frac{n_{ij}}{N_{ij}}$$

This procedure was implemented for the sampling intensities in the j ecoregions and these estimated areas of "Forest Land" were added in each of the k years to obtain the area of "Forest Land" at the national level:

$$\widehat{ATFN}_k = \sum_{j=1}^{7} \sum_{i=1}^{3} \widehat{ATF}_{ij}$$

The uncertainty of the "Forest Land" area at the national level $\widehat{ATFN}_k$ year k was obtained by spreading uncertainties by the sum as suggested in chapter 3 of "Uncertainties" of Volume 1 of the IPCC Guidelines (2006):

$$U\left(\widehat{ATFN}_k\right) = \frac{\sqrt{\left(U\left(\widehat{ATF}_{11}\right) * \widehat{ATF}_{11}\right)^2 + \left(U\left(\widehat{ATF}_{12}\right) * \widehat{ATF}_{12}\right)^2 + \cdots + \left(U\left(\widehat{ATF}_{37}\right) * \widehat{ATF}_{37}\right)^2}}{\left|\widehat{ATFN}_k\right|}$$

Where:

$U\left(\widehat{ATFN}_k\right)$ is the uncertainty of the "Forest Land" area at the national level of year k,

$U\left(\widehat{ATF}_{ij}\right)$ y $\widehat{ATF}_{ij}$ were previously defined.

It is worth mentioning that the entire process of estimating areas and their uncertainties was programmed in an algorithm developed in the Statistical Software R Project.

Data sources and methods for emission factors

As indicated in Annex 6, the main source of information for all pools is the National Forest and Soil Inventory (INFyS). Field data from two complete survey cycles is currently available: 1) Sampling (2004-2007), with information on airborne biomass and partially on dead organic matter; and 2) Resampling (2009-2014), with information for all pools. The general approach and inputs used for estimating emission factors are described in SOPs 5 y 6.

With the INFyS field data the carbon contents (t C/ha) were calculated using specific procedures for each pool, which are described below in general terms:

1. Above Ground Biomass (AGB): through the Biomass and Carbon Estimation System (SEByC) the following parameters were automatically assigned to each INFyS record: the allometric model of biomass, wood density and carbon fraction. Biomass and carbon were calculated for each INFyS record and site-level addition (Secondary unit plot). The process used to obtain the carbon content (t C/ha) per pool is described in detail in SOP 7.

2. Below Ground Biomass (BGB): through the SEByC the ratio factor R was assigned for the calculation of groundwater biomass according to the BA and ground carbon per site. The process used to obtain the carbon content (t C/ha) per pool is described in detail in SOP 8.

3. Dead Wood (DW): for the particular case of Mexico, deadwood is composed of three components or sub-pools: a) dead trees on feet, b) stumps and c) fallen wood (MLC). The first and second sub-pools were calculated with analogous procedures of the BA (using the SEByC), the MLC followed the method of planar intersections. The process used to obtain the carbon content (t C/ha) per pool is described in detail in SOP 9.

4. Litter: Litter includes 2 sub-components or sub-warehouses: a) litter (HO) and b) fermentation layer (F), through INFyS field collections and laboratory analysis it was possible to establish the carbon

contents at the subsite level. The process used to obtain the carbon content (t C/ha) per pool is described in detail in SOP 10.

5. Soil organic carbon (SOC): the carbon contents of this pool were calculated analogously to the mulch. The process used to obtain the carbon content (t C/ha) per pool is described in detail in SOP 11.

The process used to obtain the emission factors per pool on basis of content (t C/ha) is described in detail in SOP 13.

Compliance of quality and baseline setting requirements for ISFL Accounting

Any subcategories involving conversions from or to forest land: 3B3bi, 3B2bi, 3B5bi and 3B6bi (Forest Land converted to Land) 3B1bii and 3B1bi (Land converted to Forest Land)		
Emissions Baseline setting	Historical Baseline Period of 10 years	For the subcategories included in the initial selection that represent deforestation, information was available to provide annual estimates of area for the 2001-2019 period. For all subcategories included in the initial selection representing afforestation, recuperation and reforestation (L -> FL: 3B1bii and 3B1bi), information was available to provide annual estimates of area for period 2001-2019 **Therefore the requirement is considered as met.**
Methods and data	At minimum Tier 2 methods and data for setting the Emissions Baseline and monitoring	For the subcategories included in the initial selection representing Deforestation, emission/removal factors for three carbon pools (AGB, DW and litter) were estimated at level 1 ecoregions and using INFyS data; BGB EF was estimated as a function of AGB (using R:S IPCC 2006 ratios) and, SOC EF was estimated by using soil organic Carbon estimates for 30-cm depth, in Mexico and the conterminous USA, 1991-2011 https://daac.ornl.gov/cgi-bin/dsviewer.pl?ds_id=1737. Therefore, Tier 2 estimates were used for the five carbon pools in this subcategory. For all subcategories included in the initial selection representing Afforestation, Recuperation and Reforestation, emission/removal factors for three carbon pools (AGB, DW and litter) were estimated at

		level 1 ecoregions and using INFyS data; BGB EF was estimated as a function of AGB (using R:S IPCC 2006 ratios) Therefore, Tier 2 estimates were used for four carbon pools in this subcategory. EF of SOC were not estimated due to the lack of data. **Therefore the requirement is considered as met.**
Spatial information	Approach 2 or 3 for setting the Emissions Baseline and monitoring	For this subcategory, the representation of land-use and land-use conversions were obtained by using the data of the SAMOF system sample-based approach, which is consistent with Approach #2 described in Chapter 3 (Consistent Representation of Land) Volume 4 of the 2006 IPCC Guidelines. According to Table 3.6A of 2019 Refinement (Vol4, Chap 3, Subsection 3.1), SAMOF System meets with both criteria to consider the sample-based method as approach 3: Permanent and consistent georeferenced ground plots and Continuous and consistent samples using remote sensing data. **Therefore the requirement is considered as met.**
Forest Land remaining Forest Land: 3B1a (Forest Land remaining Forest Land)		
Emissions Baseline setting	Historical Baseline Period of 10 years	For subcategory 3B1a Forest Land Remaining Forest Land, information was available to provide annual estimates of area for period 2001-2019. **Therefore the requirement is considered as met.**
Methods and data	At minimum Tier 2 methods and data for setting the Emissions Baseline and monitoring, using jurisdiction-specific proxies as necessary	EF of Forest land remaining Forest land [3B1a] was estimated at level 2 ecoregions and using two cycles of INFyS data; BGB EF were estimated as a function of AGB (using R:S IPCC 2006 ratios), therefore, Tier 2 estimates were used to obtain the EF of AGB and BGB for this subcategory. On the other hand, GHG emissions/removals from DW, litter and SOC were assumed as neutral; therefore, Tier 1 EF was used for these carbon pools. **Therefore the requirement is considered as met.**
Spatial information	Approach 2 or 3 for setting the Emissions Baseline and monitoring	For this subcategory, the representation of land-use and land-use conversions were obtained by using the data of the SAMOF

		system sample-based approach, which is consistent with Approach #2 described in Chapter 3 (Consistent Representation of Land) Volume 4 of the 2006 IPCC Guidelines. According to Table 3.6A of 2019 Refinement (Vol4, Chap 3, Subsection 3.1), SAMOF System meets with both criteria to consider the sample-based method as approach 3: Permanent and consistent georeferenced ground plots and Continuous and consistent samples using remote sensing data. **Therefore the requirement is considered as met.**
Any subcategories involving conversions between land-use categories other than forest land 3B2bii. Grassland converted to Cropland		
Emissions Baseline setting	Historical Baseline Period of 10 years	For subcategory 3B2bii. Grassland converted to Cropland, information was available to provide annual estimates of area for period 2001-2019. **Therefore the requirement is considered as met.**
Methods and data	At minimum Tier 2 methods and data for setting the Emissions Baseline and monitoring, using jurisdiction-specific proxies as necessary	For the subcategory 3B2bii Grassland converted to Cropland, emission/removal factors for three carbon pools (AGB, DW and Litter) were estimated at Level 1 Ecoregions and using INFyS data; BGB EF were estimated as a function of AGB (by using R:S IPCC 2006 ratios) and, SOC EF were obtained from Soil Organic Carbon Estimates for 30-cm Depth, in Mexico and the conterminous USA, 1991-2011 https://daac.ornl.gov/cgi-bin/dsviewer.pl?ds_id=1737, so Tier 2 estimations were used for the five carbon pools in this subcategory. **Therefore the requirement is considered as met.**
Spatial information	Approach 2 or 3 for setting the Emissions Baseline and monitoring	For this subcategory, the representation of land-use and land-use conversions were obtained by using the data of the SAMOF system sample-based approach, which is consistent with Approach #2 described in Chapter 3 (Consistent Representation of Land) Volume 4 of the 2006 IPCC Guidelines. According to Table 3.6A of 2019 Refinement (Vol4, Chap 3, Subsection 3.1), SAMOF System meets with both criteria to consider the sample-based method as approach 3:

		Permanent and consistent georeferenced ground plots and Continuous and consistent samples using remote sensing data. **Therefore the requirement is considered as met.**
The most significant of the remaining non-forest subcategories in order of the relative magnitude of the contribution of these subcategories Pending to evaluate until 3A and 3C will be able		
Emissions Baseline setting	Historical Baseline Period of 10 years Where not possible and convincing justification is provided, at least 5 years for the first ISFL ERPA Phase	For subcategory 3A1a Cattle information was available to provide annual estimations of cattle population for the period 1990-2019. Cattle population statistics were available disaggregated by dairy cows [3A1ai] and other cattle [3A1aii], furthermore, cattle population can be desegregated by subcategory (mature dairy cows, mature cows, heifers, calves, and bulls) in line with an enhanced characterization for livestock population which is required to apply a Tier 2 method.
Methods and data	At minimum Tier 2 methods and data for setting the Emissions Baseline and monitoring	Country-specific emission factors applied were estimated by cattle subcategories, climate regions and management systems for 25 of 32 federal entities; however, these are not fully representatives of ISFL jurisdictional area circumstances. A more complex approach requires detailed country-specific data on gross energy intake and methane conversion factors for specific livestock categories within ISFL jurisdiction. In conclusion, data used for this category does not follow the IPCC Tier 2 method for the specific ISFL jurisdictional area circumstances.
Spatial information		NA
Additional non-forest related subcategories included at the discretion of the program Not applied		
Emissions Baseline setting	Historical Baseline Period of 10 years	No other non-forest related subcategories, such as agroforestry systems or improved grasslands, have been included, as institutions with proper attributions to implement public policies in the agriculture and livestock sector will be dealing with them
Methods and data	At minimum Tier 2 methods and data for setting the Emissions Baseline and monitoring	

Spatial information		

Annex 8: GHG Accounting Scope and Improvement Plan (GHG-ASIP): A time-bound plan to increase the scope of accounting and improve data and methods throughout the ERPA Term

Agreed GHG Accounting Scope and Improvement Plan

Section A: Institutional processes and responsibilities

A.1 Summary of the process of developing and reaching agreement to this plan

Between August and September 2021 a series of activities to propose an improvement in the data and approaches of GHG accounting for eligible subcategories that do not meet with the ISFL framework requirements took place. In particular: (i) in August, *a priori*, [3B] subcategories and their respective subcomponents -each of the five carbon pools- that were included in the initial selection and did not meet GHG accounting requirements were identified (ii) in September, technical meetings within the Technical Management of the Monitoring, Reporting and Verification System (GTSMRV) took place. In these meetings the subcomponents that didn't meet Tier2 of where Tier 2 were analyzed in detail (iii) at the beginning of October, once the GHG-[3B] inventory was completed, a technical meeting between the GTSMRV and the Forest Monitoring National System Management (GSNMRV) took place to identify the subcomponents from [3B] subcategories that did not meet the ISFLL accounting requirements and (iv) towards the middle of October a meeting between the GTSMRV and GSNMRV took place, in which a plan to improve the data and methods from category [3B] which do not meet the requirements for ISFL accounting was agreed. Additionally, in January, a meeting between CONAFOR, INECC and the ISFL states took place in which they were presented the data, outputs and methods from the [3B] subcategories and their respective subcomponents.

A.2 Overview of entities that have agreed to this plan

Table 1

Name of entity	Role of entity	Name of entity representative	Job title of entity representative
CONAFOR	Focal point of the National Forest Monitoring System	Jose Armando Alanís de la Rosa	Manager of the Forest Monitoring National System
CONAFOR	Technical Linder of the GHG accounting for 3B	Rafael Mayorga Saucedo	Manager of the Monitoring, Reporting and Verification System

Section B: Summary of analysis underlying this plan

Table 2

Subcategory from step 1	Emissions Baseline setting requirement(s) met? (Yes/No)	Methods and data requirement(s) met? (Yes/No)	Spatial information requirement(s) met? (Yes/No)	Eligible for ISFL Accounting? (Yes/No)
3B1a. Forest Land Remaining Forest Land	Yes	Yes*	Yes	Yes
3A1a. Cattle – CH4	Yes	No	No	No
3B3bi. Forest Land converted to Grassland	Yes	Yes	Yes	Yes
3B2bii. Grassland converted to Cropland	Yes	Yes**	Yes	Yes
3B2bi. Forest Land converted to Cropland	Yes	Yes	Yes	Yes
3B1bii. Grassland converted to Forest Land	Yes	Yes**	Yes	Yes
3B5bi. Forest Land converted to Settlements	Yes	Yes	Yes	Yes
3B6bi. Forest Land converted to Other Land	Yes	Yes	Yes	Yes
3B1bi. Cropland converted to Forest Land	Yes	Yes**	Yes	Yes

* EF of DW, Litter and SOC were assumed carbon neutral, this means a value of zero net change. In addition, according to the Guidance note on the application of IPCC guidelines, in subsection 4. Changes in carbon stock in the dead organic matter were excluded from subcategories that involve changes within the same land use category or represent transitions between non-forest categories.

** EF of DW and Litter were estimated at a national level, and SOC was not estimated due to the lack of data.

Section C: Agreed actions to be undertaken to increase the completeness of the scope of accounting and improve data and methods for the subsequent ERPA Phases during the ERPA Term

C.1 Actions to be undertaken to bring required subcategories into alignment with ISFL accounting requirements

Table 3.1

Subcategory	Land Converted to Forest Land (3B1bii, 3B1bi): DW, Litter and SOC cases				
Identification of gaps					
ISFL Accounting requirements	**Requirements met? (Yes/No)**	**If not met, detailed description of the gap(s)**			
• Historic time series for baseline setting	**Yes**	**NA**			
• Quality of data and methods	Yes**	For this subcategory, even when DW and Litter were estimated using NFI data, the samples were taken from general regions mostly, rather than level 1 ecoregions and using small sample sizes; so, it is considered necessary to improve the estimations of removal factors using more samples and using samples from regions closer to the ISFL jurisdictional area. Considering the new third cycle of NFI data available, for this subcategory, DW and Litter removal factors will be improved to address the ISFL accounting requirements in a better way. On the other hand, regarding SOC, removals were not estimated due to the lack of two time-steps of SOC data; therefore, it is necessary to explore other approaches that allow better use of the available data and to ensure consistency with the approach used to estimate EF/AF from other carbon pools.			
• Spatial land representation for land use change-related subcategories	Yes	**NA**			
Identification of actions to address the gap					
Identified gap	**Description of what is technically**	**Potential data sources**	**Responsible entity**	**Planned completion**	**Sources of funding/support**

	is needed to address it				
DW removal factors were taken from general regions and using small sample sizes	It is considered necessary to improve the estimations of DW removals factors using increased samples and samples from regions closer to the ISFL jurisdictional area.	The third cycle of the NFI 2015-2019 (which has been completed to 50%)	CONAFOR	First quarter 2025	ISFL fund
Litter removal factors were taken from general regions and using small sample sizes	It is considered necessary to improve the estimations of litter removals factors using more samples and using samples from regions closer to the ISFL jurisdictional .	The third cycle of the NFI 2015-2019 (which has been completed to 50%)	CONAFOR	First quarter 2025	ISFL fund
SOC removals factors are not present	AF were not estimated due to the absence of two time-steps of SOC data; therefore, it is necessary to explore other approaches that allow better use of the available information	Soil Organic Carbon Estimates for 30-cm Depth, Mexico and Conterminous USA, 1991-2011 https://daac.ornl.gov/cgi-bin/dsviewer.pl?ds_id=1737	CONAFOR	First quarter 2025	ISFL fund

	and to ensure consistency with the approach used to estimate EF/AF from other carbon pools.				

Table 3.2

Subcategory	3A1a. Cattle – CH4 emissions from enteric fermentation		
Identification of gaps			
ISFL Accounting requirements	**Requirements met? (Yes/No)**	**If not met, detailed description of the gap(s)**	
• Historic time series for baseline setting	**Yes**		
• Quality of data and methods	**No**	Mexico developed country specific emission factors based on 41 national research papers which cover 25 of 32 federal entities to apply a Tier 2 method at the national level, however, information from federal entities included into ISFL jurisdictional area were not considered or available. Therefore, country specific emission factors developed and used to estimate the Mexico's national GHG inventory could not be representing the specific circumstances into ISFL jurisdictional area. In order to implement a Tier 2 method to increase the quality of the Program GHG inventory, Mexico should develop emission factors based on representative information from ISFL jurisdictional area specific circumstances. In line with the 2006 IPCC Guidelines, country specific emission factors for cattle are estimated based on the gross energy intake and methane conversion factor.	
• Spatial land representation for land use change-related subcategories	**Not applying**		
Identification of actions to address the gap			

Identified gap	**Description of what is technically is needed to address it**	**Potential data sources**	**Responsible entity**	**Planned completion**	**Sources of funding/support**
Gross energy intake (GE)	Gather or develop information on animal dietary conditions for each cattle subcategory and each management system in ISFL jurisdictional area.	Research Centres, Livestock Producers Associations, Academic Institutions		*End of 2023*	ISFL fund
Methane conversion factor (Y_m)	Implement direct CH_4 measurement techniques in cattle population, such as respiration chambers, GreenFeed, or use of SF_6 tracer.	Research Centres, Livestock Producers Associations, Academic Institutions		End of 2023	ISFL fund

Table 3.3

Subcategory	Forest Land Remaining Forest Land (3B1a): DW, Litter and SOC				
Identification of gaps					
ISFL Accounting requirements	**Requirements met? (Yes/No)**				
*** Historic time series for baseline setting**	Yes	NA			
*** Quality of data and methods**	Yes*	For this subcategory, DW and Litter were assumed as carbon neutral, therefore Tier 1. Emission/Removal factors from DW/Litter were not estimated due to the absence of two time-steps of DW/Litter data. Even when there are 2 NFI cycles available, only DW and Litter data were collected in the second NFI cycle. Fortunately, the third NFI dataset includes a re-measurement of DW and Litter. This information will be available at the beginning of 2022, so Emission/Removal factors from DW/Litter for this subcategory will be able to be estimated. On the other hand, removals from SOC were not estimated due to the absence of two time-steps of SOC data; therefore, new SOC data are required to fill the ISFL accounting requirements and include removals from SOC for this subcategory. As the collection of new SOC data is expensive and time-consuming, improved estimations of removals from SOC for this subcategory will not be ready before the end of the current ERPA Phase.				
*** Spatial land representation for land use change-related subcategories**	Yes	NA			
Identification of actions to address the gap					
Identified gap					
DW removal/emission factors were assumed as carbon neutral (Tier1)	It is considered necessary to estimate DW removal/emission factors using two time-steps of DW carbon densities taken from the second and third cycles of the NFI.	The third cycle of the NFI 2015-2019 (which has been completed to 50%)	CONAFOR	First quarter 2025	ISFL fund
Litter	It is considered necessary	The third	CONAFOR	March	ISFL fund

removal/emission factors were assumed as carbon neutral (Tier1)	to estimate Litter removal/emission factors using two time-steps of Litter carbon densities taken from the second and third cycles of the NFI.	cycle of the NFI 2015-2019 (which has been completed to 50%)		First quarter 2025	
SOC removal/emission factors were assumed as carbon neutral (Tier1)	Even when it is recognized there are some important gaps to estimate removal EF, there is no current plan to improve data during ISFL phases because the collection of new SOC data is expensive and time-consuming	N/A	N/A	N/A	N/A

Table 3.4

Subcategory	Grassland converted to Cropland (3B2bii): DW, Litter and SOC cases		
Identification of gaps			
ISFL Accounting requirements	**Requirements met? (Yes/No)**		
*** Historic time series for baseline setting**	Yes	NA	
*** Quality of data and methods**	Yes**	For this subcategory, even when DW and Litter were estimated using NFI data, the samples were taken from general regions more than ecoregions level 1 and using small sample sizes; so, it is considered necessary to improve the estimations of removals factors using more samples and using samples from regions closer to the ISFL jurisdictional area natural features. Considering the new third cycle NFI data available, for this subcategory, DW and Litter removals factors will be improved to address the ISFL accounting requirements in a better way. On the other hand, regarding SOC, removals were not estimated due to the absence of two time-steps of SOC data; so, it is necessary to explore other approaches that allow a better use of data available and to ensure consistency with the approach used to estimate EF/AF from other carbon pools. It is considered suitable to get estimations of AF by using better approaches.	
*** Spatial land**			

representation for land use change-related subcategories	Yes	NA	

Identification of actions to address the gap					
Identified gap	**Description of what is technically is needed to address it**	**Potential data sources**	**Responsible entity**	**Planned completion**	**Sources of funding/support**
DW removal factors were taken from general regions and using small sample sizes	It is considered necessary to improve the estimations of DW removal factors using an increased number of samples and using samples from regions closer to the ISFL jurisdictional area.	The third cycle of the NFI 2015-2019 (which has been completed to 50%)	CONAFOR	First quarter 2025	ISFL fund
Litter removal factors were taken from general regions and using small sample sizes	It is considered necessary to improve the estimations of litter removal factors using more samples and using samples from regions closer to the ISFL jurisdictional area.	The third cycle of the NFI 2015-2019 (which has been completed to 50%)	CONAFOR	First quarter 2025	ISFL fund
There are no SOC removal factors	AF were not estimated due to the absence of two time-steps of SOC	Soil Organic Carbon Estimates for 30-cm Depth, Mexico and Conterminous USA, 1991-2011 https://daac.ornl.gov/cgi	CONAFOR	First quarter 2025	ISFL fund

	data; therefore, it is necessary to explore other approaches that allow a better use of the available information and to ensure consistency with the approach used to estimate EF/AF from other carbon pools.	- bin/dsviewer.pl?ds_id=1737			

C.2 Additional planned improvement to bring not-required subcategories into alignment with ISFL accounting requirements

There are no actions planned to improve data or methods on not-required subcategories.

Financing Plan

Table 5

Subcategory	Action	Finance requirements (per year in US$)					Total (US$)	Finance available (US$)	Source and Type of Finance (grant/ loan/ government budget) (US$)	Finance gap (US$)
		Y1	Y2	Y3	Y4	Y5				
Land Converted to Forest Land: DW, Litter and SOC cases	To improve DW, Litter and SOC removal factors using 3rd cycle of NFI data and improved approaches.		27,000 (4 consultants)				27,000	27,000	ISFL fund	
Forest Land Remaining Forest Land: DW and Litter cases	To estimate DW and Litter emission/removal factors using 3rd cycle of NFI data		27,000 (4 consultants)				27,000	27,000	ISFL fund	
Grassland converted to Cropland	To estimate DW and Litter emission/removal factors using 3rd cycle of NFIofNFI data		27,000 (4 consultants)				27,000	27,000	ISFL fund	

Annex 9: Estimation of the Emissions Baseline

Approaches, methods, assumptions and overview of the activity data and emission factors used in the baseline construction are detailed in Annex 6. With the information in Annex 7, the reconstruction of the Emissions baseline is possible. Furthermore, identification and assessment of the sources of uncertainty in the determination of the Emissions baseline and description of actions that have been taken to manage or reduce uncertainty are included.

The time series of annual emissions/removals inventory of the 3B Land subsector covers the 2000 - 2018 period and includes all pools and carbon dioxide as the only gas included. This 3B inventory was generated by the MRV System on October 15, 2021.

Details regarding the specific procedures used to estimate the baseline and the results, are described in the ***SOP 18 Baseline for the ISFL program***. A detailed description of each step, its objective, scope, and activities are included.

The period for the identification of the eligible subcategories for the ISFL Program is 2009 - 2018, and the period for the estimation of the baseline is also 2009 - 2018.

ISFL Baseline Tool is the core of the process to calculate the baseline. The purpose of the ISFL Baseline Tool is to assign to each inventory result a set of labels that will be used later both in the selection of main categories and in the calculation of the baseline. The ISFL Baseline tool is designed to match the results of the GHG emissions inventory of the project area in a simple way and repeat this operation in case the results change. Operating and use of the ISFL Baseline Tool are described in SOP 18 Baseline for the ISFL program.

The main results of the process for the calculation are shown in the following tables and figures:

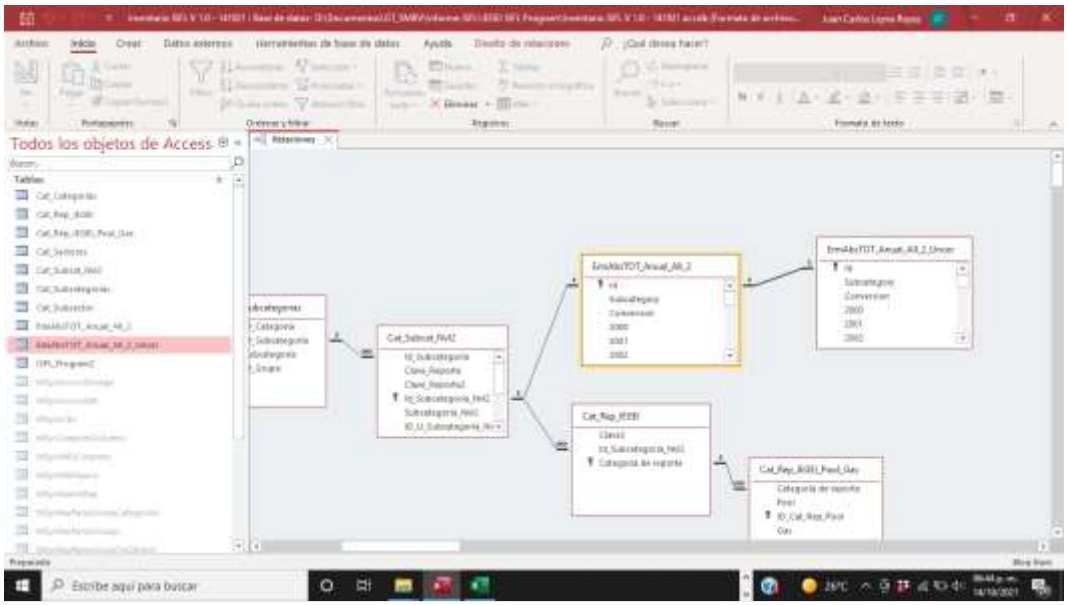


Figure 1. Table of emissions and uncertainties coupled to the tool

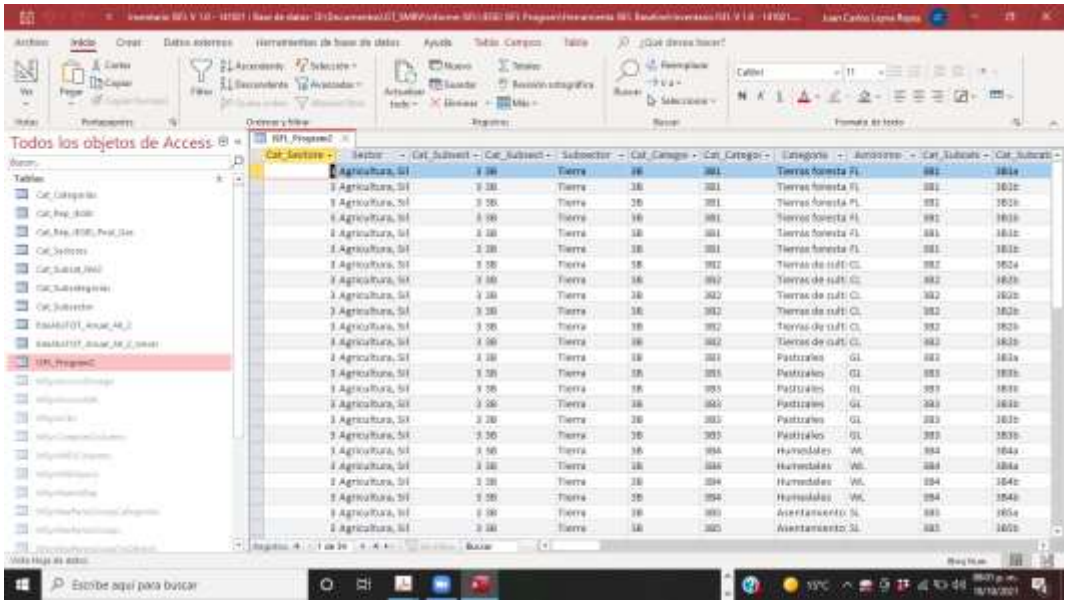


Figure 2. Main results of the ISFL Baseline Tool / Microsoft Access component

Table 1. Summary of the Program GHG Inventory

Subcategory	Net emissions and removals (t CO_2eq)	Relative contribution to the absolute level of the total GHG emissions and removals in the	Associated carbon pools and gases
3B1a. Forest Land Remaining Forest Land	-13,486,333.11	37.09%	CO2 in AGB and BGB
3A1a. Cattle	12,384,983.40	34.06%	CH4
3A2a. Cattle	2,389,689.00	6.57%	CH4
3A2a. Cattle	1,888,679.50	5.19%	N2O
3B3a. Grassland Remaining Grassland	-964,462.07	2.65%	CO2 in AGB and BGB
3B3bi. Forest Land converted to Grassland	806,792.00	2.22%	CO2 in AGB, BGB, DOM, Litter and SOC
3B2a. Cropland Remaining Cropland	-652,445.18	1.79%	CO2 in AGB
3C6. Indirect N2O emissions from manure management	555,334.50	1.53%	N2O
3C5. Indirect N2O emissions from managed soils	554,541.30	1.53%	N2O
3C4a. Synthetic fertilizers	304,625.40	0.84%	N2O
3A2i. Poultry	253,161.60	0.70%	CH4
3B2bii. Grassland converted to Cropland	236,615.67	0.65%	CO2 in AGB, BGB, DOM, Litter and SOC
3C4c. Crop residues	234,787.80	0.65%	N2O
3A1d. Goats	222,228.40	0.61%	CH4

Subcategory	Net emissions and removals (t CO_2eq)	Relative contribution to the absolute level of the total GHG emissions and removals in the	Associated carbon pools and gases
3C1a. Biomass burning in forest lands	207,828.70	0.57%	CH4
3A2h. Swine	183,607.60	0.50%	CH4
3C4d. Pasture, range and paddock manure	173,512.70	0.48%	N2O
3C3. Urea application	125,887.00	0.35%	CO2
3A1f. Horses	92,315.10	0.25%	CH4
3A1c. Sheep	77,218.80	0.21%	CH4
3C1a. Biomass burning in forest lands	70,886.90	0.19%	CH4
3C1b. Biomass burning in croplands	69,707.80	0.19%	CH4
3B2bi. Forest Land converted to Cropland	59,661.23	0.16%	CO2 in AGB, BGB, DOM, Litter and SOC
3B1bii. Grassland converted to Forest Land	-43,455.39	0.12%	CO2 in AGB, BGB, DOM and Litter
3B5bii. Cropland converted to Settlements	43,002.46	0.12%	CO2 in AGB
3C1c. Biomass burning in grasslands	36,226.70	0.10%	CH4
3A2i. Poultry	35,442.00	0.10%	CH4
3B5bi. Forest Land converted to Settlements	32,454.88	0.09%	CO2 in AGB, BGB, DOM, Litter and SOC
3C1c. Biomass burning in grasslands	31,304.60	0.09%	CH4
3C1b. Biomass burning in croplands	22,510.60	0.06%	CH4
3B5biii. Grassland converted to Settlements	21,485.08	0.06%	CO2 in AGB, BGB, DOM, Litter and SOC
3A2h. Swine	16,452.00	0.05%	CH4
3A1h. Swine	15,760.70	0.04%	CH4
3A1g. Mules and asses	14,248.10	0.04%	CH4
3B6biii. Grassland converted to Other Land	13,620.39	0.04%	CO2 in AGB, BGB, DOM, Litter and SOC
3A2f. Horses	8,410.90	0.02%	CH4
3B6bi. Forest Land converted to Other Land	6,892.39	0.02%	CO2 in AGB, BGB, DOM, Litter and SOC
3C2. Liming	4,548.50	0.01%	CO2
3A2d. Goats	3,727.00	0.01%	N2O
3B6bii. Cropland converted to Other Land	2,816.03	0.01%	CO2 in AGB
3A2c. Sheep	2,704.70	0.01%	N2O
3A2d. Goats	2,490.20	0.01%	N2O
3B3bii. Cropland converted to Grassland	-2,317.71	0.01%	CO2 in AGB and BGB
3A2g. Mules and asses	1,282.30	0.00%	CH4
3B1bi. Cropland converted to Forest Land	-1,207.71	0.00%	CO2 in AGB, BGB, DOM

Subcategory	Net emissions and removals (t CO_2eq)	Relative contribution to the absolute level of the total GHG emissions and removals in the	Associated carbon pools and gases
			and Litter
3A2c. Sheep	1,037.70	0.00%	N2O
3B4bii. Land converted to flooded land	445.39	0.00%	CO2 in AGB, BGB, DOM, Litter and SOC
3B1biii. Wetlands converted to Forest Land	NO	0.00%	CO2 in AGB, BGB, DOM and Litter
3B1biv. Settlements converted to Forest Land	NO	0.00%	CO2 in AGB, BGB, DOM and Litter
3B1bv. Other Land converted to Forest Land	NO	0.00%	CO2 in AGB, BGB, DOM and Litter
3A1i. Poultry	NA	0.00%	CH4
3B4aii. Flooded land Remaining flooded land	NE	0.00%	
3B5a. Settlements Remaining Settlements	NE	0.00%	
3B6a. Other Land Remaining Other Land	NE	0.00%	
3C4e. Mineralization/immobilization associated with loss/gain of soil organic matter	NE	0.00%	N2O
3C4f. Cultivation of organic soils	NE	0.00%	N2O
3D1. Harvested Wood Products	NE	0.00%	CO2
3A1b. Buffalo	NO	0.00%	CH4
3A1e. Camels	NO	0.00%	CH4
3A2b. Buffalo	NO	0.00%	CH4
3A2b. Buffalo	NO	0.00%	CH4
3A2e. Camels	NO	0.00%	CH4
3A2e. Camels	NO	0.00%	CH4
3A2f. Horses	NO	0.00%	CH4
3A2g. Mules and asses	NO	0.00%	CH4
3B2biii. Wetlands converted to Cropland	NO	0.00%	
3B2biv. Settlements converted to Cropland	NO	0.00%	
3B2bv. Other Land converted to Cropland	NO	0.00%	
3B3biii. Wetlands converted to Grassland	NO	0.00%	
3B3biv. Settlements converted to Grassland	NO	0.00%	
3B3bv. Other Land converted to Grassland	NO	0.00%	
3B4ai. Peatlands Remaining peatlands	NO	0.00%	
3B4bi. Land converted for peat extraction	NO	0.00%	
3B5biv. Wetlands converted to Settlements	NO	0.00%	
3B5bv. Other Land converted to Settlements	NO	0.00%	

Subcategory	Net emissions and removals (t CO_2eq)	Relative contribution to the absolute level of the total GHG emissions and removals in the	Associated carbon pools and gases
3B6biv. Wetlands converted to Other Land	NO	0.00%	
3B6bv. Settlements converted to Other Land	NO	0.00%	
3C1d. Biomass burning in all other land	NO	0.00%	CH4
3C1d. Biomass burning in all other land	NO	0.00%	CH4
3C4b. Animal manure applied to soils	NO	0.00%	N2O
3C7. Rice cultivations	NO	0.00%	CH4
TOTAL	**6,058,705.84**	**100%**	

Note: this Summary of the Program GHG Inventory was calculated as the average for time series 2009-2018 considering this as the selected baseline period. NO: Not occurring, NE: Not estimated.

Table 2. Subcategories involving conversions between land use categories

Subcategory involving conversions between land-use categories	Net emissions and removals (t CO2eq)	Relative contribution to the total absolute GHG emissions and removals associated with all land use conversions in the Program GHG Inventory	Cumulative contribution to the total absolute GHG emissions and removals associated with all land use conversions in the Program GHG Inventory
3B3bi. Forest Land converted to Grassland	806,792.00	63.49%	63.49%
3B2bi. Forest Land converted to Cropland	59,661.23	4.69%	68.18%
3B1bii. Grassland converted to Forest Land	-43,455.39	3.42%	71.60%
3B5bi. Forest Land converted to Settlements	32,454.88	2.55%	74.16%
3B6bi. Forest Land converted to Other Land	6,892.39	0.54%	74.70%
3B1bi. Cropland converted to Forest Land	-1,207.71	0.10%	74.79%
3B2bii. Grassland converted to Cropland	236,615.67	18.62%	93.41%
3B5bii. Cropland converted to Settlements	43,002.46	3.38%	96.80%
3B5biii. Grassland converted to Settlements	21,485.08	1.69%	98.49%
3B6biii. Grassland converted to Other Land	13,620.39	1.07%	99.56%
3B6bii. Cropland converted to Other Land	2,816.03	0.22%	99.78%
3B3bii. Cropland converted to Grassland	-2,317.71	0.18%	99.96%
3B4bii. Land converted to flooded land	445.39	0.04%	100.00%

Subcategory involving conversions between land-use categories	Net emissions and removals (t CO2eq)	Relative contribution to the total absolute GHG emissions and removals associated with all land use conversions in the Program GHG Inventory	Cumulative contribution to the total absolute GHG emissions and removals associated with all land use conversions in the Program GHG Inventory
Total absolute GHG emissions and removals associated with all land use conversions in the Program GHG Inventory	1,176,804.71		

Table 3. Subcategories selected

Subcategory	Net emissions and removals5 (tCO_2eq)	Justification for initial selection
3B1a. Forest Land Remaining Forest Land	-13,486,333.11	Mandatory subcategory by 4.3.4 ii
3A1a. Cattle	12,384,983.40	Mandatory subcategory by 4.3.4.iv
3B3bi. Forest Land converted to Grassland	806,792.00	Mandatory subcategory by 4.3.4 i
3B2bii. Grassland converted to Cropland	236,615.67	Mandatory subcategory by 4.3.4 iii
3B2bi. Forest Land converted to Cropland	59,661.23	Mandatory subcategory by 4.3.4 i
3B1bii. Grassland converted to Forest Land	-43,455.39	Mandatory subcategory by 4.3.4 i
3B5bi. Forest Land converted to Settlements	32,454.88	Mandatory subcategory by 4.3.4 i
3B6bi. Forest Land converted to Other Land	6,892.39	Mandatory subcategory by 4.3.4 i
3B1bi. Cropland converted to Forest Land	-1,207.71	Mandatory subcategory by 4.3.4 i
	-3,596.65	

The baseline was constructed over a 10-year period (reference period). The initial year is 2009, and the final year is 2018 and it was calculated as the historical average of the annual emissions of all selected subcategories.

Table 4. Emissions and uncertainties on reference period and baseline

	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	Historical average
Emissions	-13,261,388.31	-12,671,515.65	-11,260,089.37	-12,248,003.64	-12,147,297.62	-11,989,788.88	-13,021,225.76	-12,126,100.14	-12,228,602.92	-12,931,788.25	-12,388,580.05
Uncertainty (%)	8.83	9.59	11.99	10.01	11.19	10.36	8.96	10.33	9.88	9.00	3.16

The historical average over the reference period is -12,388,580 tCO_2e, and its uncertainty is 3.16%.

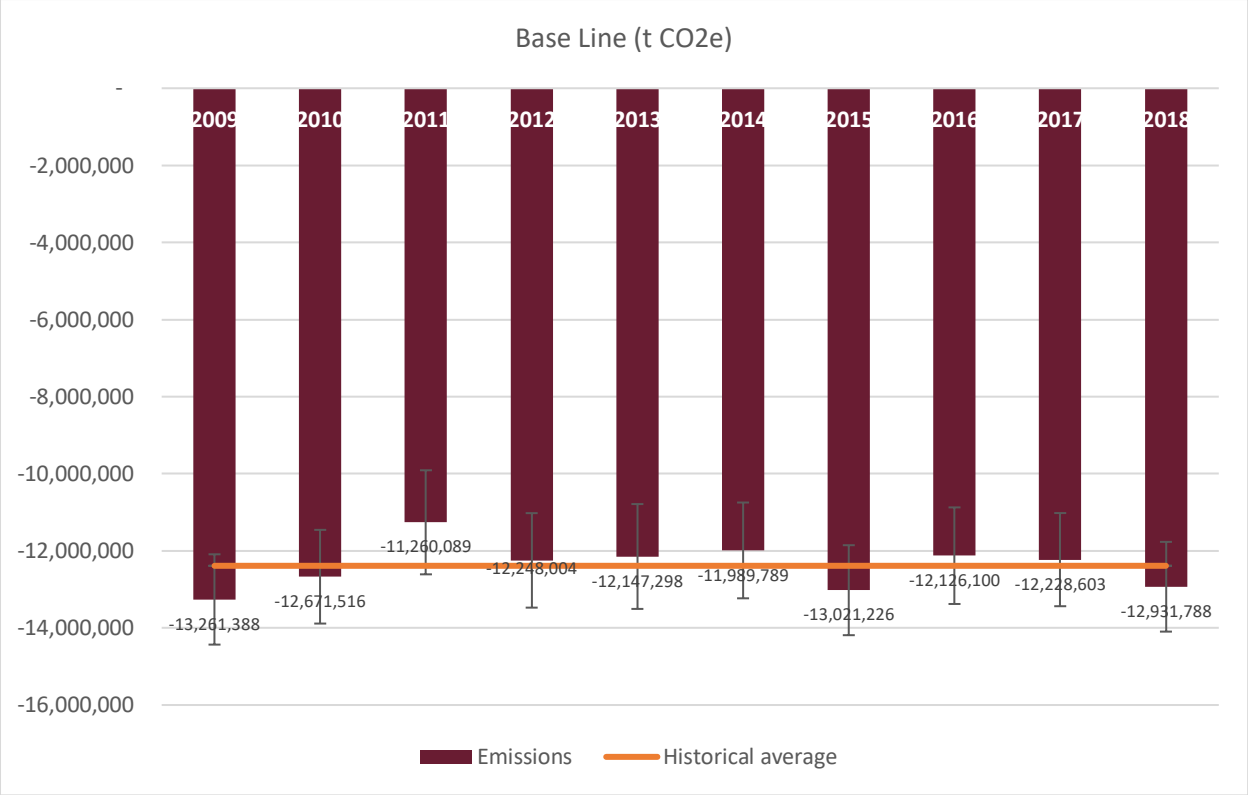


Figure 1. Baseline ISFL Program

Annex 10: Data and parameters to be monitored

Parameter:	3B1a. Forest Land Remaining Forest Land
Description:	This parameter refers to the annual area of change for land use conversions for selected [3B1a] subcategories.
Data unit:	Hectares
Source of data or measurement/calculation methods and procedures to be applied (e.g. field measurements, remote sensing data, national data, official statistics, IPCC Guidelines, commercial and scientific literature), including the spatial level of the data (local, regional, national, international)	**Source of data:** sampling approach of the Satellite Forest Monitoring System **Methods**: estimation of proportions of areas following IPCC Guidelines of 2006. **Spatial Scale:** ISFL jurisdictional area.
Fixed value or monitored? If monitored, frequency of monitoring/recording:	Monitored every year
Quality Assurance/Quality Control procedures to be applied:	SOP 2, and SOP 3 is indicating the specific quality controls to be implemented in the process to estimate AD using the sampling approach of the SAMOF System. Furthermore, at the end of SOP 2 and SOP 3, the actions to be implemented as part of the Quality Assurance are explained.
Identification of sources of uncertainty for this parameter following approaches from the most recent IPCC guidance and guidelines.	The sample size was used to estimate AD.
Process for managing and reducing the uncertainty associated with this parameter	There is already a densification in the program area. During the monitoring period the sample size will not be increased and therefore the sample size will be consistent with the baseline period.

Parameter:	3B3bi. Forest Land converted to Grassland
Description:	This parameter refers to the annual area of change for land use conversions for selected [3B3bi] subcategories.
Data unit:	Hectares

Source of data or measurement/calculation methods and procedures to be applied (e.g. field measurements, remote sensing data, national data, official statistics, IPCC Guidelines, commercial and scientific literature), including the spatial level of the data (local, regional, national, international)	**Source of data:** sampling approach of the Satellite Forest Monitoring System **Methods**: estimation of proportions of areas following IPCC Guidelines of 2006. **Spatial Scale:** ISFL jurisdictional area.
Fixed value or monitored? If monitored, frequency of monitoring/recording:	Monitored every year
Quality Assurance/Quality Control procedures to be applied:	SOP 2, and SOP 3 is indicating the specific quality controls to be implemented in the process to estimate AD using the sampling approach of the SAMOF System. Furthermore, at the end of SOP 2 and SOP 3, the actions to be implemented as part of the Quality Assurance are explained.
Identification of sources of uncertainty for this parameter following approaches from the most recent IPCC guidance and guidelines.	The sample size was used to estimate AD.
Process for managing and reducing the uncertainty associated with this parameter	There is already a densification in the program area. During the monitoring period the sample size will not be increased and therefore the sample size will be consistent with the baseline period.

Parameter:	3B2bii. Grassland converted to Cropland
Description:	This parameter refers to the annual area of change for land use conversions for selected [3B2bii] subcategories.
Data unit:	Hectares
Source of data or measurement/calculation methods and procedures to be applied (e.g. field measurements, remote sensing data, national data, official statistics, IPCC Guidelines, commercial and scientific literature),	**Source of data:** sampling approach of the Satellite Forest Monitoring System **Methods**: estimation of proportions of areas following IPCC Guidelines of 2006. **Spatial Scale:** ISFL jurisdictional area.

including the spatial level of the data (local, regional, national, international)	
Fixed value or monitored? If monitored, frequency of monitoring/recording:	Monitored every year
Quality Assurance/Quality Control procedures to be applied:	SOP 2, and SOP 3 is indicating the specific quality controls to be implemented in the process to estimate AD using the sampling approach of the SAMOF System. Furthermore, at the end of SOP 2 and SOP 3, the actions to be implemented as part of the Quality Assurance are explained.
Identification of sources of uncertainty for this parameter following approaches from the most recent IPCC guidance and guidelines.	The sample size was used to estimate AD.
Process for managing and reducing the uncertainty associated with this parameter	There is already a densification in the program area. During the monitoring period the sample size will not be increased and therefore the sample size will be consistent with the baseline period.

Parameter:	3B2bi. Forest Land converted to Cropland
Description:	This parameter refers to the annual area of change for land use conversions for selected [3B2bi] subcategories.
Data unit:	Hectares
Source of data or measurement/calculation methods and procedures to be applied (e.g. field measurements, remote sensing data, national data, official statistics, IPCC Guidelines, commercial and scientific literature), including the spatial level of the data (local, regional, national, international)	**Source of data:** sampling approach of the Satellite Forest Monitoring System **Methods**: estimation of proportions of areas following IPCC Guidelines of 2006. **Spatial Scale:** ISFL jurisdictional area.
Fixed value or monitored? If monitored, frequency of monitoring/recording:	Monitored every year
Quality Assurance/Quality Control procedures to be applied:	SOP 2, and SOP 3 is indicating the specific quality controls to be implemented in the process to estimate AD using the sampling approach of the SAMOF System. Furthermore, at the end of SOP

	2 and SOP 3, the actions to be implemented as part of the Quality Assurance are explained.
Identification of sources of uncertainty for this parameter following approaches from the most recent IPCC guidance and guidelines.	The sample size was used to estimate AD.
Process for managing and reducing the uncertainty associated with this parameter	There is already a densification in the program area. During the monitoring period the sample size will not be increased and therefore the sample size will be consistent with the baseline period.

Parameter:	3B1bii. Grassland converted to Forest Land
Description:	This parameter refers to the annual area of change for land use conversions for selected [3B1bii] subcategories.
Data unit:	Hectares
Source of data or measurement/calculation methods and procedures to be applied (e.g. field measurements, remote sensing data, national data, official statistics, IPCC Guidelines, commercial and scientific literature), including the spatial level of the data (local, regional, national, international)	**Source of data:** sampling approach of the Satellite Forest Monitoring System **Methods**: estimation of proportions of areas following IPCC Guidelines of 2006. **Spatial Scale:** ISFL jurisdictional area.
Fixed value or monitored? If monitored, frequency of monitoring/recording:	Monitored every year
Quality Assurance/Quality Control procedures to be applied:	SOP 2, and SOP 3 is indicating the specific quality controls to be implemented in the process to estimate AD using the sampling approach of the SAMOF System. Furthermore, at the end of SOP 2 and SOP 3, the actions to be implemented as part of the Quality Assurance are explained.
Identification of sources of uncertainty for this parameter following approaches from the most recent IPCC guidance and guidelines.	The sample size was used to estimate AD.
Process for managing and reducing the uncertainty	There is already a densification in the program area. During the monitoring period the sample size will not be increased and

associated with this parameter	therefore the sample size will be consistent with the baseline period.

Parameter:	3B5bi. Forest Land converted to Settlements
Description:	This parameter refers to the annual area of change for land use conversions for selected [3B5bi] subcategories.
Data unit:	Hectares
Source of data or measurement/calculation methods and procedures to be applied (e.g. field measurements, remote sensing data, national data, official statistics, IPCC Guidelines, commercial and scientific literature), including the spatial level of the data (local, regional, national, international)	**Source of data:** sampling approach of the Satellite Forest Monitoring System **Methods**: estimation of proportions of areas following IPCC Guidelines of 2006. **Spatial Scale:** ISFL jurisdictional area.
Fixed value or monitored? If monitored, frequency of monitoring/recording:	Monitored every year
Quality Assurance/Quality Control procedures to be applied:	SOP 2, and SOP 3 is indicating the specific quality controls to be implemented in the process to estimate AD using the sampling approach of the SAMOF System. Furthermore, at the end of SOP 2 and SOP 3, the actions to be implemented as part of the Quality Assurance are explained.
Identification of sources of uncertainty for this parameter following approaches from the most recent IPCC guidance and guidelines.	The sample size was used to estimate AD.
Process for managing and reducing the uncertainty associated with this parameter	There is already a densification in the program area. During the monitoring period the sample size will not be increased and therefore the sample size will be consistent with the baseline period.

Parameter:	3B6bi. Forest Land converted to Other Land
Description:	This parameter refers to the annual area of change for land use conversions for selected [3B6bi] subcategories.
Data unit:	Hectares
Source of data or measurement/calculation methods and procedures to be applied (e.g. field	**Source of data:** sampling approach of the Satellite Forest Monitoring System **Methods**: estimation of proportions of areas following IPCC

measurements, remote sensing data, national data, official statistics, IPCC Guidelines, commercial and scientific literature), including the spatial level of the data (local, regional, national, international)	Guidelines of 2006. **Spatial Scale:** ISFL jurisdictional area.
Fixed value or monitored? If monitored, frequency of monitoring/recording:	Monitored every year
Quality Assurance/Quality Control procedures to be applied:	SOP 2, and SOP 3 is indicating the specific quality controls to be implemented in the process to estimate AD using the sampling approach of the SAMOF System. Furthermore, at the end of SOP 2 and SOP 3, the actions to be implemented as part of the Quality Assurance are explained.
Identification of sources of uncertainty for this parameter following approaches from the most recent IPCC guidance and guidelines.	The sample size was used to estimate AD.
Process for managing and reducing the uncertainty associated with this parameter	There is already a densification in the program area. During the monitoring period the sample size will not be increased and therefore the sample size will be consistent with the baseline period.

Parameter:	3B1bi. Cropland converted to Forest Land
Description:	This parameter refers to the annual area of change for land use conversions for selected [3B1bi] subcategories.
Data unit:	Hectares
Source of data or measurement/calculation methods and procedures to be applied (e.g. field measurements, remote sensing data, national data, official statistics, IPCC Guidelines, commercial and scientific literature), including the spatial level of the data (local, regional, national, international)	**Source of data:** sampling approach of the Satellite Forest Monitoring System **Methods**: estimation of proportions of areas following IPCC Guidelines of 2006. **Spatial Scale:** ISFL jurisdictional area.
Fixed value or monitored? If monitored, frequency of	Monitored every year

monitoring/recording:	
Quality Assurance/Quality Control procedures to be applied:	SOP 2, and SOP 3 is indicating the specific quality controls to be implemented in the process to estimate AD using the sampling approach of the SAMOF System. Furthermore, at the end of SOP 2 and SOP 3, the actions to be implemented as part of the Quality Assurance are explained.
Identification of sources of uncertainty for this parameter following approaches from the most recent IPCC guidance and guidelines.	The sample size was used to estimate AD.
Process for managing and reducing the uncertainty associated with this parameter	There is already a densification in the program area. During the monitoring period the sample size will not be increased and therefore the sample size will be consistent with the baseline period.

Annex 11: Risk Factors Indicators

In order to avoid a subjective evaluation, this annex proposes the following specific indicators for each of the risk factors in the context of the Emissions Reduction Program in the AFOLU sector in the states of Coahuila, Chihuahua, Durango and Nuevo León in accordance with the provisions of the Reversal Risk assessment tool of the ISFL:

1. **Risk Factor A. Lack of long- term effectiveness in addressing the key drivers of AFOLU Emissions and Removals**

- **Risk Factor A1. Lack of broad and sustained stakeholder support**
    - A1.1 Relevant local stakeholders' participation in the ER Program design.
    - A1.2 Co-responsibility of local stakeholders to reduce the main drivers of deforestation and degradation
    - A1.3 Existence of accessible and effective grievance mechanisms.
    - A1.4 Maintenance or improvement of the income and/or production levels of the participants in the long term.
    - A1.5 Existence of adequate benefit sharing mechanisms.

- **Risk Factor A2: Significant occurrences of conflicts over land and resources in the Program Area**
    - A2.1 Existence of effective legal instruments and frameworks for the resolution of conflicts related to land ownership.

- **Risk Factor A3: Lack of institutional capacities and/or ineffective vertical/cross-sectoral coordination**
    - A3.1 Experience in developing policies and programs.
    - A3.2 Experience in Intersectoral cooperation.
    - A3.3 Experience of collaboration between different levels of government
- **Risk Factor A4: Lack of long-term incentives beyond climate finance to decouple deforestation and degradation from economic activities.**
    - A4.1 Experiences in decoupling deforestation and degradation from economic activities.

- **Risk Factor A5: Lack of relevant legal and regulatory environment conducive to addressing key drivers of deforestation and forest degradation**
    - A5.1 Relevant legal and regulatory environment conducive to achieve Programs objectives.

2. **Risk Factor B. Exposure and vulnerability to natural disturbances**
- **Risk Factor B1: Exposure and vulnerability to forest fires**
- **Risk Factor B2: Exposure and vulnerability to storms**
- **Risk Factor B3: Exposure and vulnerability to droughts**

- **Risk Factor B4: Exposure and vulnerability to Forest Pests and Diseases**

The proposed risk indicators are described below in order to indicate what is being considered for each of them:

Risk Factor A1. Lack of broad and sustained relevant stakeholder support

A1.1 Relevant local stakeholders' participation in the ER Program design: The risk is estimated to be low, since the ER Program will be supported by a participatory planning process in which the ejidos, communities, indigenous peoples, youth, women, inhabitants of forest areas, forest, agricultural and livestock producers will propose the actions to be taken as part of this operation. In this sense, the process will make it possible to legitimize the program's activities, as well as encourage greater ownership and involvement by the actors in the territory to reduce deforestation and forest degradation. In this way, it can be expected that the stakeholders involved in the design, development and implementation of the ER Program are committed to making it successful.

A1.2 Co-responsibility of local stakeholders to reduce the main drivers of deforestation and degradation. One of the key aspects for the design and implementation of the ER Program will be the capacity and willingness of local actors and the state and federal governments to influence decision-making, through platforms for consultation and dialogue, which will favor the permanence of long-term activities to address the drivers of deforestation and forest degradation. The existence of platforms for consultation, participation and decision-making of a sectoral and inter-sectoral nature, at both federal and state levels, will make it possible to account for the impact that co-responsibility has on the sustainability of actions to reduce emissions, therefore the risk is considered to be low.

A1.3 Existence of accessible and effective grievance mechanisms. The level of risk with respect to the existence of mechanisms for dealing with complaints is expected to be low, since there are service platforms according to the type of complaint in question. In the case of Mexico, it is the Feedback and Grievance Mechanism (MAC, by its Spanish acronym) and seeks to provide adequate responses and solutions to information requests, claims, complaints and suggestions. In addition, this mechanism is characterized by being accessible (with multiple channels widely disseminated, voluntary and inclusive access), culturally appropriate (makes use of traditional complaint handling systems), timely and effective (with clear procedures for each stage of care, as well as with appropriate resources and personnel), equitable (provides common access to information), transparent (reports on standards and results and respects confidentiality when necessary), feedback (participatory monitoring to improve performance)[99].

A1.4 Maintenance or improvement of the income and/or production levels of the participants in the long term. For the Emissions Reduction Program of Mexico, it is estimated that the activities to be implemented will maintain at least the level of income/production that they have in the scenario prior to the operation of the Program. In this sense, a low level of risk can be assumed. However, there is still a lack of analysis to be carried out regarding benefit sharing and other economic impacts (for example, due to additionality in the granting of subsidies) and other studies that show the expected behavior of the participants' income over time. Therefore, the risk is now considered medium.

[99] Mexico's feedback and grievance mechanism is available on https://www.gob.mx/conafor/documentos/mecanismo-de-atencion-ciudadana-mac-19225

A1.5 Existence of adequate benefit sharing mechanisms. For now, there is no corresponding analysis to define the arrangements for a benefit sharing mechanism and the construction of the benefit sharing plan. However, it is expected that the benefit sharing arrangements will be developed and validated through a consultative, transparent and participatory process with the owners and inhabitants of the forest lands, with the feedback of other relevant stakeholders (civil society, experts and state governments, etc.) that influence the territory. Additionally, there are broad, solid, participatory, efficient, transparent, inclusive and effective mechanisms for the benefit sharing, such as the CONAFOR Operating Rules that provide experience and contribute to keeping the risk low.

Risk Factor A2: Significant occurrences of conflicts over land and resources in the Program Area

A2.1 Existence of effective legal instruments and frameworks for the resolution of conflicts related to land ownership. The perceived risk with respect to this indicator is low, given the existence and operation of the agrarian courts, their continuous work resolving conflicts related to the tenure of ejidal, communal and small property lands. These courts have within the scope of their competence to mention a few: the restitution of lands, forests and waters to population centers or their members against acts of administrative or jurisdictional authorities, out of trial, or against acts of individuals; resolve disputes in agrarian matters between ejidatarios, community members, possessors or residents among themselves and those that arise between them and the organs of the population nucleus; Nullity proceedings against resolutions issued by agrarian authorities that alter, modify or extinguish a right or determine the existence of an obligation, among others[100].

Risk Factor A3: Lack of institutional capacities and/or ineffective vertical/cross-sectoral coordination

A3.1 Experience in developing policies and programs. Participating institutions at both the federal and state levels have extensive experience in policy design and program execution; however, this applies to policies and programs specific to the specific sectors. Therefore, it will be necessary to contextualize and raise awareness about the concept of territorial approach, especially to give continuity to activities with that approach for long enough to ensure a long-term mitigation benefit (e.g., 10-20 years). It would be also important to raise awareness regarding environmental and social management instruments. For this, the administrative institutional capacity of the different participating entities will be analyzed to implement their objectives, considering the availability of the financial resources necessary for the performance of the activities and functions; constitution and legal attributions that provide relative security with respect to its continuity and confer sufficient powers to carry out said functions, and the technical capacity of its personnel to implement the activities of the program. Therefore, considering the current circumstances of the Federal and State Public Administration, the risk is considered low.

A3.2 Experience in Intersectoral cooperation. Considering that the implementation of the activities of the Emissions Reduction Program goes beyond the forestry sector, it is essential that there be close collaboration between actors, institutions and programs (including support) of the different relevant sectors. It is to be expected that the more experience there is in this regard, the more likely it is that the Program will be successful in the long term. In this sense, the current level of risk is medium because, although there are instruments and previous experiences of intersectoral cooperation, in practice the objectives are not fully achieved, either due to administrative issues or technical capacities.

[100] Tribunales Agrarios. Naturaleza y Atribuciones. August, 2021. Available on https://www.tribunalesagrarios.gob.mx/ta/docs/pdf/cua.pdf

A3.3 Experience of collaboration between different levels of government. This indicator is based on the idea that the achievement and maintenance in the long term of the ER Program mitigation benefits are more feasible when government actors from different levels have previous experiences of successful collaboration. In this sense, the link between federal and state levels is formalized through legal instruments designed to regulate and promote said collaboration. Therefore, the level of risk is considered low since there is evidence of collaboration between the different levels of government involved in the Program.

Risk Factor A4: Lack of long-term incentives beyond climate finance to decouple deforestation and degradation from economic activities.

A4.1 Experiences in decoupling deforestation and degradation from economic activities. The risk associated with this indicator is considered medium, since several examples of decoupling of production and deforestation can be found through a variety of interventions (protected natural areas and/or community forest management and/or forest restoration and protection and/or payment for environmental services). In many cases, these interventions have been maintained in the long term (more than ten years). En México, las experiencias más exitosas de reducción de deforestación y degradación forestal de largo plazo están asociadas con tres tipos de intervenciones[101], principalmente:

i. Áreas naturales protegidas (siendo importante señalar que en México, dichas áreas suelen estar habitadas y en ellas se llevan a cabo actividades productivas);
ii. Programas de pagos por servicios ambientales; y
iii. Manejo forestal comunitario.

Risk Factor A5: Lack of relevant legal and regulatory environment conducive to addressing key drivers of deforestation and forest degradation

A5.1 Relevant legal and regulatory environment conducive to achieve Program objectives. The risk associated with this indicator is considered low, since legal frameworks have been established that promote emission reduction and climate change objectives.

The table below presents the summary of the risk factor A assessment reflecting the analysis of the indicators shown above.

Indicator	Level of risk
A1.1 Relevant local stakeholders' participation in the ER Program design.	**Low**
A1.2 Co-responsibility of local stakeholders to reduce the main drivers of deforestation and degradation	**Medium**
A1.3 Existence of accessible and effective grievance mechanisms.	**Low**
A1.4 Maintenance or improvement of the income and/or production levels of the participants in the long term.	**Medium**

[101] Es importante señalar que estas intervenciones interactúan en el territorio. Por ejemplo, en las zonas de intervención una parte importante del PSA nacional se focalizan dentro de las ANP o, en otros casos algunos de los ejidos que tienen manejo forestal reciben apoyo de PSA.

A1.5 Existence of adequate benefit sharing mechanisms.	**Low**
A2.1 Existence of effective legal instruments and frameworks for the resolution of conflicts related to land ownership.	**Low**
A3.1 Experience in developing policies and programs.	**Low**
A3.2 Experience in Intersectoral cooperation.	**Medium**
A3.3 Experience of collaboration between different levels of government	**Medium**
A4.1 Experiences in decoupling deforestation and degradation from economic activities.	**Medium**
A5.1 Relevant legal and regulatory environment conducive to achieve Programs objectives.	**Low**

Risk Factor B. Exposure and vulnerability to natural disturbances

Now, the risk assessment of reversals due to natural disturbances for the Emissions Reduction Program is presented. It should be noted that the accounting of reversals depends on the scope of the reference level (for example, the activities, pools and sources it includes), in such a way that the participating states have considered both deforestation and forest degradation in their accounting, thus both fires and storms, which generally result in degradation rather than deforestation, are potential sources of reversals. The level of risk depends on:

- The propensity of Program states to any of these events (i.e., how often they have occurred historically);
- The potential of these events to trigger a reversal (that is, their ability to cause or significantly contribute to the emissions in a year or period exceeding the emissions of the Program's reference level); and
- The capacity of the authorities and relevant stakeholders to prevent and minimize the negative effects of these disturbances.

Focusing on forests within the jurisdiction of the program, and after analyzing the available information, it has been identified that the disturbances that imply the greatest threat are forest fires (which are generally not of natural origin and they also reflect the effect of droughts on forests).

The evaluation of Risk Factor B. Exposure and vulnerability to natural disturbances starts from the intersection between the probability of occurrence of a claim that may generate reversals and the potential severity of the said claim. The capacity of the different levels of government and other actors to prevent these phenomena and to reduce their negative impacts may, depending on the type of phenomenon, reduce or increase the value of the variables. Because of these potential risks, it will consider 5% for a contingency fund that can compensate beneficiaries who lose their plots and therefore their results are affected by the effect of natural disasters.

In the following section, this document presents a summary of risk factors for natural causes by state:

Coahuila

Fires are a major factor in the degradation and loss of vegetation. From 1991 to 2015, one of the states with the largest areas affected by fires was Coahuila (in second place, with 10.9%). The State Environmental Program 2017-2023 indicates that in 20 years there have been 1,486 forest fires in Coahuila, the highest occurrence of them was registered in the last 10 years, which coincides with the presence of extreme weather events. Therefore, it is pointed out that the risk is high.

Regarding the propensity and vulnerability to tropical cyclones, it was identified that the effects occur indirectly, due to runoff in high areas, therefore the risk is considered low.

According to the various sources consulted, the drought factor does not represent a significant risk for the implementation of the RE Program in this state, therefore the risk is considered low.

Chihuahua

Fires largely explain forest degradation in the state of Chihuahua. Only during the period 1997 to 2013, 15,680 wildfires affected approximately 380,500 hectares (CONAFOR, 2017).

Regarding the propensity and vulnerability to tropical cyclones, it was identified that the effects occur indirectly, due to runoff in high areas, therefore it is considered that the risk is low.

Durango

In terms of forest degradation, one of the main origins of the deterioration of ecosystems in the State is the high incidence of forest fires. From 2005 to 2013, CONAFOR registered a total of 1,372 fires that affected 168,094.21 hectares. So, the risk is considered high.

Regarding the propensity and vulnerability to tropical cyclones, it was identified that their effects in the state of Durango occur indirectly, due to runoff in high areas, therefore the risk at this point is considered low.

Regarding the risk related to drought in the state, it is a degradation factor and exerts pressure on deforestation. In 2013, an emergency declaration was issued due to drought in the 39 municipalities of the State; which had generated livestock losses in the previous five consecutive years. The lack of rain impacts on a reduction in the production of pastures, so it is possible that livestock exerted greater pressure on the vegetation, with the consequent deterioration of the rangelands (SEMARNAT, INECC, SRNyMA, 2016). In this sense, it is identified that the risk is high.

Nuevo León

Regarding the risk of fires, at the time of preparing this subsection, it was not possible to have exact information on the role that fires play in the forest regions of the state, for this reason, it is assigned a medium risk level.

Regarding the propensity and vulnerability to tropical cyclones, it was identified that the effects occur indirectly, due to runoff in high areas, therefore the risk is considered low.

The table below presents the summary of the risk factor B assessment reflecting the analysis of the indicators shown above.

Indicator	Level of risk
B.1 Exposure and vulnerability to forest fires	**High**
B.2 Exposure and vulnerability to storms	**Low**
B3: Exposure and vulnerability to droughts	**High**
B4: Forest Pests and Diseases	**High**

Annex 12: List of international agreements and treaties, federal and state laws relevant to the ERPROGRAM

List of international agreements, conventions and treaties to which Mexico is a signatory and which determine forestry regulations:
Declaration of the United Nations Conference on Human Environment (Stockholm, Sweden, June 16, 1972).
Convention on the Elimination of All Forms of Discrimination against Women (Publication Federal Gazette D.O.F., May 12, 1981).
Convention Concerning the Protection of the World Cultural and Natural Heritage. (Signature: November 16, 1972. Ratification: February 23, 1984. Effective for Mexico: May 23, 1984).
Convention on Biological Diversity (Rio de Janeiro, Brazil, June 5, 1992. Publication. Approval in the Federal Gazette D.O.F. January 13, 1993. Effective for Mexico: December 29, 1993).
United Nations Framework Convention on Climate Change (New York, State of New York, United States of America, May 9, 1992. Publication Approval in the Federal Gazette D.O.F. January 13, 1993. Effective for Mexico: March 21, 1994).
Kyoto Protocol to the United Nations Framework Convention on Climate Change (Kyoto, Japan, December 11, 1997. Publication Approval in the Federal Gazette D.O.F. September 1, 2000. Effective for Mexico: February 16, 2005).
Convention 169 of the International Labor Organization (ILO).
Johannesburg Declaration on Sustainable Development (Johannesburg, Republic of South Africa, September 4, 2002).
Inter-American Convention on the Prevention, Punishment and Eradication of Violence against Women, "Convention of Belem do Para". (Publication D.O.F. January 19, 1999).
At COP 15 in Copenhagen, 2009, the goal of keeping global warming below 2°C was validated and developed countries commit to long-term financing support for developing countries to achieve this goal.
The Cancun agreements within the COP16 in 2010 concluded with a series of concrete measures to establish a legally binding greenhouse gas emissions reduction program. In addition to the creation of financial mechanisms such as a Green Climate Fund and a commitment to raise the greenhouse gas emissions reduction targets.
Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Derived from their Utilization under the Agreement on Biological Diversity. (Signature: 24 February 2011. Ratification: May 16, 2012. Effective for Mexico: the instrument has not yet come into force internationally).
The Paris Agreement on Climate Change (COP21, in 2016) established efforts on GHG emissions reductions that became effective in 2020.

List of federal laws, codes and regulations that comprise the applicable regulatory framework for the Benefit Sharing Plan:	
General Law of Ecological Balance and Environmental Protection (D.O.F. 28-01-1988, last amendment D.O.F. 11-04-2022). General Law of Sustainable Forest Development (D.O.F. 25-02-2003, last amendment D.O.F. 28-04-2022). General Law of Wildlife (D.O.F. 03-07-2000, last amendment D.O.F. 19-03-2014). General Law on Climate Change (D.O.F. 06-06-2012, last amendment D.O.F. 11-05-2022). Law of Sustainable Rural Development (D.O.F. 07-12-2001, last amendment published D.O.F. 03-06-2021). Agrarian Law (D.O.F. 26-02-1992, last amendment D.O.F. 08-03-2022). Law of the National Institute of Indigenous Peoples, (D.O.F. 04-12-2018, last amendment D.O.F. 18-05-2022). General Law on Equality between Women and Men (02-08-2006, last amendment D.O.F. 18-05-2022). General Law on Women's Access to a Life Free of Violence (D.O.F. 01-02-2007, last amendment D.O.F. 17-12-2015). General Law of Civil Protection (D.O.F. 06-06-2012, last reform DOF 03-06-2014) Planning Law (D.O.F. 05-01-1983, last amendment D.O.F. 16-02-2018). Federal Law of Parastatal Entities (D.O.F. 14-05-1986, last amendment D.O.F. 01-03-2019). Federal Law of Budget and Fiscal Responsibility (D.O.F. 30-03-2006, last amendment D.O.F. 27-02-2022). Federal Law of Administrative Procedure (D.O.F. 04-08-1994, last amendment D.O.F. 18-05-2018). Federal Law of Contentious Administrative Procedure (D.O.F. 01-12-2005, last amendment D.O.F. 27-01-2017). General Law of the National Anticorruption System (D.O.F. 18-07-2016, last amendment D.O.F. 20-05-2021). General Law of Administrative Responsibilities (D.O.F. 18-07-2016, last amendment D.O.F. 22-11-2021). Organic Law of the Federal Court of Administrative Justice (D.O.F. 18-07-2016). Federal Law of Transparency and Access to Public Governmental Information (D.O.F. 11-06-2002, last amendment D.O.F. 20-05-2021). Organic Law of the Federal Public Administration. (29-12-1976, last amendment D.O.F. 09-09-2022). Federal Civil Code. (D.O.F. 26-05-1928, last amendment D.O.F. 11-01-2021). Federal Code of Civil Procedures (D.O.F. 24-02-1943, last amendment D.O.F. 07-06-2021). Federal Fiscal Code (D.O.F. 31-12-1981, last amendment D.O.F. 12-11-2021). Internal Regulations of the Ministry of Environment and Natural Resources (D.O.F. 26-11-2012). Regulations of the General Law of Ecological Balance and Environmental Protection on Environmental Impact Assessment (D.O.F. 30-05-2000, last amendment D.O.F. 03-10-2014). Regulations of the General Law of Ecological Balance and Environmental Protection regarding Natural Protected Areas (D.O.F. 30-11-2000, last amendment D.O.F. 21-05-2014). Regulations of the General Law of Ecological Balance and Environmental Protection in matters of Ecological Management (D.O.F. 08-08-2003, last amendment D.O.F. 31-10-2014). Regulations of the General Law of Sustainable Forest Development (New Regulations published D.O.F. 09-12-2020). Regulations of the General Wildlife Law (D.O.F. 30-11-2006, last amendment D.O.F. 09-05-2014). Regulations of the Agrarian Law on Rural Property Management (D.O.F. 28-11-2012). Regulations of the Law of Acquisitions, Leasing and Services of the Public Sector (New Regulations D.O.F. 28-07-2010, last amendment D.O.F. 15-09-2022). Regulations of the Federal Law of Parastatal Entities. D.O.F. 26-01-1996 and its amendment D.O.F. 22-11-2010).	
State	**State Regulatory Framework**
Durango	Political Constitution of the Free and Sovereign State of Durango. Sustainable Forestry Development Law of the State of Durango. Regulations for transparency and access to public information of the Congress of the state of Durango. Law that establishes the catalog of indigenous peoples and communities of the state of Durango. Law that creates the institute for the evaluation of public policies of the state of Durango. General Law of the Indigenous Peoples and Communities of the State of Durango.

	General Law of Urban Development for the State of Durango. General Cadastre Law of the state of Durango Livestock Law of the State of Durango. State Mining Development and Promotion Law of Durango. Law of the local anti-corruption system of the state of Durango. Law of the State Institute of Women. Law on Transparency and Access to Public Information of the State of Durango. State Budget, Accounting and Public Expenditure Law. Planning Law of the State of Durango. Law on Citizen Participation for the State of Durango. Law for the youth of the state of Durango. Law of the Human Rights Commission of the State of Durango. Law on Sustainable Environmental Management for the State of Durango. Law of economic promotion for the state of Durango. Law on Sustainable Rural Development for the State of Durango. Indigenous Consultation Law for the state and municipalities of Durango. Climate Change Law for the state of Durango.
Coahuila de Zaragoza	Political Constitution of the State of Coahuila de Zaragoza Charter of Economic, Social, Cultural and Environmental Rights of Coahuila de Zaragoza Access to Public Information Law for the State of Coahuila de Zaragoza Human Settlements, Land Planning and Urban Development Law for the State of Coahuila de Zaragoza Law of Economic Development of the State of Coahuila de Zaragoza Law of Parastatal Entities of the State of Coahuila de Zaragoza Law for the Promotion of the Activities of Civil Society Organizations in the State of Coahuila de Zaragoza. Livestock Law for the State of Coahuila de Zaragoza Finance Law for the State of Coahuila de Zaragoza Law of Equality between Women and Men for the State of Coahuila de Zaragoza Law of the Commission of Human Rights for the State of Coahuila de Zaragoza Law of the Promoter for Rural Development of Coahuila Law of Citizen Participation for the State of Coahuila de Zaragoza Law of Planning for the Development of the State of Coahuila de Zaragoza Law of Civil Protection for the State of Coahuila de Zaragoza Law of Accountability and Superior Auditing of the State of Coahuila de Zaragoza Law of Environmental Responsibility of the State of Coahuila de Zaragoza Law of Wildlife for the State of Coahuila de Zaragoza Ecological Equilibrium and Environmental Protection Law for the State of Coahuila de Zaragoza Law of the Anticorruption System of the State of Coahuila de Zaragoza Law of the System of Statistical and Geographic Information of the State of Coahuila de Zaragoza Law for the Development and Inclusion of People with Disabilities of the State of Coahuila de Zaragoza Law for the Integral Development of the Youth of the State of Coahuila de Zaragoza Law for the Social Development of the State of Coahuila de Zaragoza Law for the Promotion and Development of Fruit Growing in the State of Coahuila de Zaragoza Law for the Promotion and Development of the Wine Growing Activity of the State of Coahuila de Zaragoza Law for the Adaptation and Mitigation of the effects of Climate Change in the State of Coahuila de Zaragoza Law for the Inclusion and Guarantee of the Rights of People with Autism Spectrum Disorder of the State of Coahuila de Zaragoza

	Law to Promote Equality and Prevent Discrimination in the State of Coahuila de Zaragoza. Law that creates the Decentralized Public Body called "Impulsora Minera del Estado de Coahuila de Zaragoza". Law that creates the Environmental Protection Attorney's Office of the State of Coahuila. Law that Establishes the Bases and General Guidelines for the Receipt of Federal Contributions and the Creation, Distribution, Application and Follow-up of those Resources of the State Funds for Social Development in Coahuila. Law Regulating the Division of Rural Communities in the State of Coahuila Regulatory Law of the Expenditure Budget of the State of Coahuila de Zaragoza
Chihuahua	Equality between Women and Men Law of the State of Chihuahua Finance Law of the State of Chihuahua Livestock Law of the State of Chihuahua Law for the Promotion of Competitiveness of Micro, Small and Medium Enterprises of the State of Chihuahua. Law for the Promotion and Participation of Civil Society Organizations, Groups and Networks of the State of Chihuahua. Law for Integral Sustainable Rural Development for the State of Chihuahua Law of Development and Economic Promotion for the State of Chihuahua Law of the State Human Rights Commission Law for the Protection of Personal Data of the State of Chihuahua. Law for the Regularization of Agricultural Colonies and Agricultural and Livestock Communities of State Regime Climate Change Law of the State of Chihuahua
Nuevo León	Political Constitution of the Free and Sovereign State of Nuevo León Organic Law of the Public Administration for the State of Nuevo León Environmental Law for the state of Nuevo León Law for the Protection of the Rights of People with Disabilities Law for Access of Women to a Life Free from Violence Law for the Superior Audit of the State of Nuevo León Law on Transparency and Access to Public Information of the State of Nuevo León Law to Prevent and Eliminate Discrimination in the State of Nuevo León Law of the State Institute of Women Law of Agricultural Partnership for the State of Nuevo León Youth Law for the state of Nuevo León Expenditures Law for the fiscal year 2021 of the State of Nuevo León Administrative Responsibilities Law of the State of Nuevo León Finance Law for the State of Nuevo León Climate Change Law of the State of Nuevo León Law of Sustainable Forestry Development of the State of Nuevo León Strategic Planning Law of the State of Nuevo León Law of Human Settlements, Territorial Planning and Urban Development for the State of Nuevo León. Law for the Equality between Women and Men of the State of Nuevo León State Planning Law Law of the Corporation for the Agricultural Development of Nuevo León Law for the Promotion of Agricultural Activities of the State of Nuevo León Sustainable Integral Rural Development Law of the State of Nuevo León Livestock Law of the State of Nuevo León