Mexico Forest Protocol

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Acknowledgements

Staff

Derik Broekhoff
Gary Gero
John Nickerson
Tim Kidman
Shireen Rahnema
Robert Youngs
Heather Raven

Workgroup

Armando Alanis	Comisió Nacional Forestal
Mariana Azaola	Comisión Nacional Forestal
Danae Azuara	Environmental Defense Fund
Barbara Bamberg	Air Resources Board
Karla Barclay	Comisión Nacional Forestal
Juan Carlos Carrillo	Centro Mexicano de Derecho Ambiental
Francisco Chapela	Rainforest Alliance
Carolyn Ching	Verified Carbon Standard
Alfredo Cisneros Pineda	Instituto Nacional de Ecologia
Alejandra Cors	Reforestamos Mexico
Lina Dabbagh	World Wildlife Fund
Liliana Davila	World Wildlife Fund
Pablo Delgadillo	Comision de Cooperacion Ecológica Fronteriza
Steven de Gryze	Terra Global Capital
Rubén de la Sierra	ASERCA
Francisco Echevarría	Alianza de Ejidos y Comunidades Forestales Certificados de Mexico A.C.
Leticia Espinosa	Pronatura Mexico A.C.
Raúl Espinoza Bretado	Comisión Nacional Forestal
Elsa Esquivel	Ambio
Jose Carlos Fernandez	Comisión Nacional Forestal
Rafael Flores	Comisión Nacional Forestal
Bryan Foster	Ecologic
Sandie Fournier	Ambio
Sofia Garcia	Comisión Nacional Forestal
Maria Elena Giner	Comision de Cooperacion Ecológica Fronteriza
Sergio Graf	Comisión Nacional Forestal
Gabriela Guerrero	Comisión Nacional Forestal
Leticia Gutierrez Lorandi	Comisión Nacional Forestal
Mary Kate Hanlon	New Forest
Jeffrey Hayward	Rainforest Alliance
Carly Hernandez	University of Colorado
Ivan Hernandez	Gold Standard
Robert Hrubes	Scientific Certification Systems
Omar Jiménez	Subdelegado Jurídico PROFEPA – Delegación Chihuahua
Kjell Kühne	Instituto Nacional de Ecologia
Federico Lage	Natura Proyectos Ambientales
Alex Lotsch	World Bank
Rubén Martínez	Ambiente y Desarrollo
Christina McCain	Environmental Defense Fund
Claudia Mendez	Rainforest Alliance
Jose Maria Michel	Comisión Nacional Forestal

Pedro Morales	Baker and McKenzie
César Moreno	Comisión Nacional Forestal
Kurt Christoph Neitzel	Universidad Nacional Autónoma de México
Carolina Orta	Comisión Nacional Forestal
Yves Paiz	The Nature Conservancy
Michelle Passero	The Nature Conservancy
Carlos Perez	Servicios Ambientales de Oaxaca A.C.
Laura Perez	Grupo Ecológico Sierra Gorda
Rosario Peyrot-Gonzalez	Procuraduría Federal de Protección al Ambiente
Pablo Quiroga	Natura Proyectos Ambientales
Isabel Ramirez	Universidad Nacional Autónoma de Mexico
Ricardo Rivera	Comisión Nacional Forestal
David Ross	Independent Consultant for carbon forestry projects
Federico Ruanova	Baker and McKenzie
Patti Ruiz	Grupo Ecológico Sierra Gorda
Alejandra Salazar	Pronatura Mexico A.C.
Jose Mario Sánchez	Comision de Cooperacion Ecológica Fronteriza
Steve Schwartzman	Environmental Defense Fund
Brian Shillinglaw	New Forest
Cheri Sugal	Terra Global Capital
Naomi Swickard	Verified Carbon Standard
Julie Teel	Governor's Climate and Forest Task Force
Jorge Rubén Tarango	Subdelegado Jurídico SEMARNAT - Delegación Chihuahua
Denisse Varela	Baker and McKenzie
Rubén Trejo Ortega	Independent
Rosa María Vidal	Pronatura Sur
Yougha von Laer	South Pole Carbon
Gmelina Ramirez	

Technical Support

Nancy Budge
Cecilia Simon

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Abbreviations and Acronyms

C	Carbon
CH_4	Methane
CO_2	Carbon dioxide
CONAFOR	Comisión Nacional Forestal
CRT	Climate Reserve Tonne
ENAREDD+	National REDD+ Strategy
GHG	Greenhouse gas
GWP	Global warming potential
Ha	Hectare
Kg	Kilogram
INFyS	National Forest and Soils Inventory
IPCC	Intergovernmental Panel on Climate Change
MFP	Mexico Forest Protocol
N_2O	Nitrous oxide
NGO	Non-governmental organization
PIA	Project Implementation Agreement
PROFEPA	Procuraduría Federal de Protección al Ambiente. Environmental Protection Agency
REDD+	Reducing emissions from deforestation and forest degradation and the role of conservation, sustainable management of forests and enhancement of forest carbon stocks
Reserve	Climate Action Reserve
SEMARNAT	Secretaria de Medio Ambiente y Recursos Naturales
UMAFOR	Forest Management Unit
UNFCCC	United Nations Framework Convention on Climate Change
Vision	Mexico's Vision on REDD+

1 Introduction

The release of the draft Climate Action Reserves (Reserve) Mexico Forest Protocol (MFP) follows 14 months of meetings, consultations, and conference calls among an expansive list of Mexican and American stakeholders. Participants in the stakeholder process include non-governmental organizations (NGOs), government agencies, private sector, and to a limited degree, landowners. The protocol provides project eligibility rules, methods to calculate a project's net effects on greenhouse gas (GHG) emissions from emission reductions (reductions) and emission removals of CO_2 from the atmosphere (removals), procedures for assessing the risk that carbon sequestered by a project may be reversed (i.e. released back to the atmosphere), and approaches for long-term project monitoring and reporting. The goal of this protocol is to ensure that the net GHG reductions and removals caused by a project are accounted for in a complete, consistent, transparent, accurate, and conservative manner and may therefore be reported to the Climate Action Reserve (Reserve) as the basis for issuing carbon offset credits (called Climate Reserve Tonnes or CRTs). The protocol is designed to interface and reconcile with future accounting strategies developed at jurisdiction levels, but can function currently for standalone projects.

The Reserve is an international offsets program working to ensure integrity, transparency, and financial value in the North American carbon market. It does this by establishing regulatory-quality standards for the development, quantification and verification of GHG emissions reduction projects in North America; issuing carbon offset credits known as CRTs generated from such projects; and tracking the transaction of credits over time in a transparent, publicly-accessible system. Adherence to the Reserve's high standards ensures that emission reductions associated with projects are real, additional, and meet rigorous permanence standards, thereby instilling confidence in the environmental benefit, credibility, and efficiency of the U.S. carbon market.

1.1 About Forests, Carbon Dioxide, and Climate Change

Forests have the capacity to both emit and sequester carbon dioxide (CO_2), a leading greenhouse gas that contributes to climate change. Trees, through the process of photosynthesis, naturally absorb CO_2 from the atmosphere and store the gas as carbon in their biomass, i.e. trunk (bole), leaves, branches, and roots. Carbon is also stored in the soils that support the forest, as well as the understory plants and litter on the forest floor. Wood products that are harvested from forests can also provide long-term storage of carbon.

When trees are disturbed, through events like fire, disease, pests or harvest, some of their stored carbon may oxidize or decay over time releasing CO_2 into the atmosphere. The quantity and rate of CO_2 that is emitted may vary, depending on the particular circumstances of the disturbance. Forests function as reservoirs in storing CO_2. Depending on how forests are managed or impacted by natural events, they can be a net source of emissions, resulting in a decrease to the reservoir, or a net sink, resulting in an increase of CO_2 to the reservoir. In other words, forests may have a net negative or net positive impact on the climate.

Through sustainable management and protection, forests can also play a positive and significant role to help address global climate change. The Reserve's MFP is designed to address the forest sector's unique capacity to sequester, store, and emit CO_2 and to facilitate the positive role that forests can play to address climate change.

1.2 Nested Projects in a Jurisdictional Framework

The development of the Reserve's protocol is occurring simultaneously with the development and ongoing evolution of Mexico's REDD+ Vision and with California's Cap-and-Trade Regulation under AB 32. Mexico is currently designing a national REDD+ strategy that is targeted for completion by the end of 2012. The process, referred to as ENAREDD+, is building on the framework established in Mexico's REDD+ Vision (Vision). States are also moving forward with strategies to address climate change. Chiapas and the Yucatan Peninsula, for example, are in the process of developing a state-level REDD+ strategy.

These dynamics have shaped the discussions and the development of the protocol, since it is a key objective to produce a protocol that is relevant to California's Cap-and-Trade and to Mexico's REDD+ strategies. Early on, the workgroup discussed the concept of developing a protocol that could function in the near term as standalone project guidance and be adaptable to REDD+ accounting systems as they develop. Ultimately, it is expected that the Reserve's MFP will provide guidance for projects that are reconciled to, or nested within, jurisdictional monitoring systems either at the state or federal level (or both).

The protocol is intended to help catalyze the development of emission reduction and sequestration activities in Mexican forests. The guidance in this protocol provides:

1. Assurances that environmental and social safeguards are achieved where credited activities occur.
2. A resolute assessment of additionality where activities occur.
3. Accurate quantification methods, based on measurable benefits resulting from explicit management activities.
4. Practical methods for ensuring permanent carbon storage in line with California regulatory requirements for offsets.

While the current guidance is designed to quantify reduced GHG emissions and enhanced sequestration at the project scale, the Reserve expects this guidance to evolve as it is incorporated into broader accounting frameworks at the national and sub-national level in Mexico. Addressing REDD+ activities at jurisdictional scales will provide opportunities to comprehensively address forest sector emissions and sequestration and improve the overall accuracy of forest carbon accounting. The ability to control and account for leakage, for instance, is proportional to the geographic scale of a program and monitoring efforts. Hence, the intent is to embed this protocol in jurisdictional mechanisms as they are developed. The ultimate objective is a system in which projects are reconciled to jurisdictional REDD+ programs in a way that is mutually reinforcing with respect to accounting, permanence, and safeguarding environmental and social values.

This protocol has been designed with conservative assumptions in order to minimize the risk of over-crediting and to facilitate the protocol's incorporation into jurisdictional programs. Incorporating the protocol in a jurisdictional REDD+ program, however, may require reconsidering or revising a number of protocol elements, including:

1. Crediting Pathway

   The protocol has been designed with the assumption that credits will be issued directly to projects. This allows individuals managing the forest to be directly rewarded for activities that reduce emissions or increase sequestration. The protocol will be fully compatible with

programs that issue credits at both the jurisdiction and project levels (or at the project level only), provided mechanisms are devised to reconcile project- and jurisdiction-level accounting for reduced emissions and enhanced sequestration. This protocol does not currently reference or incorporate such mechanisms.

It is possible to design jurisdictional REDD+ programs for which credits are issued at the jurisdiction level, and not directly to projects. Such programs may still incorporate project-level activities and could rely on this protocol to determine the relative contribution of projects to jurisdiction-wide performance. Under such programs, however, certain protocol requirements, including leakage assessments and compensation for reversals, will require modification.

2. Baselines and Reconciliation

Baselines are the starting point from which to measure changes in forest emissions from both avoided deforestation and increased sequestration. A baseline should be a representation of the future expected level of emissions from the project area or jurisdiction in the absence of a REDD+ program. This protocol requires that project baselines be estimated as a function of existing forest carbon stocks within the project area and regional deforestation trends calculated for defined management units, based on the National Forestry Commission's (CONAFOR) National Forest and Soil Inventory (INFyS).

In a jurisdictional system, a jurisdictional reference level will be set to measure performance in the jurisdiction as a whole. Project-level baselines (if incorporated) and jurisdictional reference levels must therefore be reconciled so that total crediting for all project activities may not exceed the net reductions for the jurisdiction as a whole against its reference level. Since project crediting and jurisdictional crediting will ultimately be governed by the total benefits realized at the jurisdiction level, it will be important to determine what adjustments for project-level crediting are necessary to ensure that reductions are not over-credited at the jurisdiction level. This reconciliation will be necessary regardless of whether the jurisdictional monitoring framework includes project-only crediting, or whether both projects and other jurisdiction-level activities may receive credits. Reconciliation will be made easier to the extent that project-level baselines and jurisdictional reference levels are based on compatible assumptions.

3. Scope

Jurisdictional programs may choose to monitor and account for reduced emissions from deforestation and/or degradation (RED and/or REDD), but may also include accounting for enhanced sequestration (typically called REDD+). This protocol accounts for both reduced emissions and enhanced sequestration at the project level (described in Section 2.1). A jurisdictional program that relies on this protocol may therefore need to include accounting for sequestration at the jurisdiction level (REDD+), or adopt methods for reconciling jurisdiction- and project-level accounting frameworks based on these different activities.

Additionally, extra consideration may have to be provided to both environmental and social safeguards in crediting some "+" activities in a jurisdictional "REDD+" scheme.

4. Liability and Risk-Sharing

There are risks associated with under-performance of projects or programs designed to

reduce net forest emissions. Under this protocol, projects are credited for their individual performance against a project baseline, and issuance of credits to Forest Owners is adjusted to account for potential leakage (through a leakage risk assessment), as well as for risk of reversals. At the project scale, unavoidable reversals of reductions or sequestration are compensated by the Reserve out of a common buffer pool. Contributions to the buffer pool are required by projects at a rate determined by project risk. Avoidable reversals must be compensated for by the Forest Owner. Similarly, jurisdictional systems must define mechanisms to compensate for reversals at a jurisdictional level. In addition, however, since jurisdictional REDD(+) performance will depend on the performance of both project and non-project areas, a mechanism for sharing risk among projects and between projects and the jurisdiction must be defined. Net increases in emissions outside of project areas may offset net emission reductions and sequestration achieved by projects. Conversely, the existence of a jurisdictional program that performs well may decrease the risk of reversals to individual projects, and wall-to-wall jurisdictional monitoring may decrease the need for leakage discounting. The protocol is designed to recognize the benefits of jurisdictional monitoring as it relates to leakage. Thus, leakage discounting and project risk assessments in the current protocol may be adjusted over time.

2. Safeguards

   Where possible, this protocol strives to incorporate the principles of the Cancun Agreements at the project level, where sequestration or reduced emission activities occur, through a requirement that projects be verified under the Climate, Community, and Biodiversity Standard, or the Forest Stewardship Council standards for Mexico. As jurisdictional systems for REDD+ develop, policy decisions regarding appropriate environmental and social safeguards will be determined. For the purposes of this protocol, we will evaluate future standards or practices for ensuring quality environmental and social safeguards and consider their inclusion.

The Reserve uses a rigorous, transparent, and comprehensive process for developing all of its protocols, focusing on accurate and conservative accounting to ensure that credits are issued only for GHG reductions and removals that are real, permanent, additional, verifiable, and enforceable by contract. The Reserve may update the MFP from time to time to reflect new scientific findings or policy decisions. For additional information about the update process and further news on future updates, please visit the Reserve website at www.climateactionreserve.org.

2 Forest Project Definitions

For the purposes of the MFP, a Forest Project is a planned set of activities designed to increase removals of CO_2 from the atmosphere, or reduce or prevent emissions of CO_2 to the atmosphere, through increasing forest carbon stocks or reducing emissions compared to the project's baseline.

A glossary of terms related to Forest Projects is provided in Section 15 of this protocol. Throughout the protocol, important defined terms are capitalized (e.g. "Forest Owner").

2.1 Project Activities

The Reserve will register forest project activities that fall under the definition of REDD+[1] adopted by the United Nations Framework Convention on Climate Change (UNFCCC) including:

1. Reducing emissions from deforestation
2. Reducing emissions from forest degradation
3. Sustainable management of forests
4. Enhancement of forest carbon stocks

Eligible management activities include any forestry-related activity that results in a higher level of carbon stocks across the project area compared to the project's baseline. Such activities may include, but are not limited to:

1. Increasing the overall age of the forest by increasing rotation ages
2. Increasing the forest productivity by thinning diseased and suppressed trees
3. Managing competing species for improved growth and vigor
4. Increasing the stocking of trees on under-stocked forest areas
5. Removing impediments to natural forest regeneration
6. Afforestation/Reforestation
7. Increasing carbon stocks through agroforestry
8. Urban tree planting
9. Decreasing emissions from degraded forests

[1] Decision 2/CP.13. Bali Action Plan - reducing emissions from deforestation and forest degradation in developing countries. Decision 1/CP.16. Cancun Agreements, paragraph 70. Encourages developing country Parties to contribute to mitigation actions in the forest sector by undertaking the following activities, as deemed appropriate by each Party and in accordance with their respective capabilities and national circumstances (a) Reducing emissions from deforestation; (b) Reducing emissions from forest degradation; (c) Conservation of forest carbon stocks; (d) Sustainable management of forests; (e) Enhancement of forest carbon stocks.

3 Eligibility Criteria and Participation Requirements

Forest Projects must meet several criteria and conditions to be eligible for registration with the Reserve, and must adhere to certain requirements related to their duration and crediting periods.

3.1 Project Location

This protocol is applicable to Forest Projects located anywhere in Mexico, provided they meet all other eligibility requirements described in this protocol.

3.2 Jurisdictions

Forest Projects are limited to states that either have operational REDD+ strategies or are developing REDD+ programs. The REDD+ programs must demonstrate that state monitoring and reporting is aligned with, or will be aligned with, national monitoring and reporting. Demonstration of REDD+ programs includes the presence of stakeholder bodies, legal frameworks, and dedicated agency personnel that are developing or have developed state-level baselines for forest carbon emissions, state-level policies for reducing forest emissions and/or increasing forest sequestration, and associated monitoring, reporting, and verification systems.

3.3 Forest Owner

A Forest Owner can be an individual or a collective legal person (ejido and/or communal land) that owns or legally possesses forestland. A Forest Owner must have complete control of the trees in the project area, either through outright ownership of the trees, or through rights afforded from a state or federal agency. Public agencies may not be Forest Owners.

The Forest Owner is responsible for undertaking a Forest Project and registering the project with the Reserve, and is ultimately responsible for all Forest Project reporting. The Forest Owner may, however, engage an independent third-party project developer to assist or consult with the Forest Owner and to implement the Forest Project. All information submitted to the Reserve on behalf of the Forest Owner shall reference the Forest Owner, who is ultimately responsible for the accuracy and completeness of the information submitted.

The following types of ownership are eligible for participation following the Agrarian Law.[2]

3.3.1 Communal Land (Ejidos and Communities)

1. *Ejidos* – Inscribed in the National Agrarian Registry (*Registro Agrario Nacional*, RAN[3]). Eligibility includes communally-owned land and ejidal parcels that voluntarily want to join the project with corresponding parcel certificates.
2. Communities (agrarian and indigenous) – Inscribed in the National Agrarian Registry (RAN).

3.3.2 Private Property

1. Private Property – Inscribed on the Public Registry of Property (*Registro Público de la Propiedad*).

Land owned by federal, state, or local governments is not eligible for participation.

[2] *Ejidos*, Chapter I, article 9. Communities, Chapter V, article 98. Private Property, Fifth Title, article 115.
[3] Decentralized body of the Ministry of the Agrarian Reform responsible for communal land (*ejido*) tenure regulation through the provision of legal certainty.

3.4 Required Documentation

The following documentation will be required in order to be eligible to participate.

Communities and *Ejidos*

1. Official identification – Identification that proves that the person responsible for the project is the authority of the agrarian nucleus.[4]
2. Official identification of the members of the Agrarian Authority[5] that could include: voter ID (*credencial de elector*), military ID (*cartilla militar*), passport, or certificate of naturalization.
3. Basic File (*Carpeta Básica*[6]).
4. Presidential Resolution (*Resolución Presidencial*) – For *ejidos* and communities constituted or recognized before 1992
    a. Possession Act (*Acta de Posesión y Deslinde*)
    b. Property Boundaries (*Plano Definitivo*)
    c. Registration Proof (*Constancia Registral del ejido*[7])
5. For certified *Ejidos*: Delimitation, Destination, and Land Allocation Act (*Acta de Delimitación, Destino, y Asignación de Tierras Ejidales*, ADDAT). Each parcel certificate must be presented where the project will be developed.
6. Communal land use plan (*Ordenamiento Territorial Comunitario*[8]).
7. Communal bylaws (*Estatutos comunales*[9]).
8. Forest management plan.

Small Private Property[10]

1. Official identification of the members of the Agrarian Authority[11] that could include: voter ID (*credencial de elector*), military ID (*cartilla militar*), passport, or certificate of naturalization.
2. Property titles inscribed under the Public Registry.
3. Forest management plan.

3.5 Required Carbon Plan within Forest Management Plan

The Reserve requires that a forest management plan be developed and approved under the Mexican General Law for Sustainable Forest Development. Management plans must be authorized by the Ministry of Environment and Natural Resources (SEMARNAT) through their

[4] An agrarian nucleus refers to social property, communities and ejidos. Many times the authority of the agrarian nucleus is the *Comisariado Ejidal* or *Bienes Comunales* who is the responsible body to execute and enforce the decisions taken in the General Assembly.
[5] The Agrarian Authority is the *Comisariado Ejidal* or *Bienes Comunales*, which in general is composed of three individuals elected by the General Assembly: president, secretary, and treasurer.
[6] *La Carpeta Basica* is constituted of information that proves the creation and constitution of *ejidos* and communities. Documents include: *Resolución Presidencial, Acta de Posesión y Deslinde*, and *Plano Definitivo*. The information can be provided at the Agrarian Registry. The *Resolucion Presidencial* (Presidential Resolution) is a decree given by the president where it is stated that the land is given to the corresponding community or *ejido*. This fact is stated on the *acta de posesión y deslinde* and a map of the community was drawn, called *Plano Definitivo*. Presidential resolutions are registered in the Agrarian Registry and on the Public Registry.
[7] Document that refers to the land dimensions and number of current beneficiaries.
[8] Defines land uses within a community or *ejido*.
[9] Internal rules and regulations.
[10] Owners that legally possess their land but do not have a property title will be assessed for eligibility case by case.
[11] The Agrarian Authority is the *Comisariado Ejidal* or *Bienes Comunales*, which in general is composed of three individuals elected by the General Assembly: president, secretary, and treasurer.

delegations on each state. These management plans are enforced through the Environmental Protection Agency (*Procuraduría Federal de Protección al Ambiente*, PROFEPA).

SEMARNAT currently requires management plans to define:

1. Management objectives
2. Location and biophysical characteristics
3. Forest inventory
4. Harvest techniques
5. Conservation measures, including strategies to protect habitat and threatened and endangered plant and animal species
6. Forest protection, including prevention, control, and firefighting, pests and diseases
7. Prevention and mitigation of environmental impacts
8. Afforestation and reforestation commitments

These management plans must be prepared by a legally qualified professional forester, who is hired by the owner to develop a forest management plan and submit it for approval by the relevant Forestry Delegation of SEMARNAT at the state level.

In addition to SEMARNAT's requirements, the Reserve will require that the management plan include a "carbon plan" that clearly states the rights of the Forest Owner with regards to forest carbon and their ability to engage in transactions, and acknowledges the Forest Owner's participation in the Reserve's program (see Section 11.2.2).

3.6 Regulatory Compliance

Each time the Forest Project is verified, the Forest Owner must attest that the project is in material compliance with all applicable laws[12] relevant to the project activity. Forest Owners are required to disclose in writing to the verifier any and all instances of material non-compliance of the project with any law. If a verifier finds that a project is in a state of recurrent non-compliance or non-compliance that is the result of negligence or intent, then CRTs will not be issued for GHG reductions that occurred during the period of non-compliance. Non-compliance solely due to administrative or reporting issues, or due to "acts of nature," will not affect CRT crediting.

3.7 Social and Environmental Safeguards

Forest Projects can create long-term climate benefits as well as provide other environmental benefits, including the sustaining of natural ecosystem processes. However, there has been a concern of potential social and environmental risks related to REDD+ activities.

Guidelines were developed at the Conference of the Parties XVI in Cancun (2010) that highlight the role of conservation, sustainable management of forests, and enhancement of forest carbon stocks in developing countries. The guidelines recommend that the following safeguards should be promoted and supported as part of REDD+ activities.

1. Actions complement or are consistent with the objectives of national forest programs and relevant international conventions and agreements.

[12] Including the General Law of Environmental Equilibrium and Protection, Law for Sustainable Rural Development, General Law for Sustainable Forest Development, Agrarian Law, and The Political Constitution of the Mexican United States, among others.

2. Transparent and effective national forest governance structures, taking into account national legislation and sovereignty.
3. Respect for the knowledge and rights of indigenous peoples and members of local communities, by taking into account relevant international obligations, national circumstances and laws, and noting that the United Nations General Assembly has adopted the United Nations Declaration on the Rights of Indigenous Peoples.
4. The full and effective participation of relevant stakeholders, in particular, indigenous peoples and local communities.
5. Actions are consistent with the conservation of natural forests and biological diversity, ensuring that actions referred to in paragraph 70[13] of this decision are not used for the conversion of natural forests, but are instead used to incentivize the protection and conservation of natural forests and their ecosystem services, and to enhance other social and environmental benefits.
6. Actions to address the risks of reversals.
7. Actions to reduce displacement of emissions.

In order to maintain adherence with the principles of the Cancun Agreements at the project level, all projects registered under this protocol must be verified under the Climate, Community, and Biodiversity Standard or certified under the Forest Stewardship Council standards for Mexico. Other elements of the Cancun Agreements may be addressed at a state or national scale in the context of jurisdictional programs. Projects recognized under these programs may thus be required to adhere to additional (or alternative) social and environmental safeguards or standards.

3.8 Project Start Date

The start date of a Forest Project is the date on which project activities are initiated that will lead to increased GHG reductions or removals relative to the Forest Project's baseline. A Forest Project must be submitted for listing no more than one year after initiation of project activities. For projects that have 30 tonnes or more of carbon stocks per hectare in standing live and dead trees, initial verification must be completed within 30 months of listing. For projects that have less than 30 tonnes of carbon stocks per hectare in standing live and dead trees, verification must be completed within 60 months of listing. Projects that do not meet the required verification deadline must be resubmitted under the latest version of the protocol.

3.9 Project Crediting Period

The baseline for any Forest Project registered with the Reserve under this version of the MFP is assumed to be valid for 20 years. This means that a registered Forest Project will be eligible to receive CRTs for GHG reductions and removals quantified using this protocol, and verified by Reserve-approved verification bodies, for a period of 20 years following the project start date. Crediting periods may be renewed at the end of 20 years provided the project continues to meet the eligibility requirements of the most current version of the protocol.

3.10 Minimum Time Commitment

Forest Owners must monitor and verify a Forest Project for a period of 100 years following the issuance of any CRT for GHG reductions or removals achieved by the project. For example, if

[13] REDD is described in paragraph 70 of the AWG/LCA outcome: Encourages developing country Parties to contribute to mitigation actions in the forest sector by undertaking the following activities, as deemed appropriate by each Party and in accordance with their respective capabilities and national circumstances.

CRTs are issued to a Forest Project in year 10 following its start date, monitoring and verification activities must be maintained until year 110. Forest Projects must submit annual monitoring reports and undergo periodic site verification during this time. The frequency of site verification visits is dependent on the number of projects in the program (see Section 14).

There are three possible exceptions to this minimum time commitment:

1. A Forest Project automatically terminates if a Significant Disturbance occurs[14], leading to an Unavoidable Reversal (see Section 11.1.1) that reduces the project's standing live tree carbon stocks below the project's baseline standing live tree carbon stocks. Once a Forest Project terminates in this manner, the Forest Owner has no further obligations to the Reserve.
2. A Forest Project may be voluntarily terminated prior to the end of its minimum time commitment if the Forest Owner retires a quantity of CRTs equal to the total number of CRTs issued to the project over the preceding 100 years.
3. A Forest Project may be automatically terminated if there is a breach of certain terms described within the Project Implementation Agreement. Such a termination will require the Forest Owner to retire a quantity of CRTs, equal to the total number of CRTs issued to the project over the preceding 100 years.

3.11 Project Implementation Agreement

For a Forest Project to be eligible, the Forest Owner is required to sign an agreement with the Reserve. The agreement is referred to as a Project Implementation Agreement (PIA). The PIA sets forth the Forest Owner's obligation (and the obligation of its successors and assigns) to comply with the Mexico Forest Protocol. It is not possible to terminate the PIA for only a portion of the Project Area. The PIA must be signed by the Forest Owner before a project can be registered with the Reserve. It must be signed by the governance body of the *ejido*/community or the land owner of small private property. It must also have the Assembly Act attached as proof of prior and informed consent of the *ejido*/community that is participating. The Assembly Act has to be signed by the formal community members (as listed in the Agrarian Registry (RAN) and constitute at least 3/4 of the total members registered[15]). The PIA is completed after the Reserve has reviewed the verification documents and is about to register the project. The PIA is attached to the management plan administered by SEMARNAT. Since contracts with *ejidos* and communal ownerships are limited to a 30-year period, the PIA will be renewed prior to the expiration of each contract.

3.11.1 Attestation of Title

Each time a Forest Project is verified, the Forest Owner must sign the Reserve's standard Attestation of Title form indicating that the Forest Owner has an exclusive ownership claim to the GHG reductions and removals achieved by their Forest Project over the verification period. Copies of the Attestation of Title form are available on the Reserve's website. Please note that in requesting this form, the Reserve is not providing credit or acting as a broker to trade any Forest Project CRTs.

3.12 Other Eligibility Criteria

An affidavit stating that there are no ongoing encumbrances or expectations for specific forest management activities is required in cases where a Reserve project is to be initiated where a

[14] The natural disturbance shall not be the result of avoidable or grossly negligent acts of the Forest Owner.
[15] Article 26, correlated with article 23, fractions VIII, X and XIV of the Agrarian Law.

previous project existed. Projects may not be located on any part of a project that was terminated as the result of an avoidable reversal.

Since project risk assessments and baselines are developed from data associated with Forest Management Unit (*Unidad de Manejo Forestal*, UMAFOR) reports, only projects within UMAFOR boundaries that have completed an initial assessment and have received approval from CONAFOR are eligible (see Section 9.1.1 for more information on UMAFORs and the corresponding reference document).

4 Additionality

The Reserve strives to register only projects that yield GHG emission reductions and removals that are additional to what would have occurred in the absence of a carbon offset market (i.e. under "Business As Usual"). For a general discussion of the Reserve's approach to determining additionality see the Reserve's Program Manual (available at http://www.climateactionreserve.org/how/program/program-manual/).

Forest Projects must satisfy the following tests to be considered additional:

1. **Legal requirement test.** Forest Projects must achieve GHG reductions or removals above any GHG reductions or removals that would result from compliance with any law, statute, rule, regulation or ordinance. Legally-binding mandates entered into as part of the project and in support of project activities are not considered for the purpose determining additionality under the legal requirement test.
2. **Performance test.** Forest Projects must achieve GHG reductions or removals above and beyond any GHG reductions or removals that would result from engaging in "Business As Usual" activities, as defined by the requirements described below (Section 4.2).

4.1 Legal Requirement Test

At the Forest Project's first verification, the Forest Owner must sign the Reserve's Attestation of Voluntary Implementation form indicating that project activities are not legally required at the time of the project start date.

Legal constraints must be included in the determination of the project baseline, as described in Section 9 of this protocol.

4.2 Performance Test

Project activities are considered additional to the extent they produce GHG reductions and removals in excess of those that would have occurred under a "Business As Usual" scenario, as defined by the baseline estimation requirements in Section 9.

5 Identifying the Project Area

The geographic boundaries defining the Project Area must be described in detail at the time a Forest Project is listed on the Reserve. The boundaries must be defined using a map, or maps that display public and private roads, major watercourses (4th order or greater), topography, towns, and latitude and longitude. A GIS shapefile is required to be submitted that matches the map in the project document. The maps should be of adequate resolution to clearly identify the requested features. The Project Area can be contiguous or separated into tracts. The Project Area must be limited to one forest management unit (*Unidad de Manejo Forestal*, UMAFOR).

6 GHG Assessment Boundary

The GHG Assessment Boundary defines all the GHG sources, sinks, and reservoirs that must be accounted for in quantifying a Forest Project's GHG reductions and removals. The GHG Assessment Boundary encompasses all the GHG sources, sinks, and reservoirs that may be significantly affected by Forest Project activities, including forest carbon stocks, sources of biological CO_2 emissions, and GHG emissions from mobile combustion. For accounting purposes, the sources, sinks, and reservoirs included in the GHG Assessment Boundary are organized according to whether they are predominantly associated with a Forest Project's "Primary Effect" (i.e. the Forest Project's intended changes in carbon stocks, GHG emissions or removals) or its "Secondary Effects" (i.e. unintended changes in carbon stocks, GHG emissions or removals caused by the Forest Project).[16] Secondary Effects may include increases in mobile combustion CO_2 emissions associated with site preparation, as well as increased CO_2 emissions caused by the shifting of harvesting activities from the Project Area to other forestlands (often referred to as "leakage"). Projects are required to account for Secondary Effects from leakage following the methods described in Section 10.

The following table provides a comprehensive list of the GHG sources, sinks, and reservoirs (SSRs) that may be affected by a Forest Project, and indicates which SSRs must be included in the GHG Assessment Boundary depending on the project specifics. If a SSR is designated as a reservoir/pool, this means that GHG reductions and removals are accounted for by quantifying changes in carbon stock levels. For SSRs designated as sources or sinks, GHG reductions and removals are accounted for by quantifying changes in GHG emission or removal rates, as described in the tables.

[16] The terms "Primary Effect" and "Secondary Effect" come from WRI/WBCSD, 2005. *The Greenhouse Gas Protocol for Project Accounting*, World Resources Institute, Washington, DC. Available at http://www.ghgprotocol.org.

Table 6.1. GHG Assessment Boundary

SSR	Description	Type	Gas	Included or Excluded?	Quantification Method	Justification/Explanation
Primary Effect Sources, Sinks, and Reservoirs						
REDD+-1	Standing live carbon (carbon in all portions of living trees)	Reservoir / Pool	CO_2	Included	**Baseline**: Modeled based on initial field inventory measurements; methodology outlined in Section 9 **Project**: Measured by field measurements and updating forest carbon inventory	Increases in standing live carbon stocks are likely to be a large Primary Effect of REDD+ projects. For baseline estimation purposes, pre-existing trees and trends in carbon storage in the Project Area must be modeled. See Section 9 for more details on baseline modeling.
REDD+-2	Shrubs and herbaceous understory carbon	Reservoir / Pool	CO_2	Excluded	**Baseline**: Not included in baseline measurements **Project**: Not included in project measurements	For crediting purposes shrubs and herbaceous understory carbon is excluded since changes in this reservoir are unlikely to have a significant effect on total quantified GHG reductions or removals. Furthermore, it is generally not practical to undertake measurements of shrubs and herbaceous understory accurate enough for crediting purposes.
REDD+-3	Standing dead carbon (carbon in all portions of dead, standing trees)	Reservoir / Pool	CO_2	Included	**Baseline**: Measured based on initial field inventory measurements **Project**: Measured by updating forest carbon inventory	REDD+ projects may significantly increase standing dead carbon stocks over time.
REDD+-4	Lying dead wood carbon	Reservoir / Pool	CO_2	Excluded	**Baseline**: Not included in baseline measurements **Project**: Not included in project measurements	For crediting purposes lying dead wood carbon is excluded since changes in this reservoir are unlikely to have a significant effect on total quantified GHG reductions or removals. Furthermore, it is generally not practical to undertake measurements of lying dead wood accurate enough for crediting purposes.

REDD+-5	Litter and duff carbon (carbon in dead plant material)	Reservoir / Pool	CO_2	Excluded	**Baseline**: Not included in baseline measurements **Project**: Not included in project measurements	Litter and duff carbon is excluded since changes in this reservoir are unlikely to have a significant effect on total quantified GHG reductions or removals. Furthermore, it is generally not practical to undertake measurements of litter and duff accurate enough for crediting purposes.
REDD+-6	Soil carbon	Reservoir / Pool	CO_2	Included for emissions and Excluded for crediting	**Baseline**: Not included in baseline measurements **Project**: Default values provided by Reserve in resource file based on activity	Soil carbon is not anticipated to change significantly as a result of most REDD+ project activities. Increases in soil carbon are not creditable; however, soil carbon must be included in the GHG Assessment Boundary if the project includes mechanical site preparation for the establishment of forest species or rotation forestry at intervals less than 25 years.
REDD+-7	Carbon in in-use forest products	Reservoir / Pool	CO_2	Excluded	**Baseline**: Not included in baseline measurements **Project**: Not included in project measurements	REDD+ project activities may result in increased levels of carbon storage in forest products compared to baseline levels. For crediting purposes, in-use forest carbon products is excluded since changes in this reservoir are unlikely to have a significant effect on total quantified GHG reductions or removals. Furthermore, data do not exist to accurately estimate the amount of in-use forest products that remains for the defined period of permanency (100 years).
REDD+-8	Forest product carbon in landfills	Reservoir / Pool	CO_2	Excluded	**Baseline**: Not included in baseline measurements **Project**: Not included in project measurements	No data has been obtained to suggest wood products remain in long-term storage in landfills in Mexico.

Secondary Effects Sources, Sinks, and Reservoirs						
REDD+ 9	Nutrient application	Source	N_2O	Included when nutrient application is above baseline	**Baseline:** Estimated based on data from forest management plan and interviews **Project:** Included if forest management plan contains an agriculture intensification component	Agricultural intensification may include an increase in the usage of synthetic nitrogen based fertilizers. When fertilizer usage is increased as a result of project activities, emissions of N_2O are classified as an emission source. Guidance to account for emissions associated with fertilizers will be developed during the public comment period.
REDD+-10	Biological emissions from site preparation activities	Source	CO_2	Included	**Baseline**: Not included in baseline measurements **Project**: Quantified based on measured carbon stock changes in included reservoirs (see SSRs REDD+-2, REDD+-5 and REDD+-6)	Biological emissions from site preparation are not quantified separately but rather are captured by measuring changes in included carbon reservoirs. For other carbon reservoirs, changes are unlikely to have a significant effect on total quantified GHG reductions or removals.
REDD+-11	Mobile combustion emissions from site preparation activities	Source	CO_2	Excluded	**Baseline**: Not included in baseline measurements **Project**: Not included in project measurements	Mobile combustion CO_2 emissions from site preparation are not expected to be significantly different from baseline levels.
			CH_4	Excluded	**Baseline**: Not included in baseline measurements **Project**: Not included in project measurements	Changes in CH_4 emissions from mobile combustion associated with site preparation activities are not considered significant.

			N_2O	Excluded	**Baseline**: Not included in baseline measurements **Project**: Not included in project measurements	Changes in N_2O emissions from mobile combustion associated with site preparation activities are not considered significant.
REDD+-12	Mobile combustion emissions from ongoing project operation and maintenance	Source	CO_2	Excluded	**Baseline**: Not included in baseline measurements **Project**: Not included in project measurements	Mobile combustion CO_2 emissions from ongoing project operation and maintenance are unlikely to be significantly different from baseline levels, and are therefore not included in the GHG Assessment Boundary.
			CH_4	Excluded	**Baseline**: Not included in baseline measurements **Project**: Not included in project measurements	CH_4 emissions from mobile combustion associated with ongoing project operation and maintenance activities are not considered significant.
			N_2O	Excluded	**Baseline**: Not included in baseline measurements **Project**: Not included in project measurements	N_2O emissions from mobile combustion associated with ongoing project operation and maintenance activities are not considered significant.
REDD+-13	Stationary combustion emissions from ongoing project operation and maintenance	Source	CO_2	Excluded	**Baseline**: Not included in baseline measurements **Project**: Not included in project measurements	Stationary combustion CO_2 emissions from ongoing project operation and maintenance could include GHG emissions associated with electricity consumption or heating/cooling at Forest Owner facilities or at facilities owned or controlled by contractors. These emissions are unlikely to be significantly different from baseline levels, and are therefore not included in the GHG Assessment Boundary.
			CH_4	Excluded	**Baseline**: Not included in baseline measurements **Project**: Not included in project measurements	CH_4 emissions from stationary combustion associated with ongoing project operation and maintenance activities are not considered significant.

			N_2O	Excluded	**Baseline**: Not included in baseline measurements **Project**: Not included in project measurements	N_2O emissions from stationary combustion associated with ongoing project operation and maintenance activities are not considered significant.
REDD+-14	Biological emissions from clearing of forestland outside the Project Area for agriculture and/or grazing	Source	CO_2	Included	**Baseline**: Not included in baseline measurements **Project**: Estimated using default land use conversion factors for non-project land	Projects on land currently, or projected to be used for, grazing or growing crops may cause displacement of these activities to other lands, leading to a reduction in carbon stocks on those lands (e.g. due to clearing of trees and shrubs). The shift may be either a market response or physical response to the project activity. Emissions associated with shifting land uses are estimated using default "leakage" factors outlined in Section 10 of the protocol.
REDD+-15	Biological emissions or removals from changes in timber harvesting on forestland outside the Project Area	Source / Sink	CO_2	Included	**Baseline**: Not included in baseline measurements **Project**: Leakage factors outlined in Section 10	If harvesting is reduced in the Project Area, harvesting on other lands may increase to compensate for the lost production. This "leakage" effect is outlined in Section 10 of the protocol. Projects may also increase harvesting levels relative to the baseline, potentially causing other landowners to reduce harvesting in response to increased wood product supply. The reduction in harvesting may lead to increased carbon stocks on their lands. Carbon stock increases on other lands are excluded from the GHG Assessment Boundary because it is not possible to ensure their permanence.

REDD+-16	Combustion emissions from production, transportation, and disposal of forest products	Source	CO_2	Excluded	**Baseline**: Not included in baseline measurements **Project**: Not included in project measurements	The Primary Effect of Forest Projects in Mexico is to conserve and increase onsite forest carbon stocks, without substantially affecting the production, transportation, and disposal of wood products with regards to baseline levels. Therefore, these emissions are not included in the GHG Assessment Boundary of this protocol.
			CH_4	Excluded	**Baseline**: Not included in baseline measurements **Project**: Not included in project measurements	Combustion-related CH_4 emissions from changes in the production, transportation, and disposal of forest products are not considered significant.
			N_2O	Excluded	**Baseline**: Not included in baseline measurements **Project**: Not included in project measurements	Combustion-related N_2O emissions from changes in the production, transportation, and disposal of forest products are not considered significant.
REDD+-17	Combustion emissions from production, transportation, and disposal of alternative materials to forest products	Source	CO_2	Excluded	**Baseline**: Not included in baseline measurements **Project**: Not included in project measurements	The Primary Effect of Forest Projects in Mexico is to conserve and increase onsite forest carbon stocks, without substantially affecting the production, transportation, and disposal of wood products with regards to baseline levels. Therefore, these emissions are not quantified in the assessment boundary of this protocol.
			CH_4	Excluded	**Baseline**: Not included in baseline measurements **Project**: Not included in project measurements	Combustion-related CH_4 emissions from changes in the production, transportation, and disposal of alternative materials are not considered significant.
			N_2O	Excluded	**Baseline**: Not included in baseline measurements	Combustion-related N_2O emissions from changes in the production, transportation, and disposal of alternative materials are not considered significant.

					Project: Not included in project measurements	
REDD+-18	Biological emissions from decomposition of forest products	Source	CO_2	Included	**Baseline**: Quantified as a component of calculating carbon stored for 100 years in wood products (SSR REDD+-7) and landfills (SSR REDD+-8)	CO_2 emissions from the decomposition of forest products are built into calculations of how much forest product carbon will remain in in-use wood products and in landfills, averaged over 100 years (see SSR REDD+-7 and Reference Document).
					Project: Quantified as a component of calculating carbon stored for 100 years in wood products (SSR REDD+-7) and landfills (SSR REDD+-8)	
			CH_4	Excluded	**Baseline**: Not included in baseline measurements	In-use wood products will produce little to no CH_4 emissions. CH_4 emissions can result from anaerobic decomposition of forest products in landfills. Additionally, dimensional wood products are assumed to be in landfills in minimal quantities. Thus, changes in forest-product production are assumed to have no significant effect on future CH_4 emissions from anaerobic decomposition of forest products in landfills. These emissions are therefore excluded from the GHG Assessment Boundary.
					Project: Not included in project measurements	
			N_2O	Excluded	**Baseline**: Not included in baseline measurements	Decomposition of forest products is not expected to be a significant source of N_2O emissions.
					Project: Not included in project measurements	

7 Quantifying Net GHG Reductions and Removals

This section provides requirements and guidance for quantifying a Forest Project's net GHG reductions and removals. The Reserve will issue Climate Reserve Tonnes (CRTs) to a Forest Project upon confirmation by an ISO-accredited and Reserve-approved verification body that the Forest Project GHG reductions and removals have been quantified following the applicable requirements of this section (see Section 14 for verification requirements).

The quantification method proceeds in seven steps:

1. **Quantifying the project onsite carbon stocks (Sections 8.1 to 8.3).** Each year, the Forest Owner must determine the Forest Project actual onsite carbon stocks. This does not require a re-measurement of the inventory each year, but does require that inventory estimates are updated using the guidance in this section and in Section 8. The estimate of actual onsite carbon stocks must be adjusted by an appropriate confidence deduction, as described in Section 8.2.2.
2. **Determining actual carbon in harvested wood products (Section 8.4).** Each year, the Forest Owner must report any harvesting in the Project Area and from this determine the amount of carbon transferred to long-term storage in wood products.
3. **Determining the project baseline onsite carbon stocks (Section 9).** The baseline is an estimate of what would have occurred in the absence of a Forest Project. To establish baseline onsite carbon stocks, project-level variables affecting carbon stocks are analyzed with regional estimates of forest carbon trends to determine a projection of carbon stocks. The baseline is established for renewable 20-year crediting periods.
4. **Estimating baseline carbon in harvested wood products.** In conjunction with modeling baseline onsite carbon stocks, the Forest Owner must forecast any harvesting that would have occurred in the baseline and convert this to an average annual harvesting volume. From this, the Forest Owner must determine the amount of carbon that would have been transferred each year (on average) to long-term storage in wood products. Baseline harvesting is forecasted following the guidance in this section and carbon stored in wood products must be calculated following the requirements in Section 9.
5. **Calculating the project Primary Effect.** Each year, the Forest Owner must quantify the actual change in GHG emissions or removals associated with the Forest Project's intended ("primary") effect, as defined in Section 8. For any given year, the Primary Effect is calculated by:
    a. Taking the difference between actual onsite carbon stocks for the current year and actual onsite carbon stocks for the prior year.[17]
    b. Subtracting from (a) the difference between baseline onsite carbon stocks for the current year and baseline onsite carbon stocks for the prior year.[18]
    c. Adding to (b) the calculated difference between actual and baseline carbon in harvested wood products for the current year (see Equation 8.1).
6. **Quantifying the project Secondary Effects.** Each year, the Forest Owner must quantify the actual change in GHG emissions or removals associated with the Forest Project's unintended ("secondary") effects, as defined in Section 10. Requirements and guidance for quantifying Secondary Effects are provided below for each type of Forest Project. Secondary Effects will almost always be negative (i.e. they will reflect an increase in GHG emissions caused by the project).

[17] For the purposes of calculating the project's Primary Effect, actual and baseline carbon stocks prior to the start date of the project are assumed to be zero.
[18] See footnote 10.

7. **Calculating total net GHG reductions and removals.** For each year, total net GHG reductions and removals are calculated by summing a Forest Project's Primary and Secondary Effects. If the result is positive, then the Forest Project has generated GHG reductions and/or removals in the current year. If the result is negative, this may indicate a reversal has occurred (see Section 11.1).[19]

The required formula for quantifying annual net GHG reductions and removals is presented in Equation 7.1. Net GHG reductions and removals must be quantified and reported in units of carbon dioxide-equivalent (CO_2e) metric tons.

Equation 7.1. Annual Net GHG Reductions and Removals

$$\mathbf{QR_y = [(\Delta\ AC_{onsite} - \Delta\ BC_{onsite}) + SE_y] + N_{y-1}}$$

Where,

QR_y = Quantified GHG reductions and removals for year y

And,

$$\mathbf{\Delta\ AC_{onsite} = (AC_{onsite,\ y})(1 - CD_y) - (AC_{onsite,\ y-1})(1 - CD_{y-1})}$$

Where,

$AC_{onsite,\ y}$ = Actual onsite carbon (CO_2e) as inventoried for year y
$AC_{onsite,\ y-1}$ = Actual onsite carbon (CO_2e) as inventoried for year y-1 (if y is the first year of the project, then the value for $AC_{onsite,\ y-1}$ will be zero)
CD_y = Appropriate confidence deduction for year y, as determined in Section 8.2.2
CD_{y-1} = Appropriate confidence deduction for year y-1, as determined in Section 8.2.2

And,

$$\mathbf{\Delta\ BC_{onsite} = BC_{onsite,\ y} - BC_{onsite,\ y-1}}$$

Where,

$BC_{onsite,\ y}$ = Baseline onsite carbon (CO_2e) as estimated for year y
$BC_{onsite,\ y-1}$ = Baseline onsite carbon (CO_2e) as estimated for year y-1 (if y is the first year of the project, then the value for $BC_{onsite,\ y-1}$ will be zero)
SE_y = Secondary Effect GHG emissions caused by the project activity in year y
N_{y-1} = Any negative carryover from the prior year (occurs when total quantified GHG reductions are negative prior to the issuance of any CRTs for the project – see footnote 19)

[19] A reversal occurs only if: (1) Total net GHG reductions and removals for the year are negative; and (2) CRTs have previously been issued to the Forest Project. If calculated GHG reductions and removals are negative and no CRTs have been issued to the project since its start date, then the result should be treated as a "negative carryover" to GHG reduction calculations in subsequent years (variable N_{y-1} in Equation 7.1). This may happen, for example, because the confidence deduction applied to actual onsite carbon stocks can result in actual values being less than baseline values in a Forest Project's initial years.

8 Quantifying the Project Onsite Carbon Stocks

The MFP provides a standardized methodology for determining project inventories for standing live and dead carbon across all land use activities. The inventory methodology is scalable to various project sizes. The methodology will provide consistency between projects which will improve the efficiency of project development and verification activities. The approach to quantification of onsite carbon stocks is designed to be inclusive of a variety of land use activities so that a broad range of project activities can be implemented to generate credits at minimal expense through the use of default estimators. This will allow activities such as agroforestry and urban forestry to be quantified. The methodology is also consistent with certain management planning activities required by CONAFOR. The Reserve will accept plots that have been installed with the oversight of a professional forester as part of planning requirements for management plans under SEMARNAT. The plots, however, must be considered as a sample point within the stratification guidelines described in this document.

8.1 Stratifying the Project into Stands

Stands are the base units of assessment for calculating benefits associated with a forest carbon project. A stand is a spatially explicit polygon that consists of the following similar attributes:

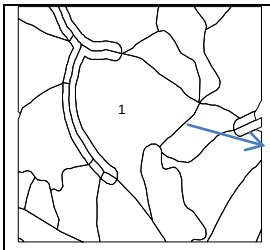
- Stand identifier
- Area
- Land use/vegetative/forest cover
- Size class
- Regulatory/legal constraints
- Responsibility

The Project Area must be stratified into stands that share common attributes for each of the fields above. These stands shall be created within a Geographic Information System (GIS) and provided to the Reserve as a shapefile or KML file that can be displayed on Google Earth.

Stands should be relatively homogeneous within each polygon for the variables discussed in this section. Where the variables are not homogeneous, a separate stand shall be created. The resolution for the development of strata is 4 hectares, meaning a decision must be made for units of land 4 hectares or greater. The identification of a land use label must be based on 'best-fit' at this level. Forest Owners may choose to map stands smaller than 4 hectares at their own discretion. Stands larger than 4 hectares are welcomed if the attributes described in this section within the stand are homogeneous. Roads and trails are not to be mapped as a stand. They should be included within the design of stands using the variables described in this section. The stands created using the stratification system described in this section must be included in an informational database to track these values over time. Table 8.1 displays the relationship between a stand as a spatial entity and the data associated with it in a relational database, based on the stand's unique identifier.

Table 8.1. Example of Relationship between Stands in the GIS and Stands in a Relational Database

The image on the left displays a stand with a unique identifier (1). Information about the stand is stored in a relational database.



Stand	Area (Ha)	Stratum (Vegetation Code)	Size Class	Regulatory / Legal Constraint	Responsibility
1	25	BGg_c	2	Determined independently for each project	Communal
2	14	BC_mcc	1	Determined independently for each project	Perez

The following guidance shall be used for attributing each field.

8.1.1 Stand Number

Stands must be created based on the current combination of land use and vegetation cover. Consideration should be given to the creation of stands so that future adjustments to stand boundaries are minimized. Forest Owners should consider how future agricultural and silvicultural goals would impact vegetation within a stand. Stand numbers must be unique to the polygon and are assigned by the Forest Owner.

8.1.2 Area

Area must be calculated as hectares by the GIS and used to create the polygons (stands).

8.1.3 Stratum

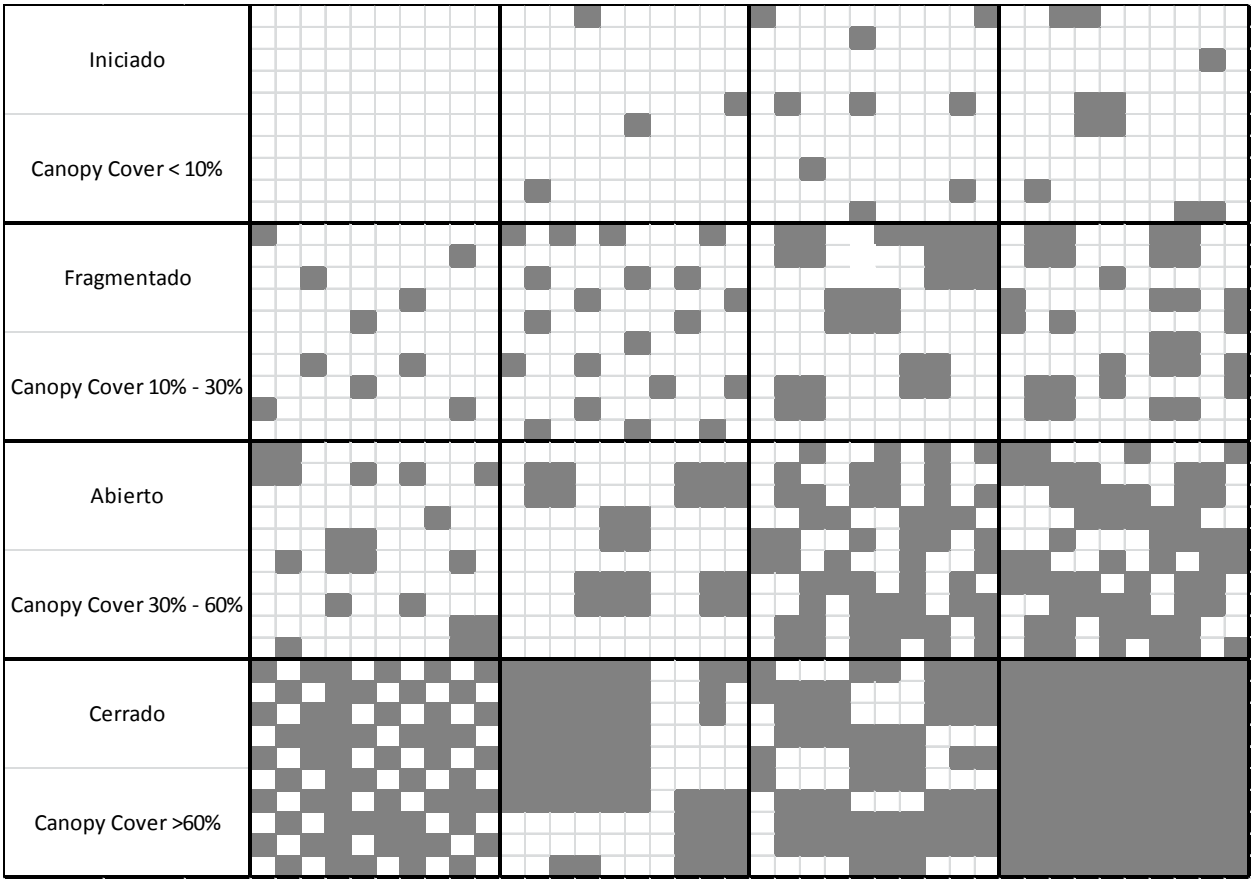
Each stand is assigned a vegetation/land use label based on existing characteristics which forms the basis of a stratified landscaped and provides the framework for developing an inventory based on a stratified design. Vegetation/land use labels are determined for each stand from remote sensing (including aerial photos) or field observations. The vegetation/land use is based on defining ecosystems, vegetation form, type of vegetation, and canopy cover. A size class code must be added to the vegetation/land use code to develop the stratum value. The ecosystem portion of the stratum is defined using the guidance in Table 8.2 below.

Table 8.2. Descriptions of General Ecosystems for Determination of Vegetation/Land Use Strata

Ecosystem	Description
Forest	Land spanning more than 0.5 hectares with trees higher than 5 meters and a canopy cover of more than 10%, or trees able to reach these thresholds in situ. There are a diversity of species (not one species has more than 80% cover) and with diversity of ages around 10 hectares.
Rainforest	Tropical forest vegetation where woody perennial species are dominant that develop spontaneously, with crown cover greater than 10% of land cover, providing that the area is larger than 1,500 square meters, excluding *acahuales.*
Arid Zones	Vegetation that develops spontaneously in regions of arid or semiarid climate, with area larger than 1,500 square meters.
Plantations	Land spanning more than 0.5 hectares with trees higher than 5 meters and a canopy cover of more than 10%, or trees able to reach these thresholds in situ. Plantations are characterized by 80% cover or more of one species, little variation in age and usually young trees.
Agricultural/Urban	Lands devoted principally to agriculture or buildings, water systems, etc. Lands can be managed with agroforestry or urban forests.
Other Non-Forest	Rock.

The canopy cover portion of the stratum shall be based on the criteria displayed in Table 8.3. Table 8.3 also displays examples of the variation within each canopy cover class.

Table 8.3. Canopy Cover Criteria with Examples of Variation within Each Class



The vegetation/land use portion, or key, of the stratum identified for each stand is determined using the values displayed in Table 8.4.

Table 8.4. Guidance for the Selection of the Vegetation/Land Use Key

Ecosystem	Formation	Vegetation Type	Canopy Cover	Key
Bosque	*Galería*	*Bosque de galería*	*Cerrado*	BG_gc
			Abierto	BG_ga
			Fragmentado	BG_gf
			Inicio	BG_gi
	Coníferas	*Bosque de ayarin* (*Ayarin* > 66% BA)	*Cerrado*	BC_ac
			Abierto	BC_aa
			Fragmentado	BC_af
			Inicio	BC_ai
		Bosque de cedro (*Cedro* > 66% BA)	*Cerrado*	BC_cc
			Abierto	BC_ca
			Fragmentado	BC_cf
			Inicio	BC_ci
		Bosque de oyamel (*Oyamel* > 66% BA)	*Cerrado*	BC_oc
			Abierto	BC_oa
			Fragmentado	BC_of
			Inicio	BC_oi
		Bosque de pino (*Pino* > 80%)	*Cerrado*	BC_pc
			Abierto	BC_pa
			Fragmentado	BC_pf
			Inicio	BC_pi
		Bosque de pino-encino (*Pino* > 50%, *Encino Importante*)	*Cerrado*	BC_pec
			Abierto	BC_pea
			Fragmentado	BC_pef
			Inicio	BC_pei
		Bosque de táscate	*Cerrado*	BC_tc
			Abierto	BC_ta
			Fragmentado	BC_tf
			Inicio	BC_ti
		Matorral de coníferas	*Cerrado*	BC_mca
			Abierto	BC_mcc
			Fragmentado	BC_mcf
			Inicio	BC_mci
	Latifoliadas	*Bosque de Encino* (*Encino* > 80%)	*Cerrado*	BL_ec
			Abierto	BL_ea
			Fragmentado	BL_ef
			Inicio	BL_ei
		Bosque de encino-pino (*Encino* > 50%, *Pino Importante*)	*Cerrado*	BL_epc
			Abierto	BL_epa
			Fragmentado	BL_epf
			Inicio	BL_epi
	Mesófilo	*Mesófilo de montana*	*Cerrado*	BM_mc
			Abierto	BM_ma
			Fragmentado	BM_mf
			Inicio	BM_mi
Especial	*Especial*	*Palmar*	*Cerrado*	EE_pc
			Abierto	EE_pa
			Fragmentado	EE_pf
			Inicio	EE_pi
		Vegetación de dunas costeras		EE_vdc
Zonas áridas	*Matorral Xerófilo*	*Xerófilo Chaparral*	*Cerrado*	ZX_xc
			Abierto	ZX_xa
			Fragmentado	ZX_xf
			Inicio	ZX_xi
		Matorral crasicaule	*Cerrado*	ZX_mcc
			Abierto	ZX_mca

			Fragmentado	ZX_mcf
			Inicio	ZX_mci
		Matorral desértico microfilo	*Cerrado*	ZX_mdmc
			Abierto	ZX_mdma
			Fragmentado	ZX_mdmf
			Inicio	ZX_mdmi
		Matorral desértico rosetofilo	*Cerrado*	ZX_mdrc
			Abierto	ZX_mdra
			Fragmentado	ZX_mdrf
			Inicio	ZX_mdri
		Matorral espinoso tamaulipeco	*Cerrado*	ZX_mec
			Abierto	ZX_mea
			Fragmentado	ZX_mef
			Inicio	ZX_mei
		Matorral rosetofilo costero	*Cerrado*	ZX_mrc
			Abierto	ZX_mra
			Fragmentado	ZX_mrf
			Inicio	ZX_mri
		Matorral sarcocaule	*Cerrado*	ZX_sc
			Abierto	ZX_sa
			Fragmentado	ZX_sf
			Inicio	ZX_si
		Matorral sarco-crasicaule	*Cerrado*	ZX_scc
			Abierto	ZX_sca
			Fragmentado	ZX_scf
			Inicio	ZX_sci
		Matorral sarco-crasicaule de neblina	*Cerrado*	ZX_scnc
			Abierto	ZX_scna
			Fragmentado	ZX_scnf
			Inicio	ZX_scni
		Matorral submontano	*Cerrado*	ZX_smc
			Abierto	ZX_sma
			Fragmentado	ZX_smf
			Inicio	ZX_smi
		Mezquital	*Cerrado*	ZX_mzc
			Abierto	ZX_mza
			Fragmentado	ZX_mzf
			Inicio	ZX_mzi
		Mezquital Xerófilo	*Cerrado*	ZX_mzxc
			Abierto	ZX_mzxa
			Fragmentado	ZX_mzxf
			Inicio	ZX_mzxi
		Vegetación de desiertos arenosos	*Cerrado*	ZX_vc
			Abierto	ZX_va
			Fragmentado	ZX_vf
			Inicio	ZX_vi
		Vegetación gipsofila	*Cerrado*	ZX_vgc
			Abierto	ZX_vga
			Fragmentado	ZX_vgf
			Inicio	ZX_vgi
Pastizal	*Pastizal*	*Pastizal huizachal*		PP_ph
		Pastizal gipsofilo		PP_pg
		Pastizal halófilo		PP_pha
		Pastizal natural		PP_pn
		Pradera de alta montana		PP_pam
		Sabana		PP_ps
Plantación	*Plantaciones Forestales*	*Bosque Cultivado*	*Cerrado*	PL_bc
			Abierto	PL _ba

			Fragmentado	PL _bf
			Inicio	PL _bi
Selvas	*Selva Caducifolia*	*Matorral subtropical*	*Cerrado*	SC_mc
			Abierto	SC_ma
			Fragmentado	SC_mf
			Inicio	SC_mi
		Selva baja caducifolia	*Cerrado*	SC_bc
			Abierto	SC_ba
			Fragmentado	SC_bf
			Inicio	SC_bi
		Selva mediana caducifolia	*Cerrado*	SC_smc
			Abierto	SC_sma
			Fragmentado	SC_smf
			Inicio	SC_smi
	Selva Espinosa	*Selva baja espinosa*	*Cerrado*	SE_bc
			Abierto	SE_ba
			Fragmentado	SE_bf
			Inicio	SE_bi
	Selva Perennifolia	*Selva alta perennifolia*	*Cerrado*	SP_ac
			Abierto	SP_aa
			Fragmentado	SP_af
			Inicio	SP_ai
		Selva alta subperennifolia	*Cerrado*	SP_asc
			Abierto	SP_asa
			Fragmentado	SP_asf
			Inicio	SP_asi
		Selva baja perennifolia	*Cerrado*	SP_bc
			Abierto	SP_ba
			Fragmentado	SP_bf
			Inicio	SP_bi
		Selva baja subperennifolia	*Cerrado*	SP_bsc
			Abierto	SP_bsa
			Fragmentado	SP_bsf
			Inicio	SP_bsi
		Selva mediana perennifolia	*Cerrado*	SP_mc
			Abierto	SP_ma
			Fragmentado	SP_mf
			Inicio	SP_mi
		Selva mediana subperennifolia	*Cerrado*	SP_msc
			Abierto	SP_msa
			Fragmentado	SP_msf
			Inicio	SP_msi
	Selva Subcaducifolia	*Selva baja subcaducifolia*	*Cerrado*	SS_bc
			Abierto	SS_ba
			Fragmentado	SS_bf
			Inicio	SS_bi
		Selva mediana subcaducifolia	*Cerrado*	SS_mc
			Abierto	SS_ma
			Fragmentado	SS_mf
			Inicio	SS_mi
Agricultura/Urbano	*Uso no Forestal*	*Agricultura de humedad*	*Fragmentado*	AU_ahf
			No fragmentado	AU_ahnf
		Agricultura de riego	*Fragmentado*	AU_arf
			No fragmentado	AU_arnf
		Agricultura de riego eventual	*Fragmentado*	AU_aref
			No fragmentado	AU_arenf
		Agricultura de	*Fragmentado*	AU_atf

		temporal	*No fragmentado*	AU_atnf
		Asentamientos Humanos		AU_ah
		Cuerpo de agua		AU_ca
		Zona urbana	*Fragmentado*	AU_zuf
			No fragmentado	AU_zunf
	Vegetación Inducida	*Palmar inducido*		AUV_pai
		Pastizal cultivado		AUV_pc
		Pastizal inducido		AUV_pi
		Sabaneada		AUV_s
Vegetación Hidrófila	*Vegetación Hidrófila*	*Manglar*	*Cerrado*	VH_mc
			Abierto	VH_ma
			Fragmentado	VH_mf
			Inicio	VH_mi
		Petén	*Cerrado*	VH_pc
			Abierto	VH_pa
			Fragmentado	VH_pf
			Inicio	VH_pi
		Popal	*Cerrado*	VH_poc
			Abierto	VH_poa
			Fragmentado	VH_pof
			Inicio	VH_poi
		Selva de galería	*Cerrado*	VH_sgc
			Abierto	VH_sga
			Fragmentado	VH_sgf
			Inicio	VH_sgi
		Talar	*Cerrado*	VH_tc
			Abierto	VH_ta
			Fragmentado	VH_tf
			Inicio	VH_ti
		Vegetación de galería	*Cerrado*	VH_vgc
			Abierto	VH_vga
			Fragmentado	VH_vgf
			Inicio	VH_vgi
		Vegetación halófila	*Cerrado*	VH_hc
			Abierto	VH_ha
			Fragmentado	VH_hf
			Inicio	VH_hi
		Vegetación halófila hidrófila	*Cerrado*	VH_hhc
			Abierto	VH_hha
			Fragmentado	VH_hhf
			Inicio	VH_hhi

A size class must be determined for each stand to complete the identification of the stratum. As a reminder, only one stratum label, or identifier can exist per stand. Therefore, if the vegetation is heterogeneous with regards to vegetation, canopy closure or size, the stand must be divided into two or more stands until the minimum mapping unit of 4 hectares is achieved.

8.1.4 Determining Size Classes

A diameter size class label is assigned to each stand if it contains forest vegetation or is expected to contain forest vegetation as part of project activities. The size classes are as follows in Table 8.5.

Table 8.5. DBH Classes

Class	DBH
0	Trees < 1 centimeter or non-existent
1	1- 20 centimeters
2	20.1 – 40 centimeters
3	40.1 – 60 centimeters
4	> 60 centimeters

Tree diameter is based on diameter at breast height. The process for determining size class is described in Table 8.6 below.

Table 8.6. Determining Size Class for the Stratum

Is total tree cover greater than 10% of the stand's area?

No → Are there at least 50 seedlings per hectare?

No → Non-forest

Yes → Are there at least 50 seedlings per hectare?

Yes → Size class = 0

Do the trees greater than 45 cm (size class 4 and 5) DBH comprise more than 50% of the total basal area in the stand?

Yes → Size class = 4

No

Do the trees greater than 30 cm (size class 3, 4, and 5) DBH comprise more than 50% of the total basal area in the stand?

Yes → Size class = 3

No

Do the trees greater than 15 cm (size class 2, 3, 4, and 5) DBH comprise more than 50% of the total basal area in the stand?

Yes → Size class = 2

No

Size class = 1

The stratum can be completed by affixing the size class identifier to the vegetation/land use key. As an example, a vegetation/land use key with a BC_oc and a size class of 4 would receive a stratum label of BC_oc_4.

8.2 Sampling Methodology (Standing Live and Dead Wood)

The sampling methodology is designed to achieve an unbiased inventory estimate with a target precision of +/- 5% at the 90% confidence interval for standing live and dead trees. The strata developed following the guidance above form the basis for a stratified sampling design. Default carbon estimates must be assigned to certain strata with low carbon stocking to improve the efficiency of developing the inventory. Default estimates for applicable strata are found in a reference file associated with this protocol. Strata with default estimates do not have to be sampled even if plots are randomly located within the strata polygons.

8.2.1 Inventory Plots

A grid of plot locations must be developed for each project. Plots will be selected randomly for each stratum from the pool of available plots in the grid. A recommended number of plots and spacing between plots can be developed using the following formula.

Equation 8.1. Number of Plots and Plot Spacing

n = (Hx10) / (H^0.5)

Where,

n = Number of plots
H = Project hectares

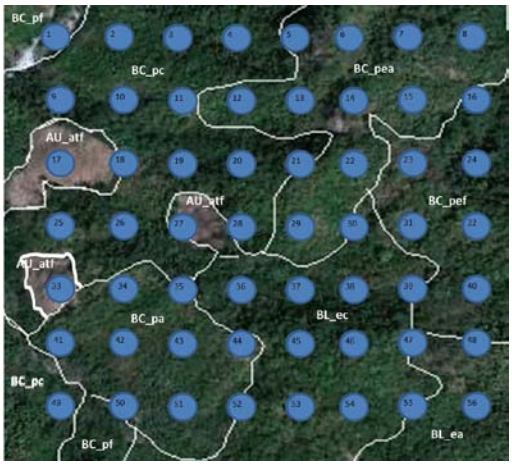
And,

M = (H/n x 10,000)^0.5

Where,

M = The distance between each plot in meters

Once the grid is produced, plots are organized in a tabular database with the plot/stratum combinations to facilitate the selection of plots (discussed below). Figure 8.1 below displays how plots are systematically located across the project area.



Stratum	Plot
BC_pf	1
BC_pc	2
BC_pc	3
BC_pc	4
BC_pae	5
BC_pae	6
BC_pae	7
…and continued for each plot.	

Figure 8.1. Example of a Systematic Grid of Sample Plots Overlaid Across the Project Area and the Plot Ordered by Stratum in a Database

Plots are randomly selected from each stratum for sampling. Achieving the overall sampling goal of +/- 5% at the 90% confidence interval will require a different approach for each project based on number of strata and the variability of stocking within the strata.[20] Box 8.1 below displays guidance that will assist Forest Owners in determining how many plots to randomly select for each stratum. Forest Owners are responsible for calculating their own descriptive statistics to determine if more or less plots are needed in any particular stratum.

Box 8.1. Guidance to Assist in Determining the Plot Allocation by Stratum for Eligible Strata

This general guidance is intended to assist Forest Owners to achieve the required confidence standards of the MFP, but does not guarantee that projects will obtain the required standard without further analysis.

The guidance below assigns more plots to the strata that cover a higher relative proportion of the project area and have high levels of biomass with a non-uniform (heterogeneous) distribution of trees compared to strata that cover a small relative proportion of the project area and have low stocking with a uniform (homogeneous) distribution of trees. In theory, the effort of stratification helps to ensure that heterogeneous stands are uncommon.

To use the guidance, Forest Owners must calculate the area representation of each stratum as a percent of the Project Area and hypothesize as to the variability and the biomass stocking levels (relative biomass). The percent value of the Project Area is multiplied by the plot multiplier, provided below, appropriate for each stratum. An example is provided at the bottom of the table.

	Plot Multipliers			**Project's Relative Biomass** (per unit area (Ha) basis)
	100	75	50	Low Biomass (0 – 33 percentile)
	120	90	60	Medium Biomass (33 – 66 percentile)
	140	105	70	High Biomass (> 66 percentile)
Stand Variability	Heterogeneous	Medium	Homogeneous	

Example				
A	B	C	D	E
Proportion of Project Area	Estimated Biomass Class	Estimated Stand Variability	Formula	Result
25%	High	Medium	0.25**x**105	26.25 = 26 plots

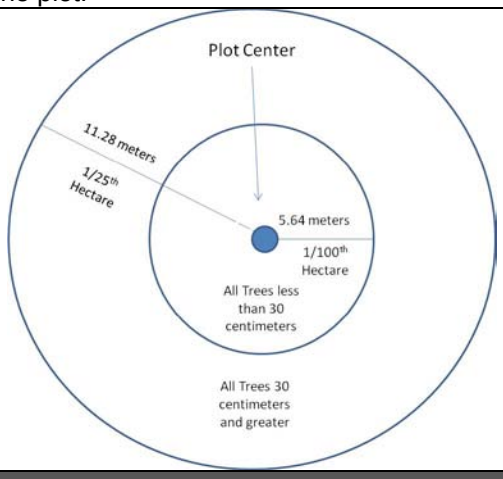
For certain strata, default values will be provided by the Reserve that can be used as part of the project baseline and inventory monitoring. Inventory plots must be established at the project initiation. Data from inventory plots are valid for a period of 10 years, during which time the plot data can be updated with estimates of annual increment to both diameter and height measurements. The process for updating plots is described in detail in a subsequent section.

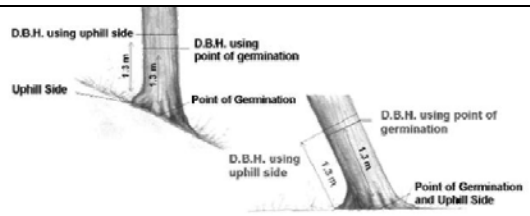
[20] Inventory sampling that achieves a confidence level that is less than +/- 5% at the 90% confidence interval are accepted with discounts for uncertainty. No projects are accepted if the confidence is less than +/- 20% at the 90% confidence interval.

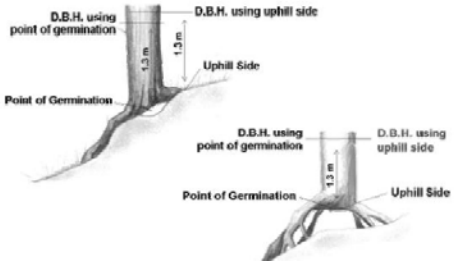
Since plot data can be no older than 10 years, plots must be periodically re-measured or new plots installed for both annual monitoring and periodic field verification. New inventory plots must be selected randomly for measurement from the grid of potential plots described above. Plots can be removed from the inventory only when an event changes the forest cover (such as harvest or forest fire) that requires the stratum designation to be modified or when the plot is older than 10 years of age.

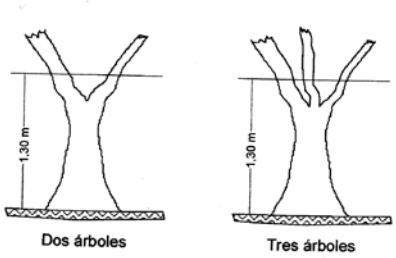
Inventory plots are to be installed as fixed radius plots. The size of the radius varies depending on the attribute that is measured, as shown in Table 8.7 below. Only the random plots selected in each stratum need to be installed. Plot centers must be monumented so they can be relocated for future measurement or for verification. Table 8.7 displays the data that are to be collected at each inventory plot.

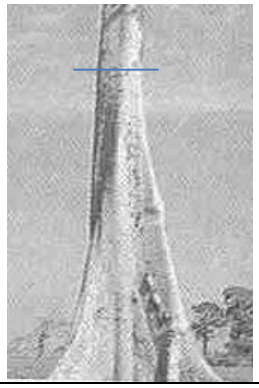
Table 8.7. Inventory Plots

For Each Plot	
Attribute	**Description**
Date of Plot Visit	Day/Month/Year
Latitude	From GPS
Longitude	From GPS
Vegetation Stratum	Enter the symbol for the vegetation from Section 8.1.
Plot Number	Enter the plot number for the plot, as described in the Section 8.2.
Inventory Personnel	Enter the initials of the inventory technicians responsible for measuring and recording data on the plot.
On a Fixed 1/25th Hectare Radius (Radius = 11.28 m), all trees ≥ 25 cm DBH and ≥ 3 m height **On a Fixed 1/100th Hectare Radius (Radius = 5.64 m), all trees ≥ 10 cm and < 25 cm**	
Attribute	**Description**
Tree Number	Trees are assigned a number 1 to X starting from 0 degrees (North) and generally proceeding clockwise. The numbering convention in the database facilitates the relocation and the verification of the trees.
Species	Enter the species code for each species on the plot. The species code can be found for each species in the corresponding reference document. The species code is based on the first two letters of the genus and the first two letters of the species for any given species.
DBH	Measure and record Diameter at Breast Height (DBH) to the nearest centimeter on every tree using a diameter tape and wrapping the tree at a height of 1.3 meters from the base of the tree on the uphill side.

<table>
<tr><td></td><td>







</td></tr>
<tr><td>Total Height</td><td colspan="2">Measure of total height (height from base of tree to top) to the nearest meter on each tree within the plot.</td></tr>
<tr><td>Crown Ratio</td><td colspan="2">For each tree, provide an ocular estimate of the crown length as a percentage of the tree’s height (to the nearest 10%).</td></tr>
<tr><td>Previous 5 years’ radial increment</td><td colspan="2">Increment measurements to the nearest 1/10th centimeter of the tree’s past 5 year growth on every third plot or on any uncommon tree.</td></tr>
<tr><td rowspan="6">Status</td><td>Code</td><td>Description</td></tr>
<tr><td>V</td><td>Live tree with normal form</td></tr>
<tr><td>P</td><td>Live tree with poor form</td></tr>
<tr><td>Md</td><td>Dead tree with no indication of decay</td></tr>
<tr><td>Ms</td><td>Dead tree with indication of decay</td></tr>
<tr><td colspan="3"></td></tr>
<tr><td>Defect – Bottom 33%</td><td colspan="2" rowspan="3">For each portion of the tree, provide an ocular estimate of the portion of tree that is missing (as a percentage of the section) as the result of breakage or cavities.</td></tr>
<tr><td>Defect – Mid 33%</td></tr>
<tr><td>Defect – Top 33%</td></tr>
</table>

8.2.2 Calculating the Project Carbon Inventory and Confidence Statistics in Standing Live and Dead Trees

This section provides a step by step approach to calculating the project inventory in standing live and dead trees. The Reserve provides default estimates for certain strata that are intended to provide efficiencies to the inventory process and must be used for estimates of project carbon stocks as well as baseline estimates. Since they are not the result of a sampling process within the project, they are not considered when calculating the project's statistical accuracy from sampling. Developing forest carbon estimates from sampling must be done according to the following general steps:

1. Calculating the net carbon tonnes on a per hectare basis for each plot
2. Calculating the net carbon tonnes on a per hectare basis for each stratum and for the project
3. Calculating the project sampling error and confidence deduction

The plot data and stratification used to calculate the inventories must represent current conditions at the time the inventory is created. The process for updating forest inventories is discussed in Section 8.3. Volumes, biomass, and carbon are to be calculated for each tree sampled in the plots. Volume and density calculations are provided in a reference file for each tree based on the tree's measured diameter and height. The biomass estimates calculated for each tree are adjusted based on the defect noted for each tree during inventory sampling. The net biomass is converted to carbon tonnes and expanded to a per hectare basis, as shown in Table 8.8.

Table 8.8. Calculate the Carbon Tonnes for each Plot on a per Hectare Basis

Steps	Description	Tools/Process Required	
1	Calculate the cubic foot volume in each tree.	Formula provided in resource file. Formulas provided will enable volume to be calculated for all portions of the tree.	
2	Calculate the biomass tonnes in each tree.	Formula provided in Resource File	
3	Adjust the tree's biomass based on defect percentages assigned to each tree.	Defect – Bottom 33%	60% **x** biomass tonnes in gross tree $_{(Step\ 2)}$ **x** Defect% $_{(Bottom\ 33\%)}$
		Defect – Middle 33%	30% **x** biomass tonnes in gross tree $_{(Step\ 2)}$ **x** Defect% $_{(Middle\ 33\%)}$
		Defect – Top 33%	10% **x** biomass tonnes in gross tree $_{(Step\ 2)}$ **x** Defect% $_{(Top\ 33\%)}$
		Sum Defect	Sum of biomass defect from each step above
		Adjusted Biomass	Biomass $_{(Step\ 2)}$ – Sum Defect
4	Calculate the carbon tonnes in each tree.	Adjusted Biomass $_{(Step\ 3)}$ **x** 0.5	
5	Expand the carbon estimate in each tree to a per hectare basis.	Multiply the carbon estimate in each tree by the weight required to represent the estimate on a per hectare basis: 25 **x** Carbon Tonnes $_{(Step\ 5)}$ for trees sampled in 1/25th hectare radius 100 **x** Carbon Tonnes $_{(Step\ 5)}$ for trees sampled in 1/100th hectare radius	

The individual plot estimates are summed and averaged for each stratum. These strata estimates are then expanded to the project based on the area representation (hectares) of each stratum, as shown in Table 8.9.

Table 8.9. Determine the Carbon Tonnes for Stratum X and for the Project

Steps	Description	Tools/Process Required
6	Calculate the average carbon tonnes per hectare in Stratum X.	Sum the carbon estimates from each plot within Stratum X on a per hectare basis and divide by the number of plots in Stratum X.
7	Calculate the total carbon tonnes in Stratum X.	Multiply the average estimate of carbon tonnes per hectare by the total hectares represented by Stratum X in the project.
8	Calculate the total carbon tonnes in the project.	Repeat Step 7 for each stratum and sum the estimates of each stratum.

The target sampling error for inventory estimates based on sampling activities is +/- 5% of the mean at the 90% confidence level, ***evaluated at the programmatic level*** (i.e. across all projects registered with the Reserve in a particular jurisdiction). However, the sampling error associated with individual projects may never exceed +/- 20% at the 90% confidence interval. The underlying principle is that the inventory accuracy at the programmatic level will approximate the desired sampling error of +/- 5% at the 90% confidence interval as the total number of projects is increased. This provides for an efficient and more cost-effective method of achieving inventory estimates at the project level. The calculations used to determine inventory confidence are based on the assumption that the plot measurements are current, whether measured in the current year or updated using techniques described in the next section.

The project-level target sampling error depends on the number of projects registered with the Reserve. To ensure the desired programmatic accuracy is achieved within state-level jurisdictions, the target sampling error for inventory data associated with individual forest projects in a given state varies on a sliding scale based on the number of projects registered with the Reserve in the same state. Projects that do not meet the target sampling error are subject to a confidence deduction (determined in Table 8.11). The confidence deduction is applied directly to the project inventory of live and dead trees, but not to the baseline estimate, to ensure a conservative quantification of project benefits. The target sampling error for the individual projects ranges between 7% to 20% of the mean at the 90% confidence level based on the total number of projects in each state registered with the Reserve as shown in Table 8.10 below.

Table 8.10. Target Sampling Error at the 90% Confidence Level for Projects Participating in the Reserve

Number of Participating Projects in each State	Target Sampling Error (TSE)
2	7%
3	8%
4	9%
5	10%
6	11%
7	12%
8	13%
9	14%
10	15%

11	16%
12	17%
13	18%
14	19%
15+	20%

Table 8.11. Calculate the Sampling Error for the Estimate and Apply the Confidence Deduction

Steps	Description	
9	Guidance for calculating sampling errors for a stratified sample will be added during public comment period.	
10	**Actual Project Sampling Error at 90% Confidence Level**	**Confidence Deduction**
	0 - TSE%	0%
	TSE to 20%	Maximum Value (0,(Actual sampling error – TSE %) to the nearest 1/10th per cent)
	Greater than 20%	100%

8.3 Updating Project Carbon Inventories and Determining Actual Onsite Carbon Stocks

Actual carbon stocks for projects must be determined for annual monitoring reports by updating the Project Area's forest carbon inventory to indicate estimated changes as the result of harvest or other disturbances, forest growth, and updated information. The annual adjustments to inventory data are based on the inclusion of new information, adjusting existing data for forest growth and disturbances, and recalculating the carbon estimates and the confidence deduction. Each step is described in greater detail below.

8.3.1 Updating Forest Inventory Data based on New Information

Any plots sampled or re-sampled in the past year must be incorporated into the project inventory. If a plot is re-measured, the old data must be replaced with the new data in terms of representing the plot's inventory. Plot data is valid for no longer than 10 years without being re-measured. The project inventory therefore must be based on plots sampled within the 10-year period. Forest Owners may decide to perform all of their inventory sampling in a given year or distribute it throughout the 10-year timeframe.

8.3.2 Updating Forest Inventory Data for Growth

Updating tree records in inventory databases is based on applying an appropriate diameter increment and a height increment to each tree record in the database. The guidance for adding annual diameter and height increment is based on increment measurements taken at plots for diameters and on a regression analysis for heights. The steps involved are displayed in Table 8.12.

Table 8.12. Steps for Updating Tree Records in Forest Inventory Databases

This is a process for updating the live trees in the inventory database. Dead trees remain as they were when the plot was measured and only updated when the plot is re-measured.

Steps	Description	Tools/Process Required
1	Querying data for analysis.	Query live tree records by the size classes identified in Section 8.1.4 by strata and species that have been measured for increment.
2	Determine annual diameter increment.	The data for diameter increment was collected to represent the increment over the previous 5 years. This data must be divided by 5 to determine the average annual increment.
3	Calculate average annual diameter increment.	The average annual diameter increment by species and size class is calculated by summing the results from Step 2 for each species and size class and dividing by the number of records summed
4	Add diameter increment to tree records.	The average diameter increment for each species and size class is multiplied by the number of years that have passed since the tree record was measured and added to the original diameter estimate to update the diameter estimate to a current reporting year.
5	Calculate a diameter-to-height regression estimator.	Using only original measured data (not updated data), a regression formula is developed by inserting the measured diameter and height data by species into a spreadsheet (e.g. Microsoft Excel) and using the linear regression function.
6	Compute the average diameter by species and size class.	The average diameter for each species and size class is determined by selecting all records (for a given species and size class) from the previous year and dividing the sum by the number of records queried.
7	Calculate the estimated height for the average diameters from Step 6.	Apply the regression formulae developed in Step 5 for each species to the average diameter from the previous year (Step 6) by species for each size class to calculate an estimated height for each combination of species and size class.
8	Calculate the average updated diameter for each species and size class.	Add the diameter increment for each species and size class (Step 3) to the average diameter by species and size class (Step 6) to calculate an average updated diameter for each species and size class.
9	Calculate the estimated heights for the average updated diameters from Step 8.	Apply the regression formulae developed in Step 5 for each species to the average diameters determined in Step 8 to calculate an estimated updated height for each species and size class.
10	Determine the height increment for updating inventory estimates.	The annual height increment estimate is determined for each species and size class combination by subtracting the average height estimate (Step 7) from the average updated height estimate (Step 9).
11	Add height increment to tree records.	The average height increment for each species and size class is multiplied by the number of years that have passed since the tree record was measured and added to the original height estimate to update the height estimate to a current reporting year.

8.3.3 Updating Forest Inventory Estimate for Harvests and/or Disturbances that have occurred in the Previous Year

Harvests and/or natural disturbances that represent changes to forest cover classes require that the stratification system be updated to reflect current land use and forest cover conditions. Any areas affected by harvest and/or natural disturbances must be indicated on an updated map of land use and forest cover classes. The representation of hectares by land use and forest cover classes must also be updated in the inventory database to accurately expand the plot estimates for each land use and forest cover class. Any plots associated with the changed cover class must either be discarded from the current inventory database until the plot is updated or updated through re-measurement. The updated plots must be associated with the updated land use and forest cover class.

8.3.4 Completing the Annual Update Process

Upon updating the records in the inventory databases to reflect the height and diameter increments, updating the land use and forest cover classes for disturbances, and updating the stratum-associated area (hectare) assignments in the forest inventory database, the forest carbon stocks can be recalculated using the methods identified in Section 8.2.2. Additionally, the confidence statistics for the forest carbon stocks must be recalculated which may result in an adjustment to the confidence deduction for the project.

8.4 Estimating Annual Carbon Stored in Harvested Wood Products

Wood products may constitute a reservoir for storing carbon over the long term. Projects that increase wood product production compared to baseline production can conceivably receive credit for the resulting incremental carbon storage. By the same token, projects that reduce wood product production must account for the incremental *reduction* in stored wood product carbon. For harvested wood products to be considered, the harvested wood products must be effectively “permanent,” meaning that sequestered carbon associated with harvested wood products must remain stored for at least 100 years. Lacking data to develop regionalized estimates of permanent carbon storage, this protocol will not include harvested wood products in either the baseline calculations or in the project activity calculations.

9 Determining the Project Baseline

The baseline approach is based on identifying trends of forest carbon stocks within the management unit(s) where the project is located, and tailoring those trends to the Project Area. The initial assessment of trends is established using broadly defined management units that share similar forest communities, watersheds, economy, and governance. The trend helps to define the project's "territorial" or "landscape" baseline against which both sequestration (removals) and avoided emissions (reductions) are measured. This approach will allow conservation activities to be credited along with reforestation, improved forest management, agroforestry, and urban forestry.

9.1 Identifying the Regional Trend of Forest Carbon Stocks

Mexico's national inventory system is a set of permanent inventory plots that are distributed throughout the country. Many of these plots have been re-measured and provide the basis for inferring trends in forest carbon stocks. This inference can be applied to project inventories to establish a standardized trend for the project.

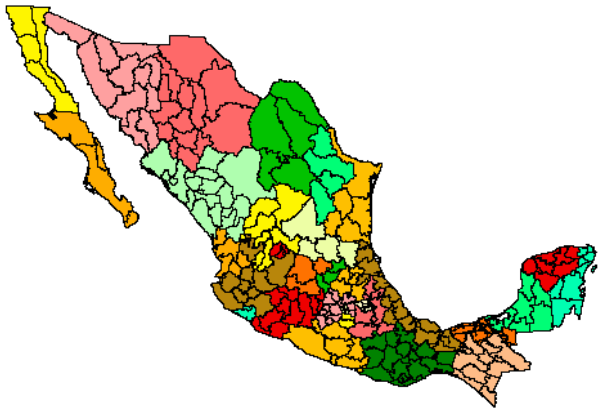


Figure 9.1. Management Units (UMAFORs) in Mexico

Each separate polygon in the map above is an UMAFOR. The UMAFORs are colored independently for each state (UMAFOR boundaries are delimited by municipalities and therefore stat boundaries).

9.1.1 Identifying Trends from Management Units (UMAFORs)

Projects must determine which UMAFORs they are in by overlaying the project boundaries on the UMAFOR map. A full list of the UMAFORs is found in Appendix B. A GIS shapefile of the UMAFORs is available through the Reserve's Mexico Forest Protocol webpage. For projects that are within one UMAFOR, the trend for the project is determined by selecting the appropriate annual rate of change of forest carbon identified in the UMAFOR table in Appendix B. This value is then used to calculate the projected trend for the 20-year crediting period. An example of the calculation of trends is shown in Table 9.1 below.

Table 9.1. Example Illustrating the Method for Developing a Regional Trend

UMAFOR 'X'	Values
Rate of change of forest carbon for UMAFOR (from Mexico Forest Protocol webpage)	-0.4%
20 Year Projection	-8.0%

Projects may extend beyond one UMAFOR but cannot extend beyond a state boundary. For projects that are within more than one UMAFOR, the regional value is determined as the weighted average of historical trends for each of the UMAFORs the project is located in. Equation 9.1 displays how the weighted value is determined.

Equation 9.1. Determining a Weighted Value for Historical Forest Carbon Trends

$$\sum((\text{UMAFOR Hectares}_a) \textbf{ x } (\text{20-Year Projection}_a) + (\text{UMAFOR Hectares}_b) \textbf{ x } (\text{20-Year Projection}_b)) / \sum(\text{UMAFOR Hectares}_{a,b})$$

9.2 Consideration of Legal Constraints

As discussed in the section on additionality, Forest Projects may only receive credit to the extent they achieve GHG reductions or removals beyond baseline levels, assuming baseline compliance with all applicable laws, statutes, rules, regulations or ordinances. To account for legal requirements in the project baseline, the regional forest carbon trend must be adjusted, where necessary, to reflect legal constraints. Legal constraints include all laws, regulations, and legally-binding commitments applicable to the Project Area at the project initiation that could affect standing live carbon stocks. Legal constraints include the following constraints that are enforced within the Project Area.

1. Federal, state/provincial or local government regulations that are required and might reasonably be anticipated to influence carbon stocking over time including, but not limited to:
    a. Zones with harvest restrictions (e.g. buffers, streamside protection zones, wildlife protection zones, protected areas (ANPs))
    b. Harvest adjacency restrictions
    c. Minimum stocking standards
2. Forest practice rules established by federal, state or municipal government
3. Other binding requirements that affect forest carbon stocks such as trusts (*fideicomisos*)

A list of all legal constraints that have a potential impact on the project forest carbon must be compiled and qualified in terms of the effect of the constraint on project forest carbon stocks and the existing enforcement activities within the Project Area. Adjustments for legal constraints to the project baseline trend may only increase the 20-year adjusted value (they may not decrease it). An example of the qualification of the legal constraints and associated quantitative adjustment of baseline trends is shown in Table 9.2.

Table 9.2. Example of Analysis of Legal Constraints

UMAFOR 'X'	20-Year Estimate of Change (Regional Trend)	-8.0%
Description of Legal Consideration	**Qualification**	**Adjustment (positive only) to Regional Trend**
Requirement to prepare and submit a management plan.	Management plan will allow stocks to decline no more than 5% over the course of the planning horizon.	+3%[21]
A natural protected area exists on 10% of the Project Area. The terms of the natural protected area prohibit harvesting.	The natural protected area contains 20% of the forest carbon stocks. There are no restrictions related to the harvesting on the balance of the project area. The forested area outside of the natural protected area that could be converted to agriculture constitutes 45% of the project area. The forest stocks are fairly evenly distributed across the forested portion of the project area. Since the potential loss of forest carbon is greater than the 20-year regional trend, no adjustments are warranted.	0%
Adjusted Regional Trend for Legal Constraints (Adjustments are added to the 20-Year Regional Trend)		-5.0%

9.3 Consideration of Financial Constraints

The trends of forest carbon stocks identified for each UMAFOR are indicative of pressures on forest stocks generated both through market opportunities and domestic use. No further analysis of market conditions will be required for project participation.

Worksheet 9.1 below provides guidance for how the regional trend from the UMAFOR is adjusted based on legal constraints at the project-level to derive an adjusted 20-year trend value.

Worksheet 9.1. Adjusting Regional Trend from UMAFOR

Steps	Guidance	Values (Example)
1	Enter Initial Project Inventory (Tonnes CO_2-e)	100,000
2	Enter Regional Forest Trend (20-year value) from UMAFOR Table*	-8.0%
3	Enter Adjustment for Legal Considerations	+3.0%
4	Add Adjustment for Legal Considerations to Regional Forest Trend Value	-5.0%
5	Multiply (100%- Line 4) **x** Line 1 to Determine the 20-Year Value	95,000

* To be provided prior to protocol implementation.

Until jurisdictional baselines and crediting terms are developed, project baselines will be defined by the 20-year value (Step 5 in Worksheet 9.1) that has been adjusted for legal constraints and is standardized as a flat line drawn to the project start date. This provides an immediate incentive to Forest Owners to implement forest management activities in an aggressive manner

[21] In this example to obtain the 3% the following formula was used: -5% - X = -8%.

to improve the 20-year trend as rapidly as possible. Figure 9.2 below provides an illustration of the how the baseline is determined.

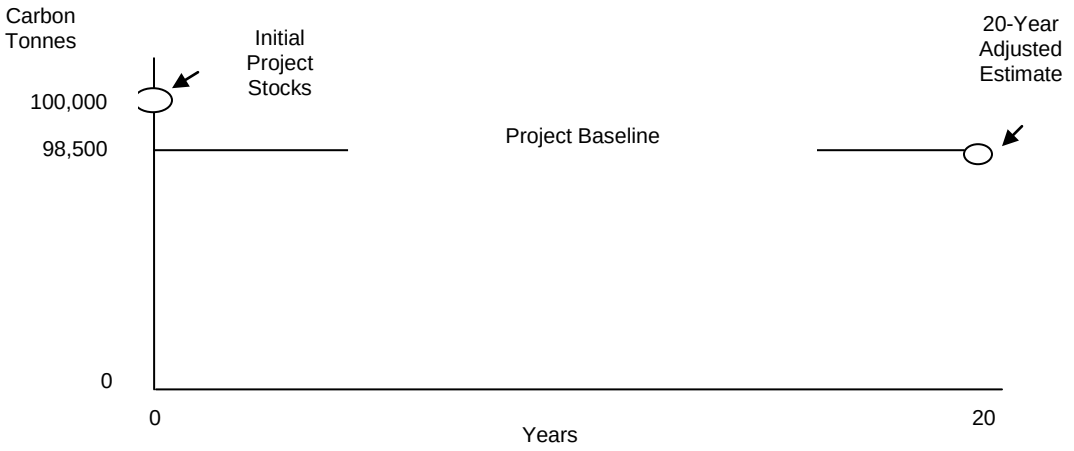


Figure 9.2. Baseline Determination

The forest trends and project baselines will be based on reference levels and crediting terms established for jurisdictions once they are developed. It is anticipated that jurisdictional reference levels and crediting terms will be calibrated to UMAFORs within the jurisdictions to develop a more resolute application of the jurisdictional baseline while maintaining integrity with jurisdictional monitoring.

10 Assessment of Secondary Effects

The interim guidance for the assessment of Secondary Effects is based on addressing the risk of shifting forest-related emissions from the Project Area to other areas. The interim guidance will likely be modified as soon as jurisdictional monitoring systems are developed and are operational, which would only allow crediting to "nested" projects if jurisdictional stocks (or emission targets) meet or exceed crediting thresholds. Jurisdictional monitoring provides greater assurances that project benefits are also benefits to the jurisdiction.

Forest Owners must determine the appropriate "leakage" risk percentage using Worksheet 10.1 below. Leakage risk is determined at the initiation of the project and can be updated if the project undertakes activities designed to mitigate leakage or if methods to track and account for leakage are adopted at the jurisdictional (state and/or national) level. The calculation of leakage is based on an assumption that a risk of leakage exists if the project activity is based on simply arresting the factors that cause forest stocks to decline without mitigating the underlying economic or social drivers for those factors. Such drivers can be mitigated, for example, through increasing the productivity of activities that tend to cause deforestation/degradation, or by conserving resources through reduced demand or improved utilization.

The steps involved in determining the leakage risk for each project include:

1. Performing an assessment of the main causal factors driving a decline in forest biomass.
2. Identifying mitigation strategies incorporated in the project design to reduce the potential for the effects of causal factors to be shifted elsewhere (leakage).
3. Calculating the project leakage estimate.

10.1 Assessment of Causal Factors that Impact Forest Biomass and Determining Influence of Causal Factors

Forest biomass can decline as a result of a variety of economic and subsistence activities. The causal elements of forest loss are commonly related to agriculture production, unsustainable harvesting of forest resources, livestock production, and housing development. The causal elements may be the result of increasing populations or reduced soil fertility within the project area, or they could be the result of economic opportunities arising from distant markets.

Factors that impact forest biomass must be addressed using Worksheet 10.1 below for each project. The Reserve [will] provides estimates of leakage risk for each UMAFOR for each of the following key causal factors that affect forest cover.

1. Agricultural Production
2. Harvested Wood Products
3. Livestock Production
4. Development

The estimates of leakage risk are based on the relative importance of each causal factor within the UMAFOR to cause loss of forest cover. Forest Owners must use the estimates of leakage risk from the UMAFOR data file and identify if any of the mitigation strategies identified in the worksheet are being implemented within the project.

Worksheet 10.1. Identifying Project Leakage Risk

Causal Factors	Description of Causal Factor	Insert Leakage Risk from UMAFOR File	Mitigation All selected mitigation strategies must be documented and approved (with an affidavit) by the appropriate agency within the project jurisdiction		Adjusted Leakage Risk
			Mitigation Description	Adjustment	
Agriculture	Increased demand for land in agricultural production due to lowered soil fertility, less irrigation, increasing populations, or increased demand for agricultural commodities.		Improved agricultural productivity resulting from mechanization, improved varieties, fertilizers, pH control, irrigation, pest and weed control, and changed cultural practices	Multiply the risk from the UMAFOR file by 0.75 percent for each percent of area in agriculture land use where the mitigation strategy has been applied	Mitigation Adjustment **x** Leakage Risk from the UMAFOR file
Harvested Wood Products	Population increase leading to increased demand for harvested wood products or increased commercialization of harvested wood products.		Improved productivity from stocking control, harvest timing, management of competing species, and tree selection for growth	Multiply the risk from the UMAFOR file by 0.75 percent for each percent of area in forest land use where the mitigation strategy has been applied	Mitigation Adjustment **x** Leakage Risk from the UMAFOR file
Grazing	Demand for meat and/or dairy products increased or reduced productivity of pasture requires additional pasture to maintain supply.		Improved productivity from rotation practices, pH control, mechanization, grass selection, pest and weed management, nutrient and water inputs	Multiply the risk from the UMAFOR file by 0.75 percent for each percent of area in grazing land use where the mitigation strategy has been applied	Mitigation Adjustment **x** Leakage Risk from the UMAFOR file
Development	Pressure within Project Area to increase footprint of permanent buildings (population and or tourism increase).		New construction is clustered	Multiply the risk from the UMAFOR file by 0.75 percent for each percent of area in construction land use where the mitigation strategy has been applied	Mitigation Adjustment **x** Leakage Risk from the UMAFOR file
Project Leakage Adjustment	100% - ((1- Adjusted Leakage $Risk_{Agriculture}$) **x** (1- Adjusted Leakage $Risk_{Harvested\ Wood\ Products}$)) **x** (1- Adjusted Leakage $Risk_{Grazing}$)) **x** (1- Adjusted Leakage $Risk_{Development}$))				

11 Ensuring Permanence of Credited GHG Reductions and Removals

The Reserve requires that credited GHG reductions and removals be effectively "permanent." Forest Owners must demonstrate, through required monitoring, reporting, and verification that the carbon stocks associated with credited GHG reductions and removals are maintained for 100 years to be considered permanent.[22] Each Forest Owner is required to sign a contract with the Reserve for each project that specifies the obligations of the Forest Owner in the event CRTs are not maintained for the permanency requirement. The contract is referred to as a Project Implementation Agreement (PIA).

11.1 Definition and Identification of a Reversal

GHG reductions and removals can be "reversed" if the stored carbon associated with them is released to the atmosphere. Reversals are deemed avoidable if they are the direct result of human activities. Reversals are deemed unavoidable if they are the result of natural events, such a wildfire that is not the result of negligence, gross negligence or willful intent, insect-related mortality or wind. A reversal occurs if the quantified GHG reductions and removals for a given reporting period (QR_y in Equation 7.1) are negative, and CRTs were issued to the Forest Project in any previous year.

This protocol contains various mechanisms to identify and mitigate reversals, including the following (each one of these points is further described in the document).

1. The requirements for all Forest Owners to inventory onsite carbon stocks, submit periodic monitoring reports, and be verified periodically by third-party verifiers (see Section 11.2.1).
2. The requirement to submit a Forest Management Program (Programa de Manejo Forestal[23]) to be approved by the corresponding SEMARNAT state and federal agencies with explicit language addressing the rights and responsibilities of the Forest Owner with regards to forest carbon and the requirement to adhere to terms of permanence within the carbon program they are participating in (see Section 3.5 and Section 11.2.2)
3. The ability for Forest Owners to establish an association (legal entity) with defined bylaws that include requirements for its participants to agree to remedy Avoidable Reversals collectively (see Section11.2.3). The association has to contract with the Reserve in addition to each Forest Owner.
4. The structured distribution of CRTs from the Reserve which provides an ongoing incentive to Forest Owners for successful monitoring, reporting, and verification and provides limits to liability of Forest Owners (see Section 11.2.4.1).
5. The requirement for each project to contribute to a Buffer Pool that serves as a common insurance pool for all projects to draw from in the event of unavoidable reversals (see Section 11.2.5).

[22] 100 years as the time horizon is in the order of magnitude of the lifetime of CO_2. Furthermore, it is consistent with the Kyoto Protocol's adoption of the IPCC's GWPs (Article 5.3) based on the effects of GHGs over a 100-year time horizon (Addendum to the Protocol, Decision 2/CP.3, para. 3) for calculation of the Absolute Global Warming Potential (AGWP) for CO_2.

[23] Under the General Law for Sustainable Forest Management, Chapter 2, Section 1.

11.1.1 Unavoidable Reversals

An Unavoidable Reversal is any reversal not due to the Forest Owner's negligence, gross negligence or willful intent, including natural events like wildfires or disease that are not the result of the Forest Owner's negligence, gross negligence or willful intent. Requirements following an Unavoidable Reversal are as follows:

1. If the Forest Owner determines there has been an Unavoidable Reversal, the annual monitoring report must clearly indicate that an Unavoidable Reversal has occurred. The Forest Owner must explain the nature of the Unavoidable Reversal as part of the annual monitoring report and provide a verified estimate of onsite carbon stocks within one year so that the reversal can be quantified (in units of CO_2-equivalent metric tons).

If the Reserve agrees that the reversal is unavoidable in origin, the Reserve will retire a quantity of CRTs from the Buffer Pool equal to size of the reversal in CO_2-equivalent metric tons (i.e. QRy, as specified in Equation 7.1). The tracking of carbon stocks and any reversals will be standardized and provide assurance that the compensation has occurred. The Buffer Pool is a transparent organism (see Section 11.2.5)

11.1.2 Avoidable Reversals

An Avoidable Reversal is any reversal that is due to the Forest Owner's negligence, gross negligence or willful intent, including harvesting, development, and harm to the Project Area due to the Forest Owner's negligence, gross-negligence or willful intent. Reversals are detected during annual monitoring and verification events. Subsequent to the identification of a reversal, the following requirements apply:

1. A written description and explanation of the reversal must accompany the annual monitoring report.
2. Within six months of receiving an Avoidable Reversal notice, the Forest Owner must provide the Reserve with a verified estimate of current onsite carbon stocks.
3. Within one year of receiving the Avoidable Reversal notice, the Forest Owner must purchase forest CRTs commensurate with the amount of CRTs that were reversed.
4. If the reversals are not compensated after one year, the Reserve will submit an additional notification to the Federal Environmental Protection Agency (PROFEPA), which will initiate administrative enforcement activities.
5. PROFEPA will report back to the Reserve.

11.2 Compensating for Reversals

The Reserve requires that all reversals, either avoidable or unavoidable, be compensated through the retirement of CRTs. If a reversal associated with a Forest Project was unavoidable (as defined above), then the Reserve will compensate for the reversal on the Forest Owner's behalf by retiring CRTs from the Buffer Pool. If a reversal was avoidable (as defined above), then the Forest Owner must compensate for the reversal by retiring a quantity of forest CRTs from its Reserve account equal to the size of the reversal in CO_2-equivalent metric tons.

11.2.1 Role of Monitoring, Reporting, and Verification in the Finding of a Reversal

A reversal can be identified through monitoring by Forest Owners and/or during site verifications by third-party verifiers. Since Forest Owners are responsible to maintain current inventories of the onsite carbon stocks and submitting annual monitoring reports, a reversal can be identified by a Forest Owner as part of updating their inventory estimates for growth, harvest, and any

other disturbances. Third-party verifiers can identify a reversal by a finding that the inventory is incorrectly characterized in the monitoring report. Adjustments to the contributions to the Buffer Pool and adjustments based on the uncertainty of the carbon estimates (which can only occur during site verification, Section 14) can lead to reversals.

11.2.2 Required Carbon Plan within Forest Management Program

As mentioned in Section 3.5, the Reserve requires that a forest management program is developed and approved by SEMARNAT though their delegations on each state. The Reserve will require that the forest management program include a "carbon plan."

The Reserve will notify PROFEPA if a reversal is found to be the result of avoidable activities. PROFEPA will visit the project and if there is non-compliance, the agency will register any omissions or irregularities that might exist. The inspector will present an Inspection Order to the authority. An administrative procedure may take place afterwards.[24] Depending on each case, the sanctions might include fines, closure, decommissioning, and administrative arrest.

11.2.3 Bylaws Required under an Association Scheme for Permanence

As part of ensuring project permanence, projects will be encouraged to form a legal association with other projects. An association is a form of self-insurance whereby groups of Forest Owners agree to act as partners to compensate collectively for Avoidable Reversals from any individual Forest Owner. Individual Forest Owners benefit from partnership within the association in that their improved risk ratings result in a greater quantity of CRTs being distributed to them immediately. Within the agreement to participate as an association, the Forest Owner responsible for the Avoidable Reversal would attempt to settle the reversal obligation prior to seeking settlement collectively from other members within the association. The collective compensation would be derived from all available CRTs within the collective through a mutually agreed upon formula. As a legal entity, associations can contract directly with the Reserve.

An association may be a legally constituted entity following the Mercantile Law (*Ley General de Societdades Mercantiles*), Cooperative Society Law (*Ley General de Sociedades Cooperativas*) or the Civil Code (*Codigo Civil Federal y Local*). These might include:

- *Asociación Civil A.C.*
- *Sociedad Civil S.C.*
- *Sociedad en Nombre Colectivo*
- *Comandita Simple (s. en c.)*
- *Comandita por Acciones (s. en c. Por a)*
- *Sociedad Anónima (s.a.)*
- *Sociedad de Responsabilidad Limitada (s. de r.l.)*
- *Sociedad Cooperativa, s. C. L. (limitada), s. C. S. (suplementada)*

For more information on associations please see Appendix A.

Some key points of the Association Scheme for Permanence:

1. The *ejidos*/communities and/or small private properties will form a legally constituted entity or an association either following the Mercantile Law or the Civil Code.

[24] See http://www.profepa.gob.mx/innovaportal/v/1369/1/mx.wap/guia_de_derechos_y_obligaciones_de_los_inspeccinados.html

2. An association is a legal body that has a common interest and wants to cooperate for the purpose of this protocol. As a legal body, it will have a governance structure that enables it to make decisions on behalf of the association (stipulated in its bylaws).
3. Any private landowner, *ejido* or communal landowner can participate in an association.
4. Each Forest Owner must maintain a separate account on the Reserve's registry system where all the credits will be transferred to and from. Each credit will be attributed with a project identifier to account for the credits associated with each Forest Owner.
5. Each Forest Owner must sign a Project Implementation Agreement (PIA)[25] with the Reserve, as required by the MFP.
6. Forest Owners are responsible for coordinating with verification bodies and coordinating verification schedules for all verifications, and managing monitoring and reporting. Forest Owners may hire another entity for project development and to provide other services. The association may engage in different activities but it is the Forest Owner's ultimate responsibility to ensure compliance with the MFP.
7. The contract to form the legally constituted entity and its bylaws must be provided to a verification body and/or the Reserve so that mandatory elements can be verified in these contracts to protect both the Forest Owners and the association. Contracts will be made public for transparency purposes.
8. Projects may enter and leave an association according to the contractual agreement with other participants in the association (bylaws).
9. Participation in an association does not change how a project determines its baseline, meets environmental and social safeguards, or meets requirements for submitting annual monitoring reports.

When defining the bylaws (rules and obligations agreed among those who constitute the organization) of the new legal entity, the following requirements must be defined:

- Partnership duration
- Fiscal address
- Purpose (goals or mission of the partnership)
- That the association is Mexican
- Characteristics of the members of the organization
- Governing bodies and their functions
- Information about the assets of the association
- How to dissolve the partnership

Furthermore, the following clauses must be included in order to be eligible to participate:

1. If one of the projects is determined to have an Avoidable Reversal, the Forest Owner would be liable and must find ways to cover for the reversals. During that period the project will not receive any credits.
2. If the Forest Owner is not able to immediately compensate for all the reversals, participants agree to remedy Avoidable Reversals collectively and the members of the association must compensate for the reversal as a proportion of their verified credits for that year. Until the reversal is fully compensated, none of the members would be able to transact credits.

[25] The PIA is a legal contract between the Forest Owner and the Reserve that specifies the terms and conditions required for a project and remedies associated with project termination or reversal of verified GHG reductions.

It is highly encouraged that the bylaws state clear rules when leaving or joining the association and the association dissolution.

11.2.4 Structure of Distribution of CRTs from the Reserve

The Reserve will issue credits to the Forest Owner with an approach that incentivizes project initiation and ongoing maintenance of carbon stocks while managing programmatic risks. A percentage of the net verified credits (adjusted for the confidence deduction, the contribution to the unavoidable risk buffer pool, and adjusted for leakage) will be released to the Forest Owner based on a schedule determined from risk of Avoidable Reversals addressed in this section. The initial distribution is calculated as a percentage using the guidance in this section and multiplied by the net verified credits to determine the initial distribution of credits to the Forest Owner. The initial distribution is intended to be substantial to incentivize the initiation of project activities and address project development costs. Remaining net verified credits will be distributed evenly on an annual basis over the following 50 years. The distribution of the remaining credits is intended to serve as an ongoing incentive for maintaining onsite carbon stocks for the term of permanency for each credit.

As an example, a project that generated 100 net verified credits (as described above) that had an initial distribution rating of 70% would receive 70 CRTs in the year the credits were verified. In the 50 years that follow, the project will receive 0.6 CRTs per year based on ongoing monitoring and verification (100%-70%)/50 years).

11.2.4.1 Determination of Avoidable Risk Rating for the Distribution of Credits

Forest Owners must derive a risk rating for their Forest Project using the tables in this section. This risk assessment must be updated every time the project undergoes a verification site visit. Therefore, a project risk assessment is dynamic. Furthermore, estimated risk values and associated mitigation measures will be updated periodically by the Reserve as improvements in quantifying risks or changes in risks are determined. Any adjustments to the risk ratings will affect only current and future distribution of credits.

Risks are classified into the categories identified in Table 11.1. The risk ratings considered for determining the distribution of credits include:

- Land tenure
- Management
- Social
- Governance
- Association

Each of these risks is described in greater detail below.

11.2.4.1.1 Land Tenure Risk

Different land tenures have different reversal risks due to specific legal characteristics of each type.

Table 11.1. Land Tenure Risk 1

Applies to all types of projects.

Identification of Risk	Contribution to Reversal Risk Rating
Private Property (*Pequeña propiedad*): Land with property titles inscribed at the "*Registro Público de la Propiedad.*" The PIA can be affixed to the title of these lands whereby the land can be used as collateral to ensure reversal compensation obligations.	**0%**
Agrarian Community (*Comunidad Agraria - propiedad privada comunal*): Common land with an agrarian certificate (*certificado agrario*) where the property is recognized and inscribed at the "*Registro Agrario Nacional.*" The PIA cannot be affixed to the title of these lands.	**15%**
Communal Parcel (*Parcela Comunal - Poseedor legítimo*): Parcel land with an agrarian certificate where the property is recognized and inscribed at the "*Registro Agrario Nacional.*" The PIA cannot be affixed to the title of these lands.	**18%**
Ejido (*propiedad privada ejidal*): Common land with an agrarian certificate (*certificado agrario*) where the property is recognized and inscribed at the "*Registro Agrario Nacional."* The PIA cannot be affixed to the title of these lands.	**20%**
Ejidal Parcel (*Parcela ejidal - Poseedor legítimo*): Parceled land where the property is recognized and inscribed at the "*Registro Agrario Nacional.*" The PIA cannot be affixed to the title of these lands.	**20%**
Legitimate Possession (*Posesion legítima / legal*): Land that has a municipal document that recognized possession of the land. The PIA cannot be affixed to the title of these lands.	**50%**

Table 11.2. Land Tenure Risk 2

Identification of Risk	Contribution to Reversal Risk Rating
Non-Communal Land	**0%**
Is the property under PROCEDE or FANAR[26]?	
Yes	**0%**
No	**2%**

[26]Program for the Certification of *Ejido* Land Rights and the Titling of Urban House Plots, *Programa de Certificación de Derechos Ejidales y Titulación de Solares*, PROCEDE. PROCEDE was a government instrument responsible for regulating social property. The main objective of the program was to give land tenure legal certainty by granting individual property certificates to *ejidatarios* (land owners). PROCEDE formally ended in December 2006.
Support Fund for Non-Regulated Agrarian Nucleus, *Fondo de Apoyo para los Núcleos Agrarios sin Regularizar*, FANAR: FANAR supports those *eijdos* that were not able to be regulated under the Program for the Certification of *Ejido* Land Rights and the Titling of Urban House Plots (PROCEDE).

Table 11.3. Land Tenure Risk 3

Applies to all types of projects.

Identification of Risk	Contribution to Reversal Risk Rating
Are there disputes over land tenure or ownership?	
No	**0**
Yes	**80%**

11.2.4.1.2 Management Risk

Management risk is the risk that land management activities could result in further loss of forests and lead to a reversal. The Institute of National Ecology has developed a model that estimates risk of deforestation. The model results are used as the basis to assign a management risk rating to each UMAFOR. The model uses the following variables to calculate risk:

- Forest type
- Geo-economic variables (altitude, slope, accessibility, agriculture density, ecological footprint)
- Institutional variables (project within a protected area (ANP), project receives incentives from the Ecosystem Payment System (PSA), management plans in place, project receives livestock incentives (PROGAN))

The risk percentage is based on a regional risk based on the UMAFOR where the project is developed and is provided in the UMAFOR resource file on the Reserve's Mexico Forest Protocol webpage (in production).

11.2.4.1.3 Social Risk

Social risks are based on the likelihood that policies developed within the governance of a Project Area will change to the detriment of forest stocks. This risk applies only to Project Areas that have multiple stakeholders living within the Project Area, such as communities and *ejidos*. Risks of policy change are expected to be proportionally lower where a greater proportion of the population living within the Project Aarea benefit from the project.

Table 11.4. Social Risk

Identification of Risk	Contribution to Reversal Risk Rating
Non-communal land	**0%**
What percentage of the total population living within the project area will benefit financially from the project?	
0 – 20%	**30%**
21 – 40%	**15%**
41 – 60%	**6%**
61 – 80%	**1%**
81%>	**0**

11.2.4.1.4 Governance Risk

Governance risk is the risk of inconsistent application of policies related to land use and benefit-sharing. This risk applies only to communally-owned lands, such as communities and *ejidos*. A project with good governance is less likely to have a reversal because the project is consented and accepted.

Table 11.5. Governance Risk 1

Identification of Risk	Contribution to Reversal Risk Rating
Non- Communal Land	**0%**
Number of General Assemblies each year	
1	**6%**
2	**1%**
>2	**0%**

Table 11.6. Governance Risk 2

Identification of Risk	Contribution to Reversal Risk Rating
Non-Communal Land	**0%**
The *ejido*/community has approved rules addressing forest carbon projects	
Yes	**0%**
No	**5%**

11.2.4.1.5 Association Risk

When a project joins an association, the risk for reversals lowers due to the commitments with other members of the association. The risk of an Avoidable Reversal is expected to increase with time as opportunity costs increase or as new generations seek value from forestlands. Opportunities to form associations will increase as more projects participate.

Table 11.7. Association Risk

Applies to all types of projects.

Identification of Risk	Contribution to Reversal Risk Rating	
	Yes	No
Is the project part of an Association as of 2015? (Yes/No)	**0%**	**0%**
Is the project part of an Association as of 2020? (Yes/No)	**0%**	**10%**
Is the project part of an Association as of 2025? (Yes/No)	**0%**	**25%**

11.2.4.2 Summarizing the Risk Analysis and Determining the Distribution of Credits

Use the excel table provided [will be provided on the Mexico Forest Protocol webpage prior to implementation of the protocol] to summarize the Forest Project reversal risk rating. As indicated above, projects developed under a private property ownership regime that sign a PIA agreement with the Reserve where land is set up as guarantee are exempt of this exercise and have 0 risk points.

11.2.4.3 Completing the Risk Rating Analysis for Distribution of Credits

Credits that are net of confidence deductions, contributions to the unavoidable risk buffer pool, and leakage adjustments, are distributed to the Forest Owners account on a schedule that is determined by the avoidable risks.

Equation 11.1. Project Distribution of Credits

The credit distribution in the current year is based on the following formula:

Initial distribution$_{Year\ X}$	=	Total Net CRTs$_{Year\ X}$ **x** ((1 – Land Tenure Risk1 %) **x** (1 – Land Tenure Risk 2 %) **x** (1 – Land Tenure Risk 3 %) **x** (1 – Management Risk %) **x** (1 – Social Risk %) **x** (1 – Governance Risk 1 %) **x** (1 – Governance Risk 2%) **x** (1 – Association Risk))
Where,		
Total Net CRTs$_{Year\ X}$	=	CRTs net of confidence deductions, leakage adjustments, and contributions to the unavoidable risk buffer pool

Distribution of remaining Total Net CRTs is based on the following formula:

Subsequent distribution on an annual basis	=	(Total Net CRTs$_{Year\ x)}$ – Initial Distribution$_{Year\ X}$)/50

11.2.5 About the Buffer Pool

The Buffer Pool is a holding account for Forest Project CRTs, which is administered by the Reserve. All Forest Projects must contribute a percentage of CRTs to the Buffer Pool any time they are issued CRTs for verified GHG reductions and removals. Each Forest Project contribution is determined by a project-specific risk rating, as described in Section 11.2.5. If a Forest Project experiences an Unavoidable Reversal of GHG reductions and removals (as defined in Section 11.1.1), the Reserve will retire a number of CRTs from the Buffer Pool equal to the total amount of carbon that was reversed (measured in metric tons of CO_2-equivalent). The Buffer Pool therefore acts as a general insurance mechanism against Unavoidable Reversals for all Forest Projects in Mexico registered with the Reserve.

Forest Owners may be able to reduce the risk rating through actions that lower the risk profile of their project. These actions and lower risk rating must be verified. Once verified, if a Forest Project's risk rating declines, the Reserve may distribute previously withheld Buffer Pool CRTs to the Forest Owner in proportion to the reduced risk. Similarly, however, the Reserve may require additional contributions to the Buffer Pool if the risk rating increases, to ensure that all CRTs (including those issued in prior years) are properly insured.

11.2.5.1 Determination of Risk Rating for the Buffer Pool

Forest Owners must derive a risk rating for their Forest Project using the worksheets provided by the Reserve.

11.2.5.1.1 Natural Disturbance Risk

Natural disturbances can pose a significant risk to the permanence of GHG reductions and removals. Natural disturbance risks are only partially controllable by management activities. Management activities that improve resiliency to wildfire, insects, and disease can reduce these risks. Management activities that shift harvesting practices from live sequestering trees to trees that have succumbed to natural disturbances reduce or negate the reversal depending on the size and location of the disturbance.

A. Natural Disturbance Risk I – Wildfire

A wildfire has the potential to cause significant reversals, especially in certain carbon pools. These risks can be reduced by certain techniques including reducing surface fuel loads, removing ladder fuels, adding fuel breaks, and reducing stand density. However, these techniques cannot reduce emission risk to zero because all landowners will not undertake fuel treatments, nor can they prevent wildfire from occurring.

B. Natural Disturbance Risk II – Disease or Insect Outbreak

A disease or insect outbreak has the potential to cause a reversal, especially in certain carbon pools.

C. Natural Disturbance Risk III – Other Episodic Catastrophic Events

A major wind-throw event (hurricane, tornado, high wind event) has the potential to cause a reversal, especially in certain carbon pools.

11.2.5.2 Summarizing the Risk Analysis and Contribution to Buffer Pool

Use the table below to summarize the Forest Project reversal risk rating.

Table 11.8. Project Contribution to the Buffer Pool Based on Risk

Risk Category	Contribution from Risk Descriptions Above
	Source
Wildfire	Calculated Risk from UMAFOR worksheet
Disease or Insect Outbreak	Calculated Risk from UMAFOR worksheet
Other Catastrophic Events	Calculated Risk from UMAFOR worksheet

11.2.5.3 Completing the Risk Rating Analysis

Equation 11.2. Project Unavoidable Reversal Risk Rating

Credits to Buffer Pool	=	100% - ((1 – Wildfire Risk%) **x** (1 – Disease Risk%) **x** (1 - Other Events Risk%))

11.3 Disposition of Forest Projects after a Reversal

If a reversal lowers the Forest Project actual standing live carbon stocks below its approved baseline standing live carbon stocks, the Forest Project will automatically be terminated. (In this circumstance, the original approved baseline for the project would no longer be valid.) If the Forest Project is automatically terminated due to an Unavoidable Reversal, another project may be initiated and submitted to the Reserve for registration on the same Project Area. New projects may not be initiated on the same Project Area if the Forest Project is terminated due to an Avoidable Reversal.

If the Forest Project has experienced a reversal and its actual standing live carbon stocks are still above the approved baseline levels, it may continue without termination as long as the reversal has been compensated. The project must continue contributing to the Buffer Pool in future years based on its verified risk rating.

12 Project Reporting

The development of a Forest Project requires that a number of forms and reports be submitted to the Reserve at different phases of project development and for the initial site verification. All reports that reference carbon stocks must be submitted with the oversight of a professional forester. This requirement does not preclude the project's use of technicians or other unlicensed/uncertified persons working under the supervision of the professional forester.

The following reports must be verified and approved by the Reserve prior to a project receiving its initial credits.

- Project Submittal form (available on the Reserve's website)
- Signed Attestation of Title form (available on the Reserve's website)
- Signed Attestation of Regulatory Compliance form (available on the Reserve's website)
- Signed Attestation of Voluntary Implementation form (available on the Reserve's website)
- Verification Statement and Report (developed and produced by the verifier in accordance with the verification guidelines on the Mexico Forest Protocol webpage [to be developed])
- Project Implementation Agreement (available on the Reserve's website)
- Project Design Document (described below)

12.1 Forest Project Design Document

The Forest Project Design Document (PDD) is a standard document for reporting required information about a project. The document is submitted at the initial verification. The following information must be reported in the PDD.

SECTION 1 – PROJECT GENERAL DESCRIPTION

1.1 Title of the proposed project
1.2 Description of the primary objectives of the project
1.3 Project participants: List project participants and parties involved and contact information.
1.4 Description of project activities to be developed within the project's boundaries
1.5 Project location
1.5.1 State and municipality
1.5.2 Name of *ejido*, community or private property
1.5.3 Descriptions and maps of the Project Area boundaries that include:
a. Public and private roads (map)
b. Towns (map)
c. Major watercourses (map)
d. Topography (map)
1.6 Concise description of the following current environmental conditions of the area:
a. Precipitation patterns
b. Temperature patterns
c. Ecosystems
d. Important flora and fauna

SECTION 2 – ELIGIBILITY CRITERIA

2.1 Description of legal title to the land and current land tenure (to include list of required documentation as specified in Section 3.4)
2.2 Carbon portion of forest management plan
2.3 Description of how the project complies with the social and environmental safeguards
2.4 Description of project start date

SECTION 3 – ASSESSMENT AND DEMONSTRATION OF ADDITIONALITY

3.1 Description of how the project will comply with the legal requirement test
3.2 Description of how the project will comply with the performance test

SECTION 4 – INVENTORY AND BASELINE

4.1 Stratification of current land use and forest cover classes: provide a map and a matrix displaying each land use and forest cover class by hectares
4.2 Map of plot locations and description of plots selected for sampling
4.3 Names and responsibilities of personnel conducting inventory sampling
    4.3.1 Carbon stocks by land use and forest cover class with confidence statistics for each stratum
    4.3.2 Description of the annual height and diameter increment by stratum
    4.3.3 Description of quality control incorporated in sampling effort
    4.3.4 Calculation methodology for determining metric tonnes per hectare for each of the included carbon pools
    4.3.5 Calculation of onsite carbon tonnes in reported pools
    4.3.6 Inventory confidence statistics for entire project estimate
4.4 Calculation of Forest Project baseline carbon stocks
    4.4.1 Identification of management unit (UMAFOR) and historical trend
    4.4.2 Application of project-level considerations to the regional trend estimates
    4.4.3 Baseline onsite carbon stocks: must be portrayed in a graph depicting time in the x-axis and carbon tonnes in the y-axis. The graph should be supported with written characterizations that explain any annual changes in baseline carbon stocks over time
    4.4.4 The Forest Owner's estimate of carbon that will be stored long term in harvested wood products in the baseline
4.5 Assessment of Secondary Effects
4.6 Proposed measures to be implemented to minimize potential leakage
4.7 Description of how management activities for the project have or will lead to increased carbon stocks in the Project Area compared to the baseline

SECTION 5 – APPROACH FOR ADDRESSING NON-PERMANENCE

5.1 Status of forest management program
5.2 Calculation of the project Avoidable Reversal risk rating for purposes of determining the distribution of CRTs
5.3 Description of the society/association and status if applicable
5.4 Calculation of the project's Unavoidable Reversal risk rating for purposes of determining contributions to the buffer pool

12.2 Transparency and Record Keeping

The Reserve requires data transparency for all Forest Projects, including data that displays current carbon stocks, reversals, and verified GHG reductions and removals, as well as verification reports. For this reason, all non-confidential project data reported to the Reserve will be publicly available on the Reserve's website.

All documents and forms related to the project must be retained by the Forest Owner for the duration of the project. This information may be requested by the verification body or the Reserve at any time.

13 Project Monitoring

Monitoring is the process of regularly collecting, updating, and reporting data related to a project's performance. Monitoring activities are prepared and submitted to the Reserve by the Forest Owner on an annual basis. Monitoring is required for a period of 100 years following the final issuance of CRTs to a project for quantified GHG reductions or removals.

The following forms and reports are required from Forest Owners each time a Forest Project is verified in order for the Reserve to issue CRTs for quantified GHG reductions.

- Project Calculation Worksheet
- Signed Attestation of Title form (available on the Reserve's website)
- Signed Attestation of Regulatory Compliance form (available on the Reserve's website)
- Signed Attestation of Voluntary Implementation form (available on the Reserve's website)
- Verification Statement and Report (developed and produced by the verifier in accordance with the verification guidelines on the Mexico Forest Protocol webpage [to be developed])

Monitoring activities do not necessitate that sample plots be re-measured annually. Monitoring consists primarily of updating and reporting a project forest carbon inventory. The process for updating inventories is described in Section 8.3. The updated inventory is reported to the Reserve on an annual basis using the Reserve's Monitoring Calculation Worksheet, which is found in the reference file for the protocol. The following items are included in the Monitoring Worksheet:

1. An updated estimate of the current year's carbon stocks.
2. The appropriate confidence deduction for the forest carbon inventory, as determined at the last full site visit verification for the project. The same confidence deduction must be used in interim years between verification site visits.
3. An estimate of current-year carbon stocks associated with harvested trees and associated carbon stocks in harvested wood products.
4. The baseline carbon stock estimates for the current year.
5. An estimate of Secondary Effects.
6. The project Unavoidable Reversal risk rating. The risk rating is updated during each full site visit verification. Between verification site visits, the project reversal risk rating does not change.
7. The project Avoidable Reversal risk rating. The risk rating is updated during each full site visit verification. Between verification site visits, the project reversal risk rating does not change.
8. A preliminary calculation of the project Buffer Pool contribution.
9. A calculation of total net GHG reductions and removals (or reversals) for the year.

Monitoring reports must also include a description of any changes in the status of the Forest Owner. If a reversal has occurred during the previous year, the report must provide a written description and explanation of the reversal, whether the Reserve classified the reversal as avoidable or unavoidable, and the status of compensation for the reversal.

14 Project Verification

Verification is the inspection and review of all sampling and quantification activities and reported data. Verification is conducted by third-party verification bodies that are responsible for ensuring that all requirements in the protocol are adhered to and that reported data meets the accuracy requirements defined in the protocol. Verification activities occur both on the project site and remotely. Onsite verification activities include inspection of stratification activities and plot measurements. Remote verification activities include reviewing project documentation related to eligibility criteria, calculation methods, baseline, and leakage determination. A detailed guide of verification activities is provided through the MFP webpage [to be developed].

All projects must undergo an initial verification to ensure that the PDD includes the required information to develop the project. The initial verification will check to ensure that inventory and baseline development are consistent with the protocol requirements and that the project meets the eligibility requirements.

Subsequent to the initial site visit verification, each project is subject to third-party site visit verification on a random basis once within a 10-year verification period. The subsequent verification efforts will focus largely on inventory data and reporting accuracy. The random selection will be based on selecting a number 0 – 9 at the beginning of each calendar year. Project identification numbers that terminate with the number selected must be verified in that calendar year. Any number selected during the 10-year period cannot be selected again until the subsequent 10-year period, eliminating the chance that some projects will undergo multiple site visit verifications while others have none within a 10-year period.

The verification of annual monitoring reports is a separate activity from site visit verification and is referred to as a desktop verification. The desktop verification focuses on ensuring that the reported data are within bounds of expected carbon flux, given forest growth and harvest/disturbance, and that there are no errors in transcription in the project's calculation worksheet. Additionally, the verifier will check to ensure that any inventory and/or calculation corrections identified during site visit verifications have been made. Verification findings can result in modifications to any previously reported and verified estimates.

Desktop verifications will be conducted randomly and will occur at least once for each project on a five-year basis, using the same procedure described for site visit verifications with two numbers randomly selected annually. The Reserve reviews each monitoring report annually. This review may initiate a desktop verification if the reported data appear to exceed expectations, at the Reserve's discretion.

14.1 Reporting and Verification Cycle

Forest Owners must have project data verified with a site visit by an approved third-party verification body at least once every 10-year verification cycle.

All Forest Projects must complete site visit verification within 30 months of being submitted to the Reserve. For any required verifications thereafter, projects must be verified within 6 months of the end of the reporting period being verified. It is possible that a project's verification period will cover up to 240 months, since the selection of projects for site visit verification occurs randomly on a 10-year basis. Every project must receive a site visit verification once every 10-year cycle. Similarly, it is possible that a project's verification period will cover up to 120 months for a desktop verification, since desktop verifications are selected randomly on a 5-year basis.

The period of time over which GHG reductions or removals are verified is referred to as the "verification period." All projects are considered verified through the randomized process of verification whether they were selected for site visit verification, desktop verification, or neither, provided the projects that were selected achieve successful verification reports. If more than 10% of the projects randomly selected fail to be successfully verified, the Reserve will randomly select another batch of projects for verification. This will continue until at least 90% of the projects selected receive successful verification reports. The end date of any verification period must correspond to the end date of a reporting period.

A Forest Project is considered automatically terminated if the Forest Owner chooses not to report data and undergo verification at required intervals.

14.1.1 Reporting Period Duration and Cycle

A "reporting period" is a period of time for which a Forest Owner quantifies and reports GHG reductions and removals (i.e. the length of time covered by a monitoring report). Reporting periods for Forest Projects have a required duration of 12 months, with two exceptions:

1. A Forest Project's first reporting period (i.e. the reporting period that precedes initial verification) may be any length of time, lasting from the project start date to any date prior to the initial verification.
2. A Forest Project's second reporting period may be less than 12 months, but no greater than 12 months.

All reporting periods after the second reporting period must be 12 months in duration and cover the same calendar period each year. Reporting periods must be contiguous, i.e. there must be no gaps in reporting during the crediting period of a Forest Project once the first reporting period has commenced.

If material issues arise during verification of a participating project, the Forest Owner will need to independently address the issues and required corrective actions. These are described in the verification guidance for this protocol and the Reserve Verification Program Manual (http://www.climateactionreserve.org/how/verification/verification-program-manual/).

The Forest Owner is responsible for selecting a single verification body for all enrolled projects in any given year or set of years. The same verification body may be used up to five consecutive years. Verification bodies must pass a conflict-of-interest review against all enrolled Forest Owners.

While Forest Owners may depend on consultants or cooperatives to complete project requirements, responsibility for monitoring reports and verification compliance is assigned to the Forest Owner.

14.1.2 Issuance and Vintage of CRTs

The Reserve will issue CRTs for quantified GHG reductions and removals that have been verified through either site visits or desktop verifications.

In general, vintages will be assigned to CRTs by *reporting period* according to the proportion of each reporting period that falls within a particular calendar year. See an example below.

Project Start Date	**First Reporting Period**		**Second Reporting Period**	
August 15, 2012	February 15, 2013		February 15, 2014	
	1,000 Credits Verified		2,000 Credits Verified	
	Vintage Credits at Verification		**Vintage Credits at Verification**	
	2012	**2013**	**2013**	**2014**
	137 days in 2012/ 185 total days = 74%	46 days in 2013 / 185 total days = 26%	319 days in 2013 / 365 days = 92%	46 days in 2014 / 365 days = 8%
Vintage	2012	2013		2014
Credits	740	260	1,840	160

15 Glossary of Terms

Above-Ground Live Biomass	Live trees including the stem, branches, and leaves or needles, brush and other woody live plants above ground.
Additionality	A criterion for forest project eligibility. A forest project is "additional" if it would not have been implemented without incentives provided by the carbon offset market, including the incentives created through the Climate Action Reserve program. Under this protocol, forest projects meet the additionality criterion by demonstrating that they pass a legal requirement test and a performance test, as described in Section 4, and by achieving GHG reductions and removals quantified against an approved baseline, determined according to the requirements in Section 9.
Allometric Equation	An equation that utilizes the genotypical relationship among tree components to estimate characteristics of one tree component from another. Allometric equations allow the below-ground root volume to be estimated using the above-ground bole volume.
Asesor Tecnico Forestal	Individuals and/or corporations who voluntarily complied with the procedures and requirements of the standard published in the Official Journal of the Federation (*Diario Oficial de la Federacion*) for CONAFOR. A list of forest technical advisors can be found in http://www.conafor.gob.mx/portal/index.php/component/content/article/34-notas/157-asesores-tecnicos-forestales-2011.
Avoidable Reversal	An avoidable reversal is any reversal that is due to the forest owner's negligence, gross negligence or willful intent, including harvesting, development, and harm to the project area.
Baseline	The level of GHG emissions, removals, and/or carbon stocks at sources, sinks, and reservoirs affected by a forest project that would have occurred under a "business as usual" scenario. For the purposes of this protocol, a project baseline must be estimated following standard procedures in Section 9.
Biological Emissions	For the purposes of this protocol, biological emissions are GHG emissions that are released directly from forest biomass, both live and dead, including forest soils. For forest projects, biological emissions are deemed to occur when the reported tonnage of onsite carbon stocks, relative to baseline levels, declines from one year to the next.
Biomass	The total mass of living organisms in a given area or volume; recently dead plant material is often included as dead biomass.[27]
Bole	A trunk or main stem of a tree.
Buffer Pool	The buffer pool is a holding account for forest project CRTs administered by the Reserve. It is used as a general insurance mechanism against unavoidable reversals for all forest projects registered with the Reserve. If a forest project experiences an

[27] (Metz, Davidson, Swart, & Pan, 2001)

	unavoidable reversal of GHG reductions and removals (as defined in Section 11.2.5), the Reserve will retire a number of CRTs from the buffer pool equal to the total amount of carbon that was reversed (measured in metric tons of CO_2-equivalent).
Business As Usual	The activities, and associated GHG reductions and removals that would have occurred in the project area in the absence of incentives provided by a carbon offset market
Carbon Pool	A reservoir that has the ability to accumulate and store carbon or release carbon. In the case of forests, a carbon pool is the forest biomass, which can be subdivided into smaller pools. These pools may include above-ground or below-ground biomass or harvested wood products, among others.
Climate Reserve Tonne (CRT)	The unit of offset credits used by the Climate Action Reserve. Each Climate Reserve Tonne represents one metric ton of CO_2 reduced or removed from the atmosphere.
Deforestation	The conversion from forestland use to another land use.
Degradation	From the point of view of climate change policy and the IPCC, it refers to loss of carbon stock within forests that remain forests.[28]
Forest Management	The commercial or noncommercial growing and harvesting of forests.
Forest Owner	A forest owner is an *ejido*, a community or an individual that owns forestland.
Forest Project	A planned set of activities designed to increase removals of CO_2 from the atmosphere, or reduce or prevent emissions of CO_2 to the atmosphere, through increasing and/or conserving forest carbon stocks.
Forest Project Design Document (PDD)	A standard document for reporting required information about a forest project. The Forest Project Design Document must be submitted for review by a verification body and approved by the Reserve before the forest project can be registered with the Reserve (see Section 12.1).
Forestland	Land spanning more than 0.5 hectares with trees higher than 5 meters and a canopy cover of more than 10 percent, or trees able to reach these thresholds in situ and that allows for management of one or more forest resources, including timber, fish and wildlife, biodiversity, water quality, recreation, aesthetics, and other public benefits.
GHG Assessment Boundary	The GHG Assessment Boundary defines all the GHG sources, sinks, and reservoirs that must be accounted for in quantifying project GHG reductions and removals (Section 6). The GHG Assessment Boundary encompasses all the GHG sources, sinks, and reservoirs that may be significantly affected by forest project activities, including forest carbon stocks, sources of biological CO_2 emissions, and

[28] UNFCCC, 2008.

	mobile combustion GHG emissions.
Greenhouse Gas (GHG)	Gas that contributes to global warming and climate change. For the purposes of this protocol, GHGs are the six gases identified in the Kyoto Protocol: carbon dioxide (CO_2), nitrous oxide (N_2O), methane (CH_4), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride (SF_6).
Listed	A forest project is considered "listed" when the forest owner has created an account with the Reserve, submitted the required Project Submittal form and other required documents, paid the project submission fee, and the Reserve has approved and accepted the project for listing.
Litter	Any piece(s) of dead woody material from a tree, e.g. dead boles, limbs, and large root masses, on the ground in forest stands that is smaller than material identified as lying dead wood.
Lying Dead Wood	Any piece(s) of dead woody material from a tree, e.g. dead boles, limbs, and large root masses, on the ground in forest stands. Lying dead wood is all dead tree material with a minimum average diameter of 13 cm and a minimum length of 2.5 m. Anything not meeting the measurement criteria for lying dead wood will be considered litter. Stumps are not considered lying dead wood.
Metric ton or "tonne" (MT)	A common international measurement for the quantity of GHG emissions, equivalent to about 2204.6 pounds or 1.1 short tons.
Non-Forest Cover	Land with a tree canopy cover of less than 10 percent.
Non-Forest Land Use	An area managed for residential, commercial or agricultural uses other than for the production of timber and other forest products, or for the maintenance of woody vegetation for such indirect benefits as protection of catchment areas, wildlife habitat, or recreation.
Onsite Carbon Stocks	Carbon stocks in living biomass, dead biomass, and soils within the project area.
Permanence	The requirement that GHGs must be permanently reduced or removed from the atmosphere to be credited as carbon offsets. For forest projects, this requirement is met by ensuring that the carbon associated with credited GHG reductions and removals remains stored for at least 100 years.
Primary Effects	The forest project's intended changes in carbon stocks, GHG emissions or removals.
Project Area	The area inscribed by the geographic boundaries of a forest project, as defined following the requirements in Section 2 of this protocol. Also, the property associated with this area.
Project Life	Refers to the duration of a forest project and its associated monitoring and verification activities, as defined in Sections 13 and 14.
REDD+	In policy texts currently in discussion under the UNFCCC, REDD+ is

	understood to include reduced deforestation and degradation, forest enhancement, sustainable management of forest, and forest conservation.
Reduction	The avoidance or prevention of an emission of CO_2 (or other GHG). GHG reductions are calculated as gains in carbon stocks over time relative to a forest project's baseline (also see Removal).
Registered	A forest project becomes registered with the Reserve when it has been verified by a Reserve-approved and ISO-accredited verification body, all required documentation (see reference document on the Mexico Forest Protocol webpage [to be developed]) has been submitted by the forest owner to the Reserve for final approval, and the Reserve approves the project.
Removal	Sequestration ("removal") of CO_2 from the atmosphere caused by a forest project. GHG removals are calculated as gains in carbon stocks over time relative to a forest project's baseline (also see Reduction).
Reservoir	Physical unit or component of the biosphere, geosphere or hydrosphere with the capacity to store or accumulate carbon removed from the atmosphere by a sink, or captured from a source.
Retire	To retire a CRT means to transfer it to a retirement account in the Climate Action Reserve's software system. Retirement accounts are permanent and locked, so that a retired CRT cannot be transferred or retired again.
Reversal	A reversal is a decrease in the stored carbon stocks associated with quantified GHG reductions and removals that occurs before the end of the project life. Under this protocol, a reversal is deemed to have occurred if there is a decrease in the difference between project and baseline onsite carbon stocks from one year to the next, regardless of the cause of this decrease (i.e. if the result of (Δ AC_{onsite} - Δ BC_{onsite}) in Equation 7.1 is negative).
Safeguard	Policy or procedure that identifies, evaluates, minimizes, and mitigates direct and indirect impacts to communities and ecosystems.
Secondary Effects	Unintended changes in carbon stocks, GHG emissions, or GHG removals caused by the forest project.
Sequestration	The process of increasing the carbon (or other GHGs) stored in a reservoir. Biological approaches to sequestration include direct removal of CO_2 from the atmosphere through land-use changes[29] and changes in forest management.
Significant Disturbance	Any natural impact that results in a loss of least 20 percent of the above-ground live biomass that is not the result of avoidable or grossly negligent acts of the forest owner.
Sink	Physical unit or process that removes a GHG from the atmosphere.

[29] (Metz, Davidson, Swart, & Pan, 2001)

Source	Physical unit or process that releases a GHG into the atmosphere.
Standing Dead Carbon Stocks	The carbon in standing dead trees. Standing dead trees include the stem, branches, roots, or section thereof, regardless of species, with minimum diameter (breast height) of five inches and a minimum height of 15 feet. Stumps are not considered standing dead stocks.
Standing Live Carbon Stocks	The carbon in the live tree pool. Live trees include the stem, branches, roots, and leaves or needles of all above-ground live biomass, regardless of species, with a minimum diameter (breast height) of 13 cm and a minimum height of 4.5 m (inventory methodology must include all trees 13 cm and greater).
Stocks (or Carbon Stocks)	The quantity of carbon contained in identified carbon pools.
Submitted	The Reserve considers a forest project to be "submitted" when all of the appropriate forms have been submitted and uploaded to the Reserve software system, and the forest owner has paid a project submission fee.
Tree	A woody perennial plant, typically large and with a well-defined stem or stems carrying a more or less definite crown with the capacity to attain a minimum diameter at breast height of 13 cm and a minimum height of 4.5 m.[30]
UMAFOR	CONAFOR has developed units of forest management (UMAFORs) that serve as assessment areas for the protocol for the purposes of calibrating protocol guidance to distinct geographic areas. UMAFORS were developed in 2008 as a planning tool for a host of forest management and informational uses. UMAFORS are geographically distinct assemblages of natural forest communities that are coincident with municipality and state boundaries. Standardized estimates of forest carbon trends are developed using national inventory data for each forested UMAFOR. There are currently 218 UMAFORs in Mexico. The information presented for each UMAFOR can be found in Appendix B. Figure 9.1 displays the UMAFORs in Mexico.
Unavoidable Reversal	An unavoidable reversal is any reversal not due to the forest owner's negligence, gross negligence or willful intent, including wildfires or disease that are not the result of the forest owner's negligence, gross negligence or willful intent.
Verification	The process of reviewing and assessing all of a forest project's reported data and information by an ISO-accredited and Reserve-approved verification body, to confirm that the forest owner has adhered to the requirements of this protocol.
Verification Period	The period of time over which GHG reductions or removals are verified. A verification period may cover multiple reporting periods. The end date of any verification period must correspond to the end date of a reporting period.

[30] (Helms 1998)

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Appendix A Definition, Roles, and Requirements of an Association

A.1 Extent of the Association

Participants in an association can include *ejidos*, communally-owned lands or other forms of private ownership, and must be constituted under the Mercantile Law or Civil Code.
Forest Owners are ultimately responsible for submitting all required forms and complying with the terms of the MFP, including management of the flow of ongoing monitoring and verification reports to the Reserve

A.2 Number of Landowners

An association must consist of two or more individual Forest Projects. There is no limit to the number of projects.

A.3 Forming an Association

An association must also submit an "Association Document" that includes the following information:

1. The name, description, and contact information of an association.
2. A list of initial Forest Owner participants. This can be updated as new Forest Owner participants enroll.
3. The contract and bylaws that are developed when creating the association.

The association documentation will be available to the public on the Reserve's website, and will require approval by Reserve staff. It must be modified any time a participant joins or leaves an association (triggered by the submission of an "Association Entry" or "Association Exit" form as described below).

A.4 Joining an Association

The rules to join an association will be stipulated in the contractual agreement and bylaws of the association. After legally joining an association, the Forest Owners will be required to submit an "Association Entry" form to the Reserve. This form may be included at the time of project submittal, or at any time thereafter. This form will require Reserve staff approval and will contain:

1. Statement that the Forest Owner joined a specific association and all legal forms to prove so. For communal land this also includes the "*Acta de Asamblea.*"[31] A participating project may only be part of one association.
2. Copies of any contract(s) between Forest Owner and association.

A.5 Leaving an Association

The rules to leave an association will be stipulated in the contractual agreement and bylaws. After legally leaving an association, the Forest Owners will be required to submit an "Association Exit" form. This form includes:

[31] *Acta de Asamblea* is a legal document where all the majority (50%+1) of the members of *ejido*/community sign to agree on an accord.

1. A statement that the Forest Owner has fulfilled terms of contract with a current association and intends to withdraw a project from a specific association. In the case of *ejidos* and communities, the Assembly Act that states it.
2. The Forest Owner has a grace period of two years to bring their project to the standards of the renewed status of the current association or as a standalone project. No credits will be issued after the two-year grace period until the project is verified under updated standards. Following an additional 24-month period of inactivity, the project will be terminated and must compensate for issued CRTs.

A.6 Association Dissolution

The rules for dissolution will be stipulated in the contractual agreement and bylaws of the association.

A.7 Accounts on the Reserve and Transfers of CRTs

Each participating project must meet all eligibility requirements, and determine a baseline specific to that project. The Forest Owner is required to contribute to the Reserve Buffer Pool based on the level of risk for Unavoidable Reversals and compensate for reversals as described in Section 11.2 of the MFP. The Forest Owner is responsible for meeting all reporting requirements described in Section 12 of the MFP.

Forest Owners must maintain a Reserve account to which CRTs will be transferred. All participating projects are identified in the Reserve software as a part of a named association along with the contact information of the legal entity.

Appendix B UMAFORs

Key_UMAF	Name	State
0101	Sierra Laurel	Aguascalientes
0102	Sierra fría	Aguascalientes
0103	El Llano	Aguascalientes
0201		Baja California
0202	SIERRA DE JUÁREZ	Baja California
0203	SAN PEDRO MÁRTIR	Baja California
0204	DESIERTO SUR	Baja California
0301	MULEGE	Baja California Sur
0302	COMONDU	Baja California Sur
0303	SIERRA LA LAGUNA	Baja California Sur
0401	UNIÓN REGIONAL DE SILVICULTORES DEL SUR DE CAMPECHE AC	Campeche
0402		Campeche
0403	ASOCIACIÓN DE SILVICULTORES "PAKALCHE"	Campeche
0404	PRODUCTORES FORESTALES DE CALAKMUL, A.C.	Campeche
0405	UNIÓN DE SILVICULTORES DEL SUR DE CAMPECHE	Campeche
0406	ASOCIACIÓN REGIONAL DE SILVICULTORES PAKAL CH╔, A.C.	Campeche
0701	centro	Chiapas
0702	altos	Chiapas
0703	fronteriza	Chiapas
0704	frailesca	Chiapas
0705	istmo costa	Chiapas
0706	norte	Chiapas
0707	sierra	Chiapas
0708	soconusco	Chiapas
0709	Asociai¾n Regional de Silvicultores Palenque A.C.	Chiapas
0710	selva	Chiapas
0711	selva	Chiapas
0801	Babicora casas grandes	Chihuahua
0802	El largo madera	Chihuahua
0803	Occidente de chihuahua	Chihuahua
0804	Baja tarahumara	Chihuahua
0805	San Juanito	Chihuahua
0806	Morelos	Chihuahua
0807	Guachochi	Chihuahua
0808	Guadalupe y calvo	Chihuahua
0809	Balleza	Chihuahua
0810	Cuenca del río santa Maria	Chihuahua
0811	Centro de Chihuahua	Chihuahua

0812	Semidesierto norte	Chihuahua
0813	Semidesierto centro	Chihuahua
0814	Semidesierto sur	Chihuahua
0501	UMAFOR Frontera	Coahuila
0502	UMAFOR Laguna	Coahuila
0503	UMAFOR Centro este	Coahuila
0504	UMAFOR Sureste	Coahuila
0505	UMAFOR Desierto oeste	Coahuila
0601	Cerro Grande	Colima
0602	Volcán-Costa	Colima
0901	Uni¾n de Comisariados y Ex comisariados del Sur poniente del D.F A.C	Distrito Federal
0902	Sociedad de Ejidos y Comunidades Forestales de Tlalpan A.C	Distrito Federal
0903	Asociaci¾n Regional de Silvicultores de Comunidades y Ejidos de Halacachtepec y Coyotliapa A.C	Distrito Federal
0904	Asoaciaci¾n Regional de Silvicultores de Xochimilco del D.F A.C.	Distrito Federal
0905	Es la Zona Urbana del DF	Distrito Federal
1001		Durango
1002	ASOCIACIÓN DE SILVICULTORES SIERRA NOROESTE	Durango
1003	SILVICULTORES DEL NORTE DE TAMAZULA	Durango
1004	TOPIA-CANELAS	Durango
1005	SANTIAGO PAPASQUIARO Y ANEXOS	Durango
1006	UNIÓN DE PERMISIONARIOS DE LA UNIDAD DE CONSERVACIÓN Y DESARROLLO FORESTAL No 4 "LA VICTORIA-MIRAVALLES"	Durango
1007	UNIDAD DE MANEJO FORESTAL 1007	Durango
1008	EL SALTO	Durango
1009	SIERRA SUR DE DURANGO	Durango
1010	LA FLOR	Durango
1012	REGIÓN SURESTE	Durango
1013	SEMIDESIERTO DE DURANGO	Durango
1011	REGIÓN INDÍGENA SUR	Durango
1501	Tejupilco	Estado de México
1502	Texcaltitlan	Estado de México
1503	Temascaltepec	Estado de México
1504	ORGANIZACIÓN REGIONAL SILVÍCOLA Y AGROPECUARIA BIOSFERA SUR A. C.	Estado de México
1505	Valle de Bravo	Estado de México
1506	Valle de Toluca	Estado de México
1507	Amanalco	Estado de México
1508	San José del Rinc¾n	Estado de México
1509	Jilotepec	Estado de México

1510	Tequisquiac	Estado de México
1511	Agua Bendita	Estado de México
1512	Tlalmanalco	Estado de México
1513	Jilotzingo	Estado de México
1101	UNIÓN DE PRODUCTORES FORESTALES DEL NORESTE DEL ESTADO DE GUANAJUATO A.C.	Guanajuato
1102	ASOCIACIÓN DE PRODUCTORES FORESTALES Y AGROPECUARIOS DEL ESTADO DE GUANAJUATO, A. C.	Guanajuato
1103	UNIDAD DE MANEJO FORESTAL BAJÍO-SUR A.C.	Guanajuato
1201	Asociaci¾n Regional de Silvicultores EL Huixteco de la Zona Norte de Guerrero, S. C.	Guerrero
1202	Uni¾n de Comunidades y Ejidos de la Monta±a Guerrerense, S. R. L.	Guerrero
1203	Asociaci¾n de Silvicultores para la Conservaci¾n de la Biodiversidad, A. C. (Regi¾n Costa Grande-Tierra Caliente del Estado de Guerrero)	Guerrero
1204		Guerrero
1205	Uni¾n de Silvicultores de la Regi¾n Centro de Guerrero, S. C.	Guerrero
1301	Asociación de Silvicultores de la Región Sierra y Huasteca	Hidalgo
1302	Asociación de Productores Forestales de la Región Zacualtipan-Molango A. C.	Hidalgo
1303	Asociación de Productores Forestales de la Región Pachuca - Tulancingo, A.C.	Hidalgo
1304	Asociación de Silvicultores de la Región del Valle del Mezquital A. C.	Hidalgo
1305	Asociación de Silvicultores de la Región Tlahuiltepa-Jacala A. C.	Hidalgo
1401	Silvicultores del Norte de Jalisco A.C.	Jalisco
1402	Silvicultores de los Altos A.C.	Jalisco
1403	SILVICULTORES DE LA CIENEGA CENTRO A.C.	Jalisco
1404	ASOCIACIÓN DE SILVICULTORES DEL SUR-SURESTE DEL ESTADO DE JALISCO AC	Jalisco
1405	Asociación de Silvicultores de la Meseta de Tapalpa A.C.	Jalisco
1406	Asociación de Silvicultores de la Región Autlán	Jalisco
1407	Asociación Regional de ejidos de la Sierra de Quila	Jalisco
1408	Asociación Regional de Silvicultores de la Costa Sur del Estado de Jalisco	Jalisco
1409	Asociaci¾n Regional de silvicultores de Tequila A.C.	Jalisco
1410	Silvicultores Unidos de la Sierra Occidental de Jalisco A.C.	Jalisco
1601	UNIDAD REGIONAL DE MANEJO FORESTAL COTIJA-TINGUINDIN	Michoacán
1602	UNIDAD REGIONAL DE MANEJO FORESTAL BAJÍO MICHOACANO	Michoacán

1603	UNIDAD REGIONAL DE MANEJO FORESTAL AGUILILLA-VARALOSO	Michoacán
1604	UNIDAD REGIONAL DE MANEJO FORESTAL DEL CENTRO DE MICHOACÁN	Michoacán
1605	UNIDAD REGIONAL DE MANEJO FORESTAL ORIENTE DE MICHOACÁN	Michoacán
1606	UNIDAD REGIONAL DE MANEJO FORESTAL MARIPOSA MONARCA	Michoacán
1607	UNIDAD REGIONAL DE MANEJO FORESTAL MESETA PURÉPECHA	Michoacán
1608	UNIDAD REGIONAL DE MANEJO FORESTAL PÁTZCUARO TIERRA CALIENTE	Michoacán
1609	UNIDAD REGIONAL DE MANEJO FORESTAL SUR OCCIDENTE DE MICHOACÁN	Michoacán
1610	UNIDAD REGIONAL DE MANEJO FORESTAL TUMBISCATo ARTEAGA	Michoacán
1611	UNIDAD REGIONAL DE MANEJO FORESTAL CUENCA LERMA	Michoacán
1701	Unidad de Manejo Forestal de la Zona Norte de Morelos	Morelos
1702	Unidad de Manejo Forestal de la Zona Sur de Morelos	Morelos
1801	Asociación Regional de Silvicultores de Acaponeta, Huajicori y Del Nayar	Nayarit
1802	Asociación de Silvicultores de Marisma y Selva de Nayarit	Nayarit
1803	Asociación Regional de Silvicultores Sierra San Juan Vallejo	Nayarit
1804	Asociación de Silvicultores Forestales de La Yesca	Nayarit
1805	Asociación de Silvicultores de Ejidos, Comunidades y Predios Particulares Forestales de Nayarit	Nayarit
1901	Asociaci¾n de Silvicultores del Sur del Estado de nuevo Le¾n A.C.	Nuevo Le¾n
1902	Asociación de Silvicultores del Centro Sur de Nuevo Le¾n AC	Nuevo Le¾n
1903	Asociación de Silvicultores del Noreste de Nuevo Le¾n AC	Nuevo Le¾n
1904	Asociación de Silvicultores del Norte de Nuevo Le¾n AC	Nuevo Le¾n
2001		Oaxaca
2002	Consejo Regional de Recursos Naturales del Papaloapan, Oaxaca, A. C.	Oaxaca
2003	Comité Regional de Recursos Naturales Yautepec-Itsmo, A. C.	Oaxaca
2004		Oaxaca
2005		Oaxaca
2006		Oaxaca
2007	Comité Regional de Recursos Naturales de la Costa de Oaxaca, A. C.	Oaxaca
2008	Silvicultores del Río Copalita, A.C. (Amancecer del Pacífico A.C.)	Oaxaca
2009	Unidad de Manejo Forestal Regional Sierra Sur Miahuatlan-Pochutla, A. C.	Oaxaca

2010	Consejo de los Recursos Naturales de la Regi¾n Ca±ada de Oaxaca, A. C.	Oaxaca
2011	Comité Regional de Recursos Naturales de la Zona Centro de Huajuapan de Le¾n, A: C.	Oaxaca
2012	Comité de Recursos Naturales de la Sierra Sur, Zimatlan, Sola de Vega, Valles Centrales, A. C.	Oaxaca
2013	Comité Regional de Recursos Naturales de la Mixteca Tlaxiaco-Putla-Juxtlahuaca, A. C.	Oaxaca
2014	Unidad de Manejo Forestal Regional Bajo Mixe, S. C.	Oaxaca
2015		Oaxaca
2101	IZTA POPO	Puebla
2102	HUAUCHINANGO	Puebla
2103	TEZIUTLAN	Puebla
2104	IZUCAR DE MATAMOROS	Puebla
2105	LIBRES-SERDAN	Puebla
2106		Puebla
2107	TEHUACÁN	Puebla
2108	ZACATLÁN	Puebla
2201	Asociaci¾n de Silvicultores de Querétaro Regi¾n Norte Sierra Gorda	Querétaro
2202	Asociaci¾n de Silvicultores de Querétaro Regi¾n Centro Semidesierto	Querétaro
2203	Asociaci¾n de Silvicultores de Querétaro Regi¾n Sur Lerma Otomí	Querétaro
2301	SOCIEDAD DE PRODUCTORES FORESTALES EJIDALES DE QUINTANA ROO S. C.	Quintana Roo
2302		Quintana Roo
2303		Quintana Roo
2304		Quintana Roo
2305		Quintana Roo
2306		Quintana Roo
2307	FORESTAL PRODUCTORES DE CARBON DE LA ZONA NORTE DE QUINTANA ROO S. C	Quintana Roo
2308		Quintana Roo
2401	UMAFOR ZONA ALTIPLANO	San Luis Potosí
2402	UMAFOR ZONA HUASTECA	San Luis Potosí
2403	UMAFOR ZONA MEDIA	San Luis Potosí
2404	UMAFOR ZONA CENTRO	San Luis Potosí
2501		Sinaloa
2502	Ing. Juan Antonio Gonzalez Guerrero	Sinaloa
2503	Ing. Alfredo Lemus Vásquez	Sinaloa
2504		Sinaloa

2601	ALAMOS	Sonora
2602	YAQUI-MAYO	Sonora
2603	RIO MATAPE	Sonora
2604	YECORA	Sonora
2605	LA MADERA	Sonora
2606	SIERRA ALTA	Sonora
2607	RIO SONORA	Sonora
2608	COSTERA	Sonora
2609	RIO CONCEPCION	Sonora
2610	FRONTERA	Sonora
2611	EL PINACATE	Sonora
2701	SIERRA DE HUIMANGUILLO	Tabasco
2702	SIERRA DE TENOSIQUE	Tabasco
2703	SIERRA DE TEAPA, TACOTALPA Y MACUSPANA	Tabasco
2704		Tabasco
2705	COSTA	Tabasco
2706	CHONTALPA	Tabasco
2707		Tabasco
2708	CENTRO	Tabasco
2709	RÍOS	Tabasco
2801	Asociación Regional de Plantadores Forestales y Silvicultores de San Fernando, A.C.	Tamaulipas
2802	Asociación Regional de Silvicultores de la Zona Serrana, A. C.	Tamaulipas
2803	Asociación Regional de Silvicultores de la Sierra de Tamaulipas, A. C.	Tamaulipas
2804	Asociación Regional de Silvicultores de la Altiplanicie Tamaulipeca, A. C.	Tamaulipas
2805	Asociación Regional de Silvicultores del Sur de Tamaulipas, A. C.	Tamaulipas
2901	Unidad de manejo forestal de la regi¾n Tlaxco - Terrenate, estado de Tlaxcala.	Tlaxcala
2902	Unidad de manejo forestal de la regi¾n Nanacamilpa - Calpulalpan, estado de Tlaxcala.	Tlaxcala
2903		Tlaxcala
2904	Unidad de manejo forestal de la regi¾n centro sur del estado de Tlaxcala.	Tlaxcala
3001	3001 LAS CHOAPAS	Veracruz
3002	3002 UXPANAPA	Veracruz
3003	3003 LOS TUXTLAS	Veracruz
3004	PICO DE ORIZABA-SIERRA DE ZONGOLICA	Veracruz
3005	RODRIGUEZ CLARA	Veracruz
3006	CUENCA DEL PAPALOAPAN	Veracruz

3007	VERACRUZ	Veracruz
3008	SIERRA DE MISANTLA	Veracruz
3009	TOTONACAPAN	Veracruz
3010	SIERRA DE OTONTEPEC	Veracruz
3011	3011 PANUCO	Veracruz
3012	VALLE Y COFRE DE PEROTE	Veracruz
3013	HUAYACOCOTLA	Veracruz
3101		Yucatán
3102	Asociación Regional de Silvicultores Ukanaantal Sihnal A.C.	Yucatán
3103		Yucatán
3104	Montebello oriente A.C.	Yucatán
3105	Asociación Regional de Silvicultores de Chiibal Mayaoob A.C."	Yucatán
3106	Asociaci¾n Regional de Agrisilvicultores del Sur de Yucatan "Nukuchk'a'ax" A.C.	Yucatán
3107		Yucatán
3206	3206	Zacatecas
3205	3205	Zacatecas
3204	3204	Zacatecas
3203	3203	Zacatecas
3202	3202	Zacatecas
3201	3201	Zacatecas