Publication Date:
01/03/2022

Revision Date:
01/12/2023

Methodology:
M000

Version:
V0.9

Contact:
Ecosystem Restoration Standard
25 Rue de Frémicourt
75015 Paris, FRANCE
info@ers.org

METHODOLOGY

Methodology for Reforestation

SUMMARY

This document details the methodology used for certifying Terrestrial Forest Restoration Projects. It covers both the principles and the methods through which each of ERS's three pillars are assessed. In addition, it describes how the Project risks are assessed.

Table of *Content*

ERS's *Methodology*

DISCLAIMER

ERS is currently putting together a scientific committee to give feedback on the selection criteria, review the baseline methodology and help improve the risk matrix modelling to holistically study project guarantees and insurance (see "Project Guarantee" below).

A V1 methodology should therefore be released by end of 2023. Until then, ERS selects projects that will allow the piloting and fine tuning of its GHG emission removal quantification.

Project *Selection*

PRINCIPLES

1. Developer Requirements

Developers should historically have:

1.1. Low mortality rates on their reforestation projects;

1.2. Reported and quantified community benefits;

1.3. Be financially stable;

1.4. Worked with local communities, respecting diverse cultural backgrounds;

1.5. Planted local species.

2. Project Requirements

Projects must not only support local communities but also positively impact biodiversity and endangered species, complying with the following criteria:

2.1. **Right flora.**

2.1.1. **Richness.** Planting density must be appropriate for the planting location.

2.1.2. **Evenness.** Project developers must define and justify crop plans or intercropping strategies based on local conditions.

2.1.3. **Diversity.** A minimum of two species must be planted on each project (native species, preferably endemic, **non** invasive). Non-native species can only be planted if they provide alternative livelihoods to communities, in which case they need to have an environmental assessment to prove that they are not invasive.

2.2. **Right community.** In order to favour community ownership of projects, project developers must ensure:

2.2.1. **Local employment.** Planting and monitoring teams should be trained and hired from local communities surrounding the project area.

2.2.2. **Fair wages.** Planter salaries should meet living wage standards in the local context.

2.2.3. **Women empowerment.** Planting teams should consist of at least 50% women, while respecting cultural practices.

2.3. **Right place.** Projects must improve:

2.3.1. **Livelihoods.** Projects should improve economic development for local communities.

2.3.2. **Biodiversity.** Projects should strive to protect IUCN RED List species.

2.3.3. **Connectivity.** Projects should aim to build buffer zones and corridors for existing areas are preferred.

3. Carbon Offset Requirements

Projects must meet all of the following criteria:

3.1. **Additionality.** The project must result in GHG emission removals that would not occur otherwise.

3.2. **Durability.** The project must ensure emissions are kept out of the atmosphere for the entire duration of the project and preferably beyond.

3.3. **Leakage.** The project must implement and monitor a leakage belt around the project area.

3.4. **Double counting.** A unit must belong to a single owner at a given time and only be retired once.

Project *Certification*

1. Developer Requirements

A developer background check is performed by ERS via:

1.1. Analysis of the developer's annual impact and financial reports for the past 3 years, and

1.2. Reference calls with existing financers and past partners to ensure their legitimacy and trustworthiness.

2. Project Selection Requirements

2.1. The developer must submit through the ERS app geolocalized and timestamped baseline photos of the sites before planting work. ERS uses those pictures to identify tree species and related biodiversity.

3. Carbon Offset Requirements

3.1. **Additionality.** ERS measures project carbon baselines before restoration begins and estimates the carbon potential over the lifetime of the project to respect this principle. Refer to Appendix 1 for more information on the calculations.

3.2. **Durability.** ERS monitors forest cover change to ensure the project's integrity is maintained over its lifetime.

3.2.1. The duration of the monitoring period is determined by the time taken for all planted trees to reach maturity.

3.3. **Leakage.** ERS monitors annually forest cover change in the leakage belt.

3.4. **Double counting.** All projects are recorded in the ERS Registry.

3.5. **Risk.** Risks that might impact the project's ability to absorb carbon in the long term are identified (Refer to Appendix 2 and 3 for more details).

3.5.1. Risks might be mitigated or compensated (Refer to "Project Guarantee" for more details).

3.5.2. The risk assessment also analyses the likelihood of the project survival based on geopolitical, climate change, socioeconomic, land ownership and management structure factors in each area.

💡 All gathered information on the developer and its project is compiled into PDD is issued by ERS and published on the ERS Registry.

Monitoring & *Verification*

SATELLITE MONITORING

1. ERS monitors certified projects annually, using cutting-edge remote sensing technology, backed by the European Space Agency.
2. Changes in forest and shrub cover is analysed by following the evolution of the canopy cover.

FOREST COVER MONITORING

Using a combination of Sentinel-1 and Sentinel-2 satellite images, ERS developed a model to assess forest cover change, gain & loss. In both cases, this model allows ERS to precisely assess how many carbon credits are lost and must be recovered through the Buffer Pool in case of reversal. Refer to Quantification Methodology for Reforestation for more details.

ANNUAL REPORTING

1. Project developers must submit an annual report containing:
    1.1. the seedlings survival rate until year four of the Project.
    1.2. Biodiversity & livelihoods improvements.
2. Annual reports are publicly disclosed in the ERS Registry.

💡 Starting from year four onwards, annual forest cover monitoring replaces the seedling survival rate.

Project *Guarantee*

1. To insure against any potential losses, ERS conducts a risk assessment for each project and calculates contribution to a buffer pool accordingly.
2. ERS monitors forest cover to verify the validity of credits over the lifespan of the project and replace any credit which fails by a credit from the buffer pool.
3. The Risk Assessment matrix measures the probability of the project being undisturbed over its lifetime and efficiently absorbing carbon and protecting wildlife.
    - 3.1. ERS evaluates geopolitical stability, socioeconomic situation, vulnerability to climate change, as well as additionality, leakage and project durability.
    - 3.2. Each criterion is evaluated on a scale from 1 to 5.

💡 The role of the buffer pool is solely to back projects against losses. Credits inside the buffer pool cannot be sold under any circumstances.

Appendices

APPENDIX 1: Quantification Methodology for Reforestation

Refer to the Quantification Methodology for Reforestation for more details on how ERS quantifies GHG emission removals.

APPENDIX 2: Risk Assessment Matrix For Carbon Criteria

	1	2	3	4	5
Additionality Ensure the project is generating a GHG emission reduction or removal that would not occur otherwise.	The additionality claim is completely erroneous. It was likely based on false data or no data at all. No remote sensing data can be used to monitor the evolution of the project.	There is some additionality to the project but it is unsure how much. The data on which the analysis was based is likely to be flawed and not a perfect representation of reality.	The project should live up to their additionality commitments in the long-term but more accurate data and better remote sensing estimates should be used to validate it.	Remote sensing models and on-the-ground data regarding biomass absorption and co-benefits validated with certainty the fact that the project is additional.	ERS technologies have proven that the project is absorbing even more carbon than originally planned for.

Durability Ensure that emissions are kept out of the atmosphere for the entire duration of the project.	Emissions will not be kept out of the atmosphere due to a poorly managed project with a very high likelihood of fire or deforestation for agricultural purposes. No buffer zone.	There is not enough data to guarantee permanence which requires assuming the worst case scenario and being conservative. GHG emission removals are unlikely to be maintained for the duration of the project and beyond. No buffer zone.	Without unexpected events and based on the available data, the project is likely to absorb carbon according to predictions for the entirety of the project.	Low disturbance allows saying with confidence that the project will absorb emissions beyond the project duration. If the project is negatively impacted, a buffer zone is attributed to each ton of carbon to compensate for potential loss of emission reduction.	Low disturbance allows saying with confidence that the project will absorb emissions across multiple generations. If the project is negatively impacted, a buffer zone is attributed to each ton of carbon to compensate for potential loss of emission reduction.
Leakage Ensure that emissions avoided through the projects are not displaced, nor occur elsewhere. No buffer zone.	The area protected for reforestation is mostly inefficient (i.e. carbon is not absorbed) AND deforestation activities are displaced.	Deforestation activities are not displaced to another location but reforestation efforts are not optimal and agricultural projects	Deforestation is not displaced and reforestation is conducted as planned. Emissions are not displaced as a consequenc	Trees are planted efficiently and death rates are low which allows the project to expand beyond its original delimitations. If leakage	Reforestation efforts were so promising and beneficial that they sparked new initiatives in the region or elsewhere. If leakage occurs, a

		remain in place for subsistence.	e and carbon is taken out of the atmosphere.	occurs, a buffer zone will account for each lost ton of carbon emission reduction	buffer zone will account for each lost ton of carbon emission reduction

APPENDIX 3: RISK ASSESSMENT MATRIX FOR EXTERNAL FACTORS

	1	2	3	4	5
Geopolitical Stability Evaluate the risk associated with the level of governance according to previous conflicts and government intervention in the location of the project and the probability of the project failing.	Very poor governance. A considerable amount of corruption, ethnic conflicts and wars. Extreme poverty and inequalities.	Poor governance. A significant amount of conflicts. No Government plan to address sustainability efforts.	Decent governance. Low amount of conflicts. Governance intervention (subsidised health coverage, public education etc) and government plan to address sustainability efforts.	Good governance. Peace, justice and strong institutions. Low poverty. Governance intervention (subsidised and universal health coverage, quality public schools, Decent work and economic growth, Reduced inequalities etc) and government plan to address	Excellent governance. Peace, justice and strong institutions. Very little to no poverty. Governance intervention (subsidised and universal health coverage, quality public schools, decent work and economic growth, gender equality, reduced inequalities, affordable and clean energy, and government plan to

				sustainability efforts.	address sustainability efforts, and have met their previous statements.
Climate change vulnerability Evaluate the risk associated with climate change according to the estimated impact of future temperature increases and the ability of trees and vegetation to adapt to such changes.	Extremely vulnerable territory to climate change. Estimates predict climate change will heavily affect the success of the project, resulting in >10% of carbon sequestered from the project	Very vulnerable territory to climate change. Estimates predict climate change will affect the success of the project, resulting in > 40 % of carbon sequestered from the project	Vulnerable territory to climate change. Estimates predict climate change will affect the success of the project, resulting in >50 % of carbon sequestered from the project	Relatively resilient to climate change. The project is likely to adapt to an increase in temperature in the next decades. Estimates predict climate change will not affect the success of the project, resulting in >80% carbon sequestered from the project.	Very resilient to climate change. The project will surely adapt to an increase in temperature in the next decades. Estimates predict climate change will not affect the success of the project, resulting in >95 % carbon sequestered from the project.
Socioeconomic factors	Local communities	Local communitie	Local communities	Local communiti	Local communitie

Evaluate the risk associated with socio-economic factors according to the ability of local communities to rely on non-forest resources to live decently.	are all smallholder farmers and solely reliant on intensive crop farming, detrimental to the soil but essential to their livelihoods. There is no other option for income in the area.	s are mostly smallholder farmers and heavily reliant on crop farming. They typically have just enough to send the next generation to school and get out of the cycle but nothing else.	have larger farming plots and make a fair living out of their crop yields. There are other options for income but this is still the best option and is a choice.	es have diverse sources of economic income and do not need to rely on farming for their livelihood.	s are completely independent of farming and can engage in reforestation projects as leisure.
Land ownership & management Evaluate the risk associated with land ownership and management by assessing the success/failure of previous projects.	No record of ownership or management. The land has been abandoned or destroyed by anthropogenic activities. The land is considered unproductive and unexploitable	Previous projects were poorly managed, leading to leakage and/or deforestation.	Previous projects were fairly well handled, leading to little leakage and/or deforestation	Previous projects well managed	Fully managed and owned by local communities with a sustainable management plan.