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Core Document

Methodology for Terrestrial Forest Conservation

Summary

This methodology sets out the criteria, requirements, and procedures for certifying terrestrial forest conservation projects that avoid unplanned deforestation and degradation (AUDD). It includes the principles and methods for establishing centrally determined, jurisdictionally nested baselines derived from Jurisdictional Reference Levels using a model to forecast biomass stock changes and allocate project-level baselines proportionally to predicted losses; demonstrating additionality; quantifying net GHG emission reductions and meeting monitoring and reporting requirements.

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1 Introduction

Standing Forests and Our Planet's Future

The world's forests are our most powerful natural allies against climate instability and ecosystem collapse. Covering approximately a third of all habitable land, they regulate rainfall, store vast amounts of carbon, harbour rich biodiversity and support the livelihoods of millions of people. Yet current rates of forest loss and degradation continue to outpace global efforts to protect them. Every year, on average, an area of forest roughly the size of Portugal disappears.

There is an urgent need for high-integrity, equitable tools to make forest conservation fairer, more transparent, and more effective at the scale and speed the world urgently requires. Equitable Earth brings together Indigenous Peoples and Local Communities (IPs and LCs), global expertise, and cutting-edge science to deliver solutions fit for this scale and urgency.

Core Innovations of M002 and the Equitable Earth Programme

M002 is a next-generation forest conservation methodology for Avoiding Unplanned Deforestation and Degradation (AUDD), designed to turn commitments into tangible, equity-centred outcomes. It integrates three key innovations that address present challenges while anticipating future needs.

Elevating Rights and Livelihoods

Safeguards for IPs and LCs have often been insufficient or inconsistent and lacking in transparency. This undermines both fairness and conservation outcomes. M002 and the Equitable Earth Programme address this through a dedicated Livelihoods Pillar with measurable requirements for protection, engagement, and benefit sharing. The requirements ensure conservation efforts strengthen social integrity and lead to fairer, more trusted and impactful outcomes.

Standard-Level Carbon Accounting and Performance Monitoring

Undue responsibility on developers for emissions reporting leads to credibility risks and inconsistencies. Under M002, Equitable Earth centralises forest biomass-change calculations and monitors deforestation and degradation with a standardised approach, using advanced remote sensing and risk modelling. This independent, uniform process ensures transparent, consistent crediting that builds confidence across the market.

Comprehensive Coverage of Forest Loss and Degradation

Overlooking the full scale of forest degradation, which historic approaches have struggled to capture, fails to reflect substantial emissions.

M002 leverages advanced technology to monitor changes in biomass. This approach explicitly includes both deforestation and degradation with conservative, standardised, and consistent rules. This guarantees credits accurately reflect total forest loss, raising the environmental integrity and impact of conservation projects.

Focused Scope with a Vision for Growth

In its initial version, M002 concentrates on above- and below-ground woody biomass and centralised monitoring of deforestation and degradation.

Importantly, this methodology is designed to evolve. Future versions will expand to include restoration activities, additional carbon pools, and other greenhouse gas sources and sinks. This phased approach provides clarity and robustness today, while paving the way for a broader scope.

A New Pathway for Forest Conservation

M002 builds on the foundational work of the original Equitable Earth Coalition formed in 2023, uniting over 125 Indigenous leaders, conservation experts and scientists to design next-generation approaches for protecting forests and supporting those who steward them.

This collaborative, community-centred legacy remains at the core of what M002 is today: a new, independently-governed, ICVCM-aligned methodology that sets the bar for forest conservation that is rigorous, equitable, and transparent.

1.1 Normative References

1.1.1 This document must be read in conjunction with the following documents:

- Equitable Earth Standard
- Programme Manual
- Registry Procedures
- Standard Setting and Methodology Development Procedure
- Terms & Definitions

1.2 Reading Notes

1.2.1 Equations in this methodology are numbered and in parentheses (e.g., (E.7)).

1.2.2 For most of these variables, their units are in tonnes of carbon dioxide equivalents (CO_2e). The variables *x* and *y* (with and without subscripts) are sometimes used as placeholder variables, and may stand in for another variable or the result of an equation as indicated by the methodology text. The variables *x* and *y* are also used to indicate geographic coordinates. The meaning of these variables should be clear based on the context provided in the methodology text.

1.2.3 Summations use set notation. Sets of variables are indicated using script notation. For example, *S* represents the set of all strata in the project area (PA), while P_k represents the set of all plots in stratum *k*. Set notation greatly reduces the number of variables used in the methodology as well as the complexity of summations.

1.2.4 Elements of a set are denoted using subscript notation. A sum over the elements of a set is indicated by the notation $\sum_{k \in S} A_k$. This example indicates the sum of the area of all strata, where A_k indicates the area of stratum k. The number of elements in a set is indicated by functional notation $\#(S)$ where the pound sign stands for “count of”.

1.2.5 Monitoring periods are notated using bracketed superscripts $[m]$. The superscript $[m = 0]$ is used to indicate the values at project start. The values at the end of the first Monitoring Period are denoted by $[m = 1]$, the second monitoring period $[m = 2]$ and so forth. These superscripts should not be confused with references to equation numbers, as equation numbers are

never in superscript. Nor should they be confused with powers of numbers which are not enclosed in brackets.

1.2.6 Estimates related to emissions, emissions reductions, and carbon stocks for the baseline, project, and leakage are specifically denoted with *B*, *P* and *L* in the subscripts of variables, respectively.

1.2.7 Average carbon stock (measured in tCO_2e/ha) is denoted by a lowercase *c*, with subscripts to differentiate carbon pools as indicated in the list of parameters in the *Monitoring, Reporting, and Verification (MRV)* section and *Appendix IV* of this methodology.

1.2.8 Project accounting units are whole metric tonnes of carbon dioxide equivalent (tCO_2e). When calculated values are non-integers, emission reductions values should be rounded down to the nearest whole number, and project emissions should be rounded up to the nearest whole number.

1.2.9 Total emissions and emission reductions (measured by tCO_2e) from GHG accounting are denoted by a capital E, with subscripts to differentiate between emission sources. For example, $E^{[m]}_{B\ AUDD}$ indicates the baseline emissions from AUDD activities at monitoring period $[m]$.

1.3 Methodology Deviations

1.3.1 Deviations from methodological requirements are permitted only under limited circumstances. Deviations from core requirements, such as baseline allocation, additionality, and eligibility criteria are not allowed. Developers may request deviations to be assessed by Equitable Earth on a case-by-case basis in accordance with the procedures set out in the Programme Manual.

❓We currently allow limited methodological deviations. In the public consultation, we will ask you whether there are additional areas where flexibility may be needed.

2 Eligibility Criteria

Projects are eligible to apply this methodology if they meet the criteria set out in this section.

2.1 Scope

2.1.1 This methodology includes carbon accounting and crediting estimation for Avoided Unplanned Deforestation and Degradation (AUDD) activities within the PA.

2.1.2 Developers must implement targeted activities to address the root causes of deforestation and degradation, including:

2.1.2.1 **Exclusion of deforestation and degrading practices:** prohibition of activities such as harvesting and logging within the PA, and implementation of controls to reduce access, where feasible.

2.1.2.2 **Community-based sustainable practices:** collaboration with communities to encourage sustainable resource use and alternative livelihoods.

2.2 Nesting

2.2.1 Projects must use an AUDD baseline, allocated via a risk map from a jurisdictional reference level (JRL) provided by Equitable Earth. Standalone (non-nested) AUDD baselines may not be applied under M002.

2.2.2 The JRL must be validated by an independent expert panel in accordance with the Jurisdictional Baseline Validation Methodology (forthcoming, to be released in November 2025).

2.3 Land Status

2.3.1 To be eligible for Equitable Carbon Unit (ECU)[1] crediting under the AUDD activity, the PA must, on average, be considered forest at project start and

[1] Following the expansion of the Equitable Earth Programme to include both restoration and conservation activities, the term “Equitable Carbon Units” (ECUs) has replaced “Verified Restoration Units” (VRUs) as the standard asset issued under the Programme. ECUs represent verified GHG reductions or removals and are labelled accordingly in the Registry and serial numbers. For the purposes of this methodology, ECUs apply only to verified emission reductions from AUDD activities. Refer to the Equitable Earth Standard for additional details.

must have met the Equitable Earth definition of forest[2] for the 10 years preceding the project start date. This is determined by averaging the biomass value for every pixel in the PA over the 10-year period preceding the project start date, and confirming the average meets the forest threshold (units = tCO_2e/ha).

2.3.2 Projects located in mangrove or other marine and coastal habitats are not eligible under this version of the methodology.

2.3.3 Avoided emissions from the rewetting of peat soils and from the conservation of peat from unplanned conversion are not eligible under this version of the methodology. The subsequent version will include criteria and methods for quantifying avoided emissions associated with these activities.

2.3.4 Monoculture plantations are not eligible for crediting under this methodology, even if classified as forest by the country.

❓**Peatlands are not eligible for crediting in this version of the methodology but will be eligible in a later version. We will ask in the public consultation whether peatlands are present in your project areas and how important their inclusion would be for project viability.**

2.4 Spatial Boundaries

2.4.1 Developers must clearly define the physical boundaries of the project. Refer to the *Geography and Project Boundaries* section in the Equitable Earth Standard for more details on requirements related to Project Boundaries.

2.4.2 The PA for AUDD activities may be a combination of forest, non-forest, or converted native ecosystems. However, the generation of GHG emission reduction credits may only be claimed on the forest areas subject to conversion (AUDD) in the baseline scenario.

2.4.3 Any forest areas within the PA boundaries may not be excluded, except plantation forests. Plantation forests are defined as non-native monocultures or forests intensively managed for timber products, food, or fiber, and are excluded from the baseline and PA.

[2] Forests: Land that meets internationally recognised definitions of forest, as established by authoritative bodies such as the FAO or the IPCC. Where applicable, national definitions may be used, provided they are consistent with the environmental integrity principles of the Equitable Earth Programme. These definitions typically include threshold criteria for minimum area, tree height at maturity, and canopy cover density. Excluded from this definition are areas established primarily for agricultural production, short-rotation tree crops, or isolated trees.

2.4.4 The size of the PA cannot increase after the end of the first monitoring period.

2.4.5 Projects of any size are eligible to apply this methodology. No minimum or maximum land area or net GHG reduction capacity is required under this version.

2.5 Temporal Boundaries

2.5.1 Developers must clearly define the temporal boundaries for the PA, specifying the period during which deforestation and degradation impacts are mitigated by project activities and eligible carbon stocks are monitored for reversals. Refer to the *Key Project Dates and Crediting Period* section in the Equitable Earth Standard for more details on core requirements related to the project start date, project registration date, submission window, and crediting period. Specific requirements for monitoring periods and their frequency are set out in the *Monitoring* section of this methodology.

❓**We are considering restricting eligibility in M002 to projects co-developed with Indigenous Peoples (IPs) and Local Communities (LCs). In the consultation, we will ask what "community-led" means to you and how projects without nearby communities should be treated.**

3 Livelihoods

3.1.1 Projects applying this methodology must meet and demonstrate conformance with all requirements in the Livelihoods Pillar, which are set out in the Equitable Earth Standard. This includes requirements related to stakeholder engagement; Free, Prior, and Informed Consent (FPIC); cultural heritage, labour rights, and other social benefits and safeguards; benefit and revenue sharing; and social additionality.

4 Ecological Condition

4.1 Principles

Project Interventions

4.1.1 Developers must engage a trained professional with a background in ecology and natural resources management and, where relevant, someone holding traditional or local ecological knowledge of the ecosystem.

4.1.2 All project interventions must be planned and implemented to maximise positive ecological outcomes, minimise risks, adhere to safeguards, and mitigate negative socio-environmental impacts in line with the requirements in the Equitable Earth Standard and this methodology.

4.1.3 Developers must:

4.1.3.1 Describe and justify each project intervention, including a detailed monitoring protocol, in the conservation plan. Please refer to the *Conservation Plan* section for more details.

4.1.3.2 Describe the scale of the intervention(s), including the size of the intervention area and the frequency of intervention, with justification.

4.1.3.3 Prevent any uncontrolled negative impacts or unintended spillover into adjacent areas.

4.1.3.4 Provide a clear delimitation of the areas in which the intervention(s) will be carried out.

4.1.3.5 Demonstrate that all interventions comply with local, regional, and/or national regulations, where applicable.

Ecosystem Extent and Connectivity

4.1.4 Projects must strive to maintain and increase ecosystem extent and connectivity to prevent habitat and ecosystem fragmentation and contribute to species dispersal, migration, and movement.

4.1.4.1 Projects must ensure that project activities do not create new barriers that could fragment or reduce habitat connectivity or disrupt already existing biological corridors.

4.1.4.2 Projects must not allow for infrastructure development or land-use changes that reduce connectivity within the PA.

4.1.5 Projects must strive to mitigate human-made barriers to ecological connectivity within the PA.

4.1.5.1 If a barrier is determined to be 'linear' in nature (e.g., roads, fences), the project must strive to advocate for its removal, modification, or mitigation (for e.g., installation of wildlife crossings, overpasses, or underpasses) to restore or enhance ecological connectivity.

Ecosystem Function

Indicator and Keystone Species

4.1.6 Projects must identify and characterise the main indicator and keystone species that are present in the PA ecosystem by providing the:

1) Scientific name
2) Common name
3) Local names used by Indigenous Peoples (IPs) and/or Local Communities (LCs), where applicable
4) National and international International Union for Conservation of Nature (IUCN) threat levels
5) Home range
6) Species category from the following: sentinel, rare, endangered, umbrella, trafficked, keystone, emblematic, endemic

4.1.7 Developers must select, with justification, at least two indicator and/or keystone species to monitor that are sufficiently prevalent to generate meaningful observations.

4.1.8 Developers must design and implement a monitoring plan to track sightings of the selected indicator and/or keystone species.

Genetic Diversity

4.1.9 Projects must retain genetically diverse populations.

4.1.10 If projects implement any planting activities:

4.1.10.1 Projects must strive to select seeds and plant materials that are genetically diverse and generated within or in the vicinity of the PA to ensure the conservation of locally adapted traits.

4.1.10.2 Projects should source from a nursery which breeds endemic and endangered species.

Species Diversity

4.1.11 Developers should have a plan to protect and/or reintroduce threatened, vulnerable, and endangered species of relevant functional groups that are endemic or native to the area.

4.1.12 If developers aim to actively reintroduce animal species:

4.1.12.1 They should ensure the long-term viability of the approach, demonstrating the projected impact on the ecosystem's trophic system.

4.1.12.2 They must develop and implement a plan to reduce and mitigate any potential human-wildlife conflict due to the species reintroduction.

Ecosystem Services

4.1.13 Where IPs and LCs depend on ecosystem services for their livelihoods, developers must ensure access is maintained.

4.1.14 Developers must ensure that access to Non-Timber Forest Products (NTFPs) and their derived benefits is fair and equitable. Particular attention should be paid to vulnerable stakeholders and IPs and LCs who depend on these resources for their livelihoods.

4.1.15 Where possible and appropriate, projects should provide alternative livelihoods for IPs and LCs and provide training to encourage sustainable management of forest products to reduce deforestation and degradation in the PA.

Ecosystem Threats

4.1.16 Developers should leverage historical data, local expertise, and active engagement with relevant stakeholders, particularly IPs and LCs, to ensure an accurate, context-specific understanding of threats and drivers.

Anthropological Threats

4.1.17 Developers must identify and analyse past and/or current anthropogenic deforestation and degradation drivers (e.g., logging, agricultural expansion), and the stakeholders involved (e.g., local farmers, logging operators).

4.1.18 Developers must strive to remove degradation drivers affecting the PA, such as browsing, overgrazing, illegal or unsustainable harvesting, hunting practices, nutrients and chemical runoffs, and proliferation of invasive species.

Natural and Climatic Threats

4.1.19 Developers must identify and strive to manage emergent and recurring natural threats to ecosystem conditions in the PA. This may include, but is not limited to, invasive species, grazing, uncontrolled fire, soil erosion, flooding, pests, disease, drought, and smothering.

4.1.20 Developers must not plant or introduce invasive species.

4.1.21 If non-native or invasive plant species are present in the PA and pose a significant risk to ecosystem integrity, developers must implement control measures and prevent further spread.

4.1.22 If invasive species are to be removed, developers must detail plans for the proper disposal, focusing on minimising carbon emissions linked to their disposal.

4.2 Methods

Baseline Assessment

4.2.1 Developers must conduct a comprehensive baseline assessment to inform the design of conservation interventions. This includes the:

4.2.1.1 Project zonation

4.2.1.2 Field assessment. Please refer to the *Field Assessment* section below for more details.

4.2.1.3 Conservation plan. Please refer to the *Conservation Plan* section below for more details.

4.2.1.4 Community consultation, where applicable, to integrate insights and priorities from IPs and LCs and relevant stakeholders into the assessment.

Field Assessment

4.2.2 Developers must complete a field assessment of the PA. This includes an overview of the current ecological condition, a biodiversity assessment, and existing land management practices.

Conservation Plan

4.2.3 Developers must design a conservation plan based on a clear understanding of the ecological conditions in the PA.

4.2.4 The conservation plan must include the following elements:

1) **Summary:** an overview, main ecological objectives, proposed interventions, and anticipated outcomes.

2) **Objectives:** clear and measurable ecological and biodiversity objectives that the project aims to achieve. Where appropriate, objectives should align with relevant SDG indicators.

3) **Interventions:** detailed descriptions of the conservation practices to be implemented. Each intervention must:

    a) Be justified with a clear rationale, based on the ecological context and conservation goals.

    b) Include expected ecological outcomes.

    c) Be paired with specific indicators to track progress.

    d) Specify the monitoring frequency for each indicator.

Measurement and Reporting

1.1.1 Refer to the *Monitoring, Reporting, and Verification (MRV)* section for more details.

5 Carbon

5.1 Baseline Scenario

5.1.1 The baseline scenario for projects under this methodology represents the most plausible land-use trajectory in the absence of project activities, consistent with historical trends, applicable legal and policy frameworks, and jurisdictional REDD+ strategies.

5.1.2 Developers must establish the baseline scenario by identifying and analysing alternative land use scenarios to the proposed project activities[3].

5.1.3 Developers must periodically re-evaluate the baseline scenario to reflect updated deforestation dynamics, changes in relevant government policies, and advances in available data and modelling approaches. This ensures that the scenario remains robust over time and continues to align with national and subnational REDD+ strategies, NDCs, and ICVCM integrity criteria.

5.2 Additionality

Principles

5.2.1 Developers must demonstrate additionality using a project method, following the steps below:

1) **Regulatory surplus.** Developers must demonstrate that there is no enforced legal obligation to implement the project activities.

2) **Barrier analysis.** Developers must identify existing barriers that would prevent the project activities from taking place without the revenues from ECUs. Barriers may include one or more of the following:

    a) **Financial barriers:** challenges related to insufficient funding, high upfront costs, difficulty accessing finance, and the lack of a clear monetary value for standing forests and sustainable forest products. This includes existing policies and requirements other

[3] This methodology requires the establishment of the baseline scenario by developers, while the project baseline is set by Equitable Earth. Refer to the *AUDD Project Baseline* and *Carbon Quantification* sections for more details on project baseline setting and calculation of baseline emissions, respectively.

than legal obligations to lower GHG emissions (e.g., non-mandatory policy incentives and enablers).

b) **Technical barriers:** challenges related to the application of technology, methodologies and technical expertise. Barriers may include difficulties in applying established methodologies, managing complex technical tasks, and ensuring accurate measurement and monitoring of key outcomes such as carbon sequestration.

c) **Capacity barriers:** challenges related to education, technical training, and human resources. Barriers may include a lack of skilled personnel or insufficient training in conservation techniques, monitoring protocols, and carbon accounting.

d) **Logistical barriers:** challenges related to the infrastructure, operational aspects of a project, and labour shortages. Barriers can include poor accessibility to key sites, limited transportation options, inadequate facilities, and the unavailability of necessary materials.

e) **Cultural and social barriers:** challenges in the collective movement of communities towards implementing, maintaining and monitoring conservation projects due to, for example, lack of information, threats to the safety of community members, and existing social structures and norms.

f) **Regulatory and institutional barriers:** limitations within the regulatory framework and its relevant institutions, such as limited staff capacity, lack of necessary skills, local regulations, complex permitting processes, ineffective bureaucratic processes or challenges in meeting specific compliance standards.

3) **Common practice assessment:** Developers must demonstrate that activities similar to the project activities are not common practice in the project's jurisdiction, following the steps set out in the *Methods* section below.

Methods

5.2.2 Both Equitable Earth and the VVB must assess the demonstration of additionality and all supporting evidence provided.

5.2.3 Developers must demonstrate additionality following the steps set out below.

Regulatory Surplus

5.2.4 Developers must identify all relevant local, regional, or national legislation, policies, or agreements in force in the project's jurisdiction.

5.2.4.1 For high-income countries[4], all legal requirements should be deemed enforceable.

5.2.4.2 For countries other than high-income countries, legal requirements should only be deemed non-enforceable based on legal and documented sources relevant to the mitigation activity.

5.2.4.3 Where a legal obligation to undertake conservation activities applies to the PA, developers must indicate and prove exactly where and in what context it applies.

5.2.4.4 Where a legal obligation to implement conservation measures applies to the PA but cannot be fulfilled without the project's funds or technology, developers must prove that barriers exist to establish additionality.

Barrier Analysis

5.2.5 Developers must demonstrate the presence of existing barriers to the implementation of project activities and provide supporting evidence for assessment by Equitable Earth and the VVB. Evidence may include, but is not limited to, the barriers outlined below.

1) **Financial barriers:** statements of account, notice of refusal of subsidies, and evidence that alternative land uses are more profitable without carbon credits.

2) **Technical barriers:** lack of tools, records of failed pilot trials, and limited availability of species adapted to local conditions.

3) **Capacity barriers:** list of staff, job descriptions, expertise and relevant knowledge, access to training and capacity-building resources, training records (or lack thereof).

4) **Logistical barriers:** maps showing remoteness or poor access, transport cost estimates or invoices, and photos of terrain and access routes.

[4] Refer to the Terms & Definitions document for a full list of high-income countries.

5) **Cultural and social barriers:** stakeholder engagement reports, evidence of past opposition or failed conservation attempts, and records of traditional land use patterns.

6) **Regulatory and institutional barriers:** unclear or restrictive legal frameworks for land use or carbon rights, evidence of policy gaps or lack of institutional support, land tenure records or land registry status, legal reviews of land or forestry laws, and correspondence with authorities showing regulatory delays.

Common Practice Assessment

5.2.6 Developers must demonstrate that the project activities would not be common practice using the following steps:

1) Define the project activities.

2) Define the geographic region for the assessment. The geographic region should have a similar policy environment as the PA, and should, at most, align with the national jurisdiction. Where there are sub-national (e.g., regional, local) programmes providing incentives for conservation activities, then the geographic region for assessment should align with them.

3) Identify any activities similar to the project activities that have been implemented previously or are currently underway in the defined geographic region, excluding any activities that are under certification or registered with Equitable Earth. Similar activities are those with comparable practices (e.g., type(s) of project interventions).

4) Compare the project activities to any identified similar activities, describing any distinctions between the project activities and similar activities.

5.2.7 If there are no distinctions between the similar activities and the project activities, then the project is not additional.

5.2.8 If there are clear distinctions, then the project activities are not common practice and therefore additional. Clear distinctions include identifiable changes in circumstances under which the project activities will be implemented (e.g., barriers exist, promotional policies or financing have ended, or similar activities were more financially attractive via subsidies or other financial flows).

5.3 Leakage

Principles

5.3.1 Projects must account for activity-shifting leakage resulting from deforestation and degradation activities displaced by project implementation.

5.3.2 Projects must mitigate leakage risks through targeted strategies and activities, designed and implemented prior to each monitoring period.

5.3.3 Leakage emissions must be monitored, quantified, and deducted from net emissions reductions, ensuring conservative crediting.

5.3.4 Market leakage is captured in the national JRL and is not quantified separately due to the local nature of displacement; this is consistent with the methodological assumption that leakage due to activity shifting is primarily local.

5.3.5 Equitable Earth may apply additional adjustments in cases where leakage risks are deemed material or not adequately mitigated.

Methods

5.3.6 A fixed leakage deduction of 10% is applied to gross emission reductions to account for activity-shifting leakage.

5.3.7 The deduction is applied only to the baseline and is calculated by Equitable Earth.

5.3.8 Developers are not required to assess, monitor, or mitigate leakage under this version of the methodology.

❓We currently propose a fixed 10% activity-shifting leakage deduction. We will ask in the public consultation whether this is appropriate for your project(s) or if alternative approaches would be preferred.

5.4 Permanence

Principles

Safeguards

5.4.1 Projects must ensure the permanence of emission reductions by contributing to a shared buffer pool managed by Equitable Earth.

5.4.2 Projects must notify Equitable Earth of any significant loss events within the project boundary that may trigger reversal classification.

5.4.3 In the conservation plan, developers must outline and justify all project interventions and activities that address anthropologic, natural, and climate risks. Refer to the *Conservation Plan* section for more details.

Reversals

5.4.4 All reversal risks must be assessed, monitored, and mitigated. Refer to the *Compensation of Reversals* section in the Programme Manual for more details.

Methods

Risk Assessment

5.4.5 All projects must adhere to the fixed buffer contribution rate defined under this methodology. Refer to the *Quantifying Net Emission Reductions (NERs)* section for more details on project-level buffer contribution.

5.4.6 Equitable Earth identifies delivery and reversal risks and assesses their likelihood and the severity of their consequences. Refer to the *Risk Assessment* section of the Programme Manual for more details.

Loss Events

5.4.7 Loss events must be monitored, reported, quantified, and compensated.

5.4.7.1 **Detection**. If developers or Equitable Earth identify a loss event within the PA that results in a cumulative carbon stock reduction exceeding 5% of previously verified net GHG reductions in pools accounted for within

the project boundary, they must notify one another within 30 calendar days.

5.4.7.1.1. Developers must report on loss events during the project lifetime. Refer to the *Reporting* section of the Equitable Earth Standard for more details.

Reversals

5.4.8 If reversals occur during the project lifetime, ECUs must be compensated through the buffer pool mechanism. Refer to the *Compensation of Reversals* section in the Programme Manual for more details.

6 Emission Sinks & Sources

6.1.1 Projects are monitored for CO_2 (carbon dioxide) and must include additional GHGs unless they are shown to be *de minimis*. Projects may only account for the GHG gasses specified in the table below.

Gas	Potential Sources
CO_2 (Carbon Dioxide)	• Flux in carbon pools
CH_4 (Methane)	• Burning of biomass • Livestock
N_2O (Nitrous Oxide)	• Burning of biomass • Livestock • Synthetic fertiliser

7 Carbon Pools

7.1.1 Equitable Earth will quantify and monitor carbon stock change for projects. Relevant carbon pools included in this methodology are listed in the table below.

Carbon Pool	Type	Inclusion	Justification
Woody biomass	**Above-ground (AGB)**	Yes	• Significant carbon pool in REDD+ projects • Primary source of emissions from deforestation and degradation • Measurable with high accuracy using remote sensing and jurisdictional datasets
	Below-ground (BGB)	Yes	• Significant carbon pool directly related to AGB • Can be robustly estimated using established root-to-shoot ratios • Inclusion ensures more complete accounting of tree biomass emissions
Non-woody biomass	**Above-ground**	No	• Generally a minor carbon pool in forest ecosystems relative to woody biomass • High temporal variability and limited impact on overall emission estimates • Excluded for simplicity in this version
	Below-ground	No	• Typically a small and

Carbon Pool	Type	Inclusion	Justification
			variable carbon pool • Limited data availability and high measurement uncertainty • Excluded for simplicity in this version
Soil organic carbon (SOC)		No	• Material in some ecosystems but high measurement uncertainty and monitoring complexity • Excluded for simplicity in this version • Conservation assumed correlated with tree biomass conservation
Dead wood		No	• Can be significant after disturbance events but variable over time • Monitoring requires additional field data • Excluded for simplicity in this version
Litter		No	• Minor pool in most tropical and subtropical forests • High turnover rate and low overall carbon stock • Excluded for simplicity in this version

❓**In M002, only woody AGB and BGB are included as eligible carbon pools. In the public consultation, we will ask whether additional pools (e.g., SOC, dead wood, litter) are relevant for your project(s), and how applicable their inclusion would be.**

8 Monte Carlo Simulation

Principles

8.1.1 Equitable Earth applies a Monte Carlo simulation to propagate pixel-level uncertainty to project- or jurisdiction-level estimations of carbon stock. This method propagates uncertainties from each component and reflects their interactions accurately, providing a robust and comprehensive probabilistic representation of both jurisdictional baselines and removal estimates, along with their corresponding uncertainties.

8.1.2 The Monte Carlo approach used by Equitable Earth involves sampling AGB values at the pixel level from a log-normal probability density function. These sampled values are then aggregated to calculate the overall AGB for the designated plot.

Methods

8.1.3 Through iterative sampling, the method constructs a comprehensive probability density function, capturing site-level uncertainty with precision. The key steps are outlined below.

8.1.4 For each pixel, the AGB estimate generated by the AGB provider is adjusted based on its associated uncertainty, following the procedure below.

8.1.4.1 The log-space mean μ_{log} and standard deviation σ_{log} are derived from the pixel's AGB estimate and standard error $\mathbf{SE}_{pixel}$.

8.1.4.2 Spatial correlation is incorporated by introducing a perturbation field, bounded between 0 and 1, and defined by equation (E.1):

$$\mathbf{Z}_{total,\,i} = \mathbf{Z}_{global,\,i} \times \sqrt{\varrho} + \mathbf{Z}_{noise,\,i} \times \sqrt{1 - \varrho} \qquad \textbf{(E.1)}$$

Where:

- $\mathbf{Z}_{total,\,i}$ = Perturbation field across the studied area at iteration *i*; dimensionless

- $\mathbf{Z}_{global,\,i}$ = Global shock across the studied area at iteration *i*, identical for all pixels and randomly drawn in $[0, 1]$; dimensionless
- $\mathbf{Z}_{noise,\,i}$ = Pixel-level independent noise at iteration *i*, independently drawn for each pixel in $[0, 1]$; dimensionless
- ϱ = Correlation factor between the pixels, fixed at 0.01 as determined by the AGB provider; dimensionless

8.1.4.3 The perturbation field created is used to compute the pixel-level AGB value at iteration *i*, using equation (E.2):

$$\mathbf{AGB}_{mc,\,i} = exp(\mu_{log} + \sigma_{log} \times \mathbf{Z}_{total,\,i}) \quad \textbf{(E.2)}$$

Where:

- $\mathbf{AGB}_{mc,\,i}$ = Perturbated above-ground biomass across the studied area at iteration *i*; tDM
- μ_{log} = Mean of the log-normal distribution; dimensionless
- σ_{log}= Standard deviation of the log-normal distribution; dimensionless
- $\mathbf{Z}_{total,\,i}$ = Perturbation field across the studied area at iteration *i*; dimensionless

8.1.4.4 AGB values are expanded to include BGB estimates. Both AGB and BGB are converted into their CO_2 equivalent (CO_2e) values.

8.1.4.5 The determined pixel-level carbon stock values obtained are aggregated to estimate the total carbon stock for the plot in the specific iteration.

8.1.4.6 These steps are iterated to build a comprehensive probability distribution of carbon stock at the plot level. During the iterations, the mean carbon stock estimate stabilises as the simulation progresses. A minimum of 500 iterations must be performed to ensure robust and reliable results. More iterations may be conducted based on empirical observations.

8.1.4.7 The resulting distribution represents the range of potential carbon stock values in the plot.

8.1.5 The Monte Carlo simulation is used at multiple stages of this methodology, including:

1) Estimation of carbon stock in PA.

2) Estimation of carbon stock for JRL.

3) Quantification of carbon stock losses for reversal assessment.

9 Carbon Stock and Baseline Estimation

9.1 AUDD Project Baseline

9.1.1 Projects must use a centrally defined and risk-adjusted baseline for AUDD, assigned by Equitable Earth[5].

9.1.2 AUDD baselines are calculated through a three-step process:

1) Establishment of a JRL.
2) Development of a deforestation risk map using the Baseline Allocation for Assessed Risk (BAAR) model.
3) Allocation of the JRL to PAs based on relative risk. Projects are not permitted to submit baseline emissions data or propose alternative baselines.

9.1.3 The AUDD baseline represents the gross emissions that would have occurred in the absence of the project and is expressed in tonnes of CO_2 equivalent per year (tCO_2e/year). The total allocation for the project must not exceed the jurisdictional cap.

Jurisdictional Reference Level (JRL)

9.1.4 The JRL represents the total historical emissions from deforestation and degradation across a defined jurisdiction over a 10-year period.

9.1.5 It is derived from historical forest biomass loss, using remote sensing and standardised jurisdiction-wide datasets.

9.1.6 The JRL serves as a carbon budget that cannot be exceeded by the sum of individual project baselines within the same jurisdiction.

[5] To ensure conservativeness and avoid perverse incentives, baselines are centrally determined by Equitable Earth using jurisdiction-wide datasets, standardised models, and quality-controlled data. Projects may not submit their own baselines or propose alternative calculations. The allocation process applies consistent rules across all projects within a jurisdiction to prevent baseline inflation and align with jurisdictional emissions accounting. This approach maximises integrity, auditability, and compatibility with jurisdictional REDD+ programs, while safeguarding environmental integrity and ensuring conservative crediting in line with ICVCM criteria.

Risk Mapping

9.1.7 Equitable Earth uses the BAAR model to develop jurisdiction-wide risk maps that consider both spatial and temporal dimensions.

9.1.8 BAAR is a machine learning model trained on historical biomass loss to predict future deforestation risk.

9.1.9 The risk map provides a continuous surface of forecasted AGB change, highlighting areas expected to experience greater biomass loss (interpreted as higher relative risk of deforestation).

9.1.10 Risk maps are periodically updated and evaluated for accuracy, transparency, and alignment with jurisdictional mitigation objectives.

Baseline Allocation

9.1.11 Project baselines are allocated by overlaying project boundaries onto the jurisdictional risk map. Equitable Earth converts the risk (AGB-change) forecast into an allocation map by scaling pixel-level predicted losses so that the sum of allocated emissions across the jurisdiction exactly equals the JRL. Per-pixel allocations are further constrained by available biomass stock to preserve nesting integrity and prevent over-allocation.

9.1.12 Each project receives a share of the JRL based on the relative deforestation risk of its location:

1) Higher-risk areas receive a proportionally larger allocation.
2) Lower-risk areas receive a smaller allocation.

9.1.13 The assigned baseline is provided in units of tCO_2e/year and is:

1) Centrally parameterised by Equitable Earth to ensure methodological consistency.
2) Designed to reflect jurisdictional climate policy and provide equitable incentives for IPs and LCs.
3) Inclusive of any jurisdiction-level discounting, which is passed through to the project allocation.

Baseline Validity and Re-Evaluation

9.1.14 The initial baseline estimation is assigned at the feasibility phase, based on a Historical Reference Period (HRP) that ends within one year of the project start date.

9.1.15 AUDD baselines are re-evaluated every six years to reflect updated deforestation dynamics. The baseline validity period begins on the project start date.

9.1.16 At each re-evaluation, the HRP is extended to incorporate the most recent historical period.

9.1.17 Revised risk maps may be developed where necessary to support updated baseline allocation.

❓ **Baselines are currently re-evaluated every six years on a fixed term. In the public consultation, we ask whether this cycle works for you, or if shorter periods would be more appropriate.**

9.2 Project Emissions

9.2.1 Project emissions represent all non-biogenic GHG emissions that occur within the project boundary as a result of project activities. These emissions must be quantified by developers and are deducted from the project's gross emission reductions in accordance with the requirements outlined in this section. Monitoring and reporting procedures are detailed in the *Monitoring, Reporting, and Verification (MRV)* section. This methodology distinguishes between:

1) Emissions from forest biomass loss, which are centrally calculated by Equitable Earth using remote sensing methods and included in the AUDD baseline and project carbon stock change estimates.

2) Emissions from project activities, which must be identified, assessed, and reported by the developer if not considered *de minimis*.

Emissions from Forest Biomass Loss

9.2.2 Emissions from degradation and deforestation within the PA are monitored by Equitable Earth and included in the net emissions balance.

9.2.3 These emissions are accounted for via carbon stock changes in eligible pools and do not require additional input from developers.

Emissions from Project Activities

9.2.4 Developers must identify and assess all GHG emission sources related to project implementation that are not captured through forest biomass changes[6]. These include, but are not limited to:

1) Biomass burning (e.g., prescribed fires).
2) Livestock grazing.
3) Use of synthetic fertilisers.
4) Other material sources.

Materiality Threshold

9.2.5 Emissions from project activities are subject to a materiality threshold of 1% of the total project emission reductions reported for the monitoring period.

9.2.6 If estimated total project activity emissions fall below this threshold, they may be considered *de minimis* and excluded from quantification and ongoing monitoring.

9.2.7 If the threshold is exceeded, all material sources must be quantified, monitored, reported and included in net emissions calculations.

Assessment Requirements

9.2.8 Developers must:

9.2.8.1 Identify all relevant project activity emission sources occurring within the project boundary.

9.2.8.2 Estimate total project activity emissions using one or more of the following:

1) Default emission factors from authoritative sources (e.g., IPCC, national inventories, jurisdictional datasets)

[6] It is assumed by default that emissions resulting from project operations, including fossil fuel combustion, staff and use of construction materials in infrastructure development are *de minimis* and are not required. These emissions must be accounted for and reported if they are material.

2) CDM A/R methodological *Tool for testing significance of GHG emissions in A/R CDM project activities*[7].

9.2.8.3 Compare against the materiality threshold to determine inclusion.

9.2.8.4 Quantify all material emission sources following the methods outlined in the *Carbon Quantification* section.

9.2.8.5 Monitor and report project activity emissions in accordance with the *Monitoring, Reporting, and Verification (MRV)* section in this methodology.

9.2.9 Equitable Earth will assess the completeness and reasonableness of emission source identification and may require justification for the exclusion of any potential sources.

❓**We currently require developers to monitor and report project activity emissions from biomass burning, grazing, fertiliser use, and other sources that are not considered *de minimis*. We will ask you in the public consultation which of these sources are significant in your projects and how you quantify them.**

[7] UNFCCC/CCNUCC (2007) 'Tool for testing significance of GHG emissions in A/R CDM project activities.' Version 01, EB 31, CDM – Executive Board. Available at: URL (Accessed 19/08/2025)

10 Carbon Quantification

This section provides guidance on the quantification of GHG emission reductions for projects using this methodology. Emission reductions are based on the monitored reduction of emissions from deforestation and degradation from the project AUDD baseline during the crediting period.

10.1 Quantifying AUDD Project Baseline Emissions

10.1.1 AUDD project baseline emissions for the eligible carbon pools ($E^{[m]}_{B\ AUDD}$) are quantified by Equitable Earth for each monitoring period using jurisdictional biomass loss data and model-based projections of deforestation risk. The quantification process is described below.

Historical Biomass Loss

10.1.2 Jurisdiction-wide historical emissions are estimated based on observed forest biomass loss during a HRP covering 10 years.

10.1.3 Biomass loss is derived from remote sensing data and converted to CO_2-equivalent emissions using jurisdiction-specific carbon stock values or appropriate default factors.

10.1.4 Emissions are spatially attributed using consistent pixel resolution and forest cover definitions, harmonised across the jurisdiction.

Emission Factor Application

10.1.5 Default carbon densities (e.g., in tCO_2e/ha) are applied to areas identified as having experienced historical loss.

10.1.6 Equitable Earth uses IPCC Tier 1 or Tier 2 default values unless jurisdictional data are available and meet quality thresholds.

10.1.7 For belowground biomass (BGB), Equitable Earth calculates the BGB fraction by multiplying the aboveground tree fraction (measured using remote sensing

direct biomass measurement) by an AGB/BGB ratio[8]. Where multiple default values are possible, the value most representative of the jurisdiction's ecological zone and forest condition is used.

Forward Projection Using Risk Models

10.1.8 A machine-learning model (BAAR) is trained on historical emissions and deforestation drivers to produce a jurisdiction-wide deforestation risk map.

10.1.9 The model predicts the spatial distribution of expected future biomass loss across the jurisdiction over a 6-year projection period.

10.1.10 The predicted emissions (i.e., JRL) represent the total future gross emissions from AUDD absent project intervention.

Derivation of Project Baseline

10.1.11 Each project's baseline is derived by applying the spatial risk weights from the jurisdictional risk map to the project boundary.

10.1.12 These risk weights are multiplied by jurisdictional carbon stock values to calculate annual expected emissions per pixel within the PA.

10.1.13 The total of these values yields the project-specific baseline in tonnes of CO_2 per year (tCO_2e/year).

10.2 Quantifying Project Emissions

10.2.1 Project emissions for each monitoring period include any forest biomass loss through any natural or anthropogenic process within the PA and through other anthropogenic activities that lead to GHG emissions.

10.2.2 Equitable Earth monitors for forest biomass loss and provides projects with the parameters required to calculate emissions resulting from forest loss.

10.2.3 Projects must monitor for emissions from other anthropogenic activities.

10.2.4 Project emissions for the current monitoring period $E_{PE\,\Delta}^{[m]}$ are estimated as in equation (E.3). Refer to the section *Monitoring, Reporting, and Verification (MRV)* in this methodology for project monitoring requirements.

[8] The default approach is to apply AGB/BGB ratios from the 2019 IPCC Guidelines for National GHG Inventories for the region, forest type, and carbon stock category that best represents the jurisdiction. Refer to *Appendix II* for the full table and reference.

10.2.5 Total project emissions for the current monitoring period can be greater than the project AUDD baseline if a major disturbance event occurs. Refer to the *Permanence* section in this methodology for additional details on reversals.

$$E_{PE\,\Delta}^{[m]} = E_{P\,for}^{[m]} + E_{P\,act}^{[m]} \quad \textbf{(E.3)}$$

Parameter	Description	Unit	Data Source
$E_{PE\,\Delta}^{[m]}$	Total project emissions for monitoring period $[m]$	tCO_2e	(E.3)
$E_{P\,for}^{[m]}$	Total emissions from forest biomass loss in the PA for monitoring period $[m]$. Parameter value cannot be greater than zero.	tCO_2e	Section *Quantifying Emissions from Changes in Project Stocks*
$E_{P\,act}^{[m]}$	Total emissions from project activities in the PA for monitoring period $[m]$	tCO_2e	(E.4)

Quantifying Emissions from Changes in Project Stocks

10.2.6 Emissions from forest carbon stock loss within the PA are calculated annually by Equitable Earth based on remote sensing data. This includes any biomass loss resulting from disturbances such as forest fires, grass fires, anthropogenic clearing, logging, or natural events.

10.2.7 Carbon stock values are compared between successive measurement periods to determine whether a net decrease in tree biomass for eligible carbon pools has occurred.

10.2.7.1 If a reduction is identified, the associated emissions are calculated in accordance with equation (E.3) and applied as the project emission parameter $E_{P\,for}^{[m]}$ for that monitoring period.

10.2.7.2 Where a net increase in carbon stocks is observed, no emissions are accounted, and $E_{P\,for}^{[m]}$ is set to zero.

Quantifying Emissions from Project Activities

10.2.8 Emissions from project activities must be included in the calculations when determined to be material. The total emissions for each monitoring period are calculated as the sum of all relevant emission sources, as specified in equation (E.4).

$$E_{P\,act}^{[m]} = E_{P\,act\,B}^{[m]} + E_{P\,act\,LS}^{[m]} + E_{P\,act\,SF}^{[m]} + E_{P\,act\,OE}^{[m]} \quad \textbf{(E.4)}$$

Parameter	Description	Unit	Data Source
$E_{P\,act}^{[m]}$	Total emissions from project activities in the PA for monitoring period $[m]$	tCO_2e	(E.4)
$E_{P\,act\,B}^{[m]}$	Total project emissions due to burning of biomass in project activities for monitoring period $[m]$	tCO_2e	(E.5)
$E_{P\,act\,LS}^{[m]}$	Total project emissions due to livestock grazing in project activities for monitoring period $[m]$	tCO_2e	(E.6)
$E_{P\,act\,SF}^{[m]}$	Total project emissions due to the use of synthetic fertilisers in project activities for monitoring period $[m]$	tCO_2e	Section *Quantifying N_2O Emissions from the Use of Synthetic Fertilisers*
$E_{P\,act\,OE}^{[m]}$	Total project emissions due to other significant emission project activities for monitoring period $[m]$	tCO_2e	Section *Quantifying Emissions from Other Significant Project Activity Sources*

Quantifying Emissions from Biomass Burning

10.2.9 Emissions from the burning of woody or herbaceous biomass as a result of project activities in the PA must be recorded as the weight (in tonnes) of woody or herbaceous biomass consumed during each burning event.

10.2.10 If the production of sustainable charcoal occurs within the PA, then it must be accounted for under emissions from burning.

10.2.11 Emissions from the controlled burning of woody or herbaceous biomass are equivalent to the sum of all burning events during the monitoring period as defined by equation (E.5).

$$E_{P\,act\,b}^{[m]} = \left(\frac{44}{12}\right) \times 0.66 \times \sum r_{cf\,b} B_b \qquad \textbf{(E.5)}$$

Parameter	Description	Unit	Data Source
$E_{P\,act\,b}^{[m]}$	Total project emissions due to burning of biomass in project activities for monitoring period $[m]$	tCO_2e	(E.5)
$\left(\frac{44}{12}\right)$	Ratio of mass of carbon dioxide to the mass of carbon, used to units of convert carbon to CO_2	Dimensionless	Default factor
$r_{cf\,b}$	Carbon fraction of biomass for burned wood or herbaceous material b. Value is from literature estimates or direct measurement	Dimensionless	Default factor
B_b	Biomass in burned wood or herbaceous material in the PA for monitoring period $[m]$	Tonnes	Developer

Quantifying Emissions from Livestock Grazing

10.2.12 If grazing of livestock occurs within the PA during the current monitoring period, the developer must calculate emissions from grazing.

10.2.13 Emissions from livestock $E^{[m]}_{P\,\Delta\,LS}$ are given by equation (E.6), based on IPCC Good Practice Guidelines and IPCC Guidelines for National Greenhouse Gas Inventories. Refer to the *Appendix III* for additional guidance on methods and requirements.

$$E^{[m]}_{P\,\Delta\,LS} = \sum_{i \in r} \left(\frac{f_{LS\,i} \times n_{LS\,i}}{10^3} \right) \times 21 \qquad \textbf{(E.6)}$$

Parameter	Description	Unit	Data Source
$E^{[m]}_{P\,\Delta\,LS}$	Total project emissions due to livestock grazing within the PA for monitoring period $[m]$	tCO_2e	(E.6)
$f_{LS\,i}$	Emission factor for the defined livestock population i. Default values from IPCC as shown in *Appendix III*	Kg CH_4 * Head^{-1} * Year^{-1}	IPCC (*Appendix III*)
$n_{LS\,i}$	Number of head of livestock species / category i in the PA	Dimensionless	Developer
21	Conversion of t CH_4 to tCO_2	Dimensionless	Default Factor

Calculating N_2O Emissions from the Use of Synthetic Fertilisers

10.2.14 If project activities include the use of synthetic nitrogen fertilisers to improve agricultural yields, then N_2O emissions must be quantified by developers.

10.2.15 Developers should use the CDM tool for *Estimation of direct nitrous oxide emission from nitrogen fertilization*[9] to calculate emissions released due to use of synthetic fertiliser $E_{P\ act\ SF}^{[m]}$.

Calculating Emissions from Other Significant Project Activity Sources

10.2.16 If another project activity results in a significant emission not covered in this methodology, its GHG emissions must be calculated for monitoring period $[m]$ using locally appropriate values, monitored project data, or default IPCC values. The developer must also define the quantification method and identify the relevant data sources.

10.3 Quantifying Emissions from Activity-shifting Leakage

10.3.1 Activity-shifting leakage results from the activities of the agent of conversion due to the project activities.

10.3.2 Total emissions from leakage activity-shifting leakage for the current monitoring period $E_{L\ AS}^{[m]}$ are calculated by Equitable Earth by multiplying the project's AUDD baseline ($E_{B\ AUDD}^{[m]}$) by a default 10% activity-shifting leakage value as in equation (E.7). Once estimated for the current monitoring period, these cumulative emissions from leakage ($E_{L\ AS}^{[m]}$) are fixed for subsequent monitoring periods.

10.3.3 Projects may be exempt from activity-shifting leakage requirements if it can be demonstrated that agents of deforestation and degradation have no access to forest areas outside the project boundary. In such cases, the parameter $E_{L\ AS}^{[m]}$ is set to zero for the full duration of the project's AUDD baseline period.

10.3.3.1 To qualify for this exemption, Developers must provide evidence based on:

10.3.3.1.1. Participatory Rural Appraisal and/or expert knowledge to assess land use practices and agent behavior; and

[9] UNFCCC/CCNUCC (2007) 'Estimation of direct nitrous oxide emission from nitrogen fertilization (Version 01).' CDM – Executive Board, EB 33, Report Annex 16, p. 1–6. Available at: URL (Accessed 19/08/2025).

10.3.3.1.2. A mandatory spatial analysis of forest accessibility, including at a minimum a 10 km buffer zone surrounding the PA

10.3.3.2 If this exemption cannot be substantiated, projects must quantify and deduct activity-shifting leakage emissions in accordance with the requirements of this section.

$$E_{L\,AS}^{[m]} = (E_{B\,AUDD}^{[m]} \times LF) \quad \textbf{(E.7)}$$

Parameter	Description	Unit	Data Source
$E_{L\,AS}^{[m]}$	Total emissions from activity-shifting leakage for monitoring period $[m]$. Parameter value cannot be greater than zero.	tCO_2e	(E.7)
$E_{B\,AUDD}^{[m]}$	Project AUDD baseline at monitoring period $[m]$	tCO_2e	Equitable Earth
LF	Activity-shifting leakage default factor for monitoring period $[m]$	tCO_2e	Equitable Earth; Section *Quantifying Emissions from Activity-shifting Leakage*

10.4 Quantifying Gross Emission Reductions (GERs)

10.4.1 The Gross Emission Reductions (GERs) for a monitoring period $[m]$ are quantified by Equitable Earth as equation (E.8). Quantified GERs should be rounded down to the nearest whole number as a conservative measure.

$$E_{GER\,ER}^{[m]} = E_{B\,AUDD}^{[m]} - E_{PE\,\Delta}^{[m]} - E_{L\,AS}^{[m]} - E_{D}^{[m]} \quad \textbf{(E.8)}$$

Parameter	Description	Unit	Data Source
$E_{GER\ ER}^{[m]}$	Gross Emission Reductions for the monitoring period $[m]$	tCO_2e	(E.8)
$E_{B\ AUDD}^{[m]}$	Project AUDD baseline emissions at monitoring period $[m]$	tCO_2e	Equitable Earth
$E_{PE\ \Delta}^{[m]}$	Total project emissions for monitoring period $[m]$	tCO_2e	(E.3)
$E_{L\ AS}^{[m]}$	Total emissions from activity-shifting leakage for monitoring period $[m]$. Parameter value cannot be less than zero	tCO_2e	(E.7)
$E_{D}^{[m]}$	Uncertainty deduction for the monitoring period $[m]$	tCO_2e	(E.1, E.2); Section *Monte Carlo Simulation*

10.5 Quantifying Net Emission Reductions (NERs)

10.5.1 The total Net Emission Reductions (NERs) from AUDD activities for a monitoring period $[m]$ are determined by subtracting the buffer account allocation from the Gross Emission Reductions (GERs), in accordance with equation (E.9).

$$E_{NER\ ER}^{[m]} = E_{GER\ ER}^{[m]} - E_{BA\ ER}^{[m]} \quad \textbf{(E.9)}$$

Parameter	Description	Unit	Data Source
$E_{NER\ ER}^{[m]}$	Net Emission Reductions for monitoring period $[m]$	tCO_2e	(E.9)

Parameter	Description	Unit	Data Source
$E^{[m]}_{GER\ ER}$	Gross Emission Reductions for monitoring period $[m]$	tCO_2e	(E.8)
$E^{[m]}_{BA\ ER}$	Buffer pool contribution for the AUDD baseline	tCO_2e	Programme Manual

10.5.2 Equitable Earth allocates 20% of the verified GHG reductions achieved by each project to the buffer pool at the time of ECU issuance. Refer to the *Buffer Pool* section in the Programme Manual for more details about how buffer pool contributions are determined and allocated.

10.5.3 In the context of this methodology, ECUs represent net emission reductions from AUDD activities after all deductions.

❓**We currently propose a fixed 20% buffer contribution. In the public consultation, we will ask whether this is acceptable or if alternative approaches would be more appropriate for the project(s) (e.g. lower fixed rates or risk-based contributions).**

11 Monitoring, Reporting, and Verification (MRV)

11.1 Indicators & Parameters

Parameters for Equitable Earth

Parameter	Description	Unit	Method / Reference
$E_{B\,AUDD}^{[m]}$	Project AUDD baseline emissions for monitoring period $[m]$, derived from the JRL and allocated to the project using the BAAR model	tCO_2e	Centrally parameterised by Equitable Earth; provided as BAAR model output
$E_{PE\,\Delta}^{[m]}$	Total project emissions for monitoring period $[m]$, sum of emissions from forest biomass loss ($E_{P\,for}^{[m]}$) and project activities ($E_{P\,act}^{[m]}$)	tCO_2e	Calculated (E.3) using project-reported activity emissions
$E_{P\,for}^{[m]}$	Emissions from forest biomass loss in the PA for monitoring period $[m]$. Cannot be greater than zero	tCO_2e	Calculated
$E_{L\,AS}^{[m]}$	Total emissions from activity-shifting leakage for monitoring period $[m]$. Cannot be less than zero	tCO_2e	Calculated (E.7)
$E_{D}^{[m]}$	Uncertainty deduction for the monitoring period $[m]$	tCO_2e	Calculated (E.1, E.2); Section *Monte Carlo Simulation*
$E_{GER\,ER}^{[m]}$	Gross emission reductions for the monitoring period $[m]$	tCO_2e	Calculated (E.8)

Parameter	Description	Unit	Method / Reference
$E_{NER\ ER}^{[m]}$	Net emission reductions for monitoring period $[m]$	tCO_2e	Calculated (E.9)
$E_{BA\ ER}^{[m]}$	Buffer pool contribution for the AUDD baseline	tCO_2e	Calculated per Programme Manual

Parameters for Developers

Parameter	Description	Unit	Method / Reference
$E_{P\ act}^{[m]}$	Total emissions from project activities in the PA for monitoring period $[m]$	tCO_2e	Calculated (E.4)
$E_{P\ act\ B}^{[m]}$	Project emissions due to burning of biomass in project activities for monitoring period $[m]$	tCO_2e	Measured and calculated (E.5)
$E_{P\ act\ LS}^{[m]}$	Project emissions due to livestock grazing in project activities for monitoring period $[m]$	tCO_2e	Measured and calculated (E.6)
$E_{P\ act\ SF}^{[m]}$	Project emissions due to the use of synthetic fertilisers in project activities for monitoring period $[m]$	tCO_2e	Measured
$E_{P\ act\ OE}^{[m]}$	Project emissions due to other significant project activity emission sources for monitoring period $[m]$	tCO_2e	Measured
B_b	Biomass in burned wood or herbaceous material in the PA for monitoring period $[m]$	tonnes	Measured
$r_{cf\ b}$	Carbon fraction of biomass for burned wood or herbaceous material b	Dimensionless	Literature estimates or direct measurement

11.1.1 In addition to the parameters set out above, developers must establish indicators related to the following:

11.1.1.1 Ecological condition interventions.

11.1.1.2 Social additionality interventions.

11.1.1.3 Identified reversal and delivery risks.

11.1.1.4 Implemented mitigation actions related to safeguards.

❓**M002 minimises field data requirements to reduce burden and ensure consistency across projects. In the public consultation, we will ask how important in-situ data collection is for your project(s), and in which cases you believe it should be required or encouraged.**

11.2 Monitoring

Monitoring by Equitable Earth

11.2.1 Equitable Earth monitors and periodically re-evaluates the AUDD project baseline for each project every six years in accordance with the approved baseline validity period.

11.2.2 Net changes in tree carbon stock within the PA are monitored by Equitable Earth for each monitoring period using remote sensing. These calculations account for emissions from deforestation and degradation.

11.2.3 Emissions from activity-shifting leakage are monitored by Equitable Earth and calculated for each monitoring period. Market leakage is addressed through jurisdictional accounting.

Monitoring by Developers

11.2.4 Developers must establish a monitoring plan and are responsible for monitoring all indicators defined during the certification process, in conformance with the *Monitoring* section in the Equitable Earth Standard and the Programme Manual, respectively.

11.2.5 In addition, developers must monitor:

11.2.5.1 Project activity emissions that are not considered *de minimis*.

11.2.5.2 Livelihoods, biodiversity, and other social and environmental benefits and impacts in accordance with the requirements defined in the Equitable Earth Standard.

11.3 Reporting

Reporting by Equitable Earth

11.3.1 Using the parameters of the *Indicators & Parameters* section, Equitable Earth compiles a GHG Monitoring Report that consolidates the results of the net GHG reductions achieved during the verification period. Refer to the *Monitoring, Reporting, and Verification (MRV) Requirements* section in the Equitable Earth Standard for more details.

Reporting by Developers

11.3.2 Developers must complete the Annual Report, reporting on indicators for each pillar and consolidating the activities undertaken over the last 12 months.

Adaptive Management

11.3.3 Developers must update the Project Design Document every four years after the registration date, based on the updated assessments of the project compiled in every Annual Report. More information about adaptive management can be found in the Programme Manual.

Appendix I: Documentation History

Version	Date	Description
v0.1	21/08/2025	Version for public consultation

Appendix II: Default AGB/BGB Ratios

A summary table of the default AGB/BGB ratios from Table 4.4 of the 2019 IPCC Guidelines for National GHG Inventories is provided below. For domains, ecological zones, or continents not shown here, refer to the IPCC document for the complete table of values[10].

Domain	Ecological zone	Continent	Origin (Natural/ Plantation)	Above- ground biomass (tonnes ha^{-1})	R [tonne root d.m. (tonne shoot d.m.)$^{-1}$]
Tropical	Tropical Rainforest	Africa	Natural	≤ 125	0.825
			Natural	>125	0.532
		North and South America	Natural	≤ 125	0.221
			Planted	≤ 125	0.170
			Natural	>125	0.221
			Planted	>125	0.170
		Asia	Natural	≤ 125	0.207
			Planted	≤ 125	0.325
			Natural	>125	0.212
	Tropical Moist	Africa	Natural	>125	0.232
			Natural	≤ 125	0.232
		North and South America	Natural	>125	0.2845
			Natural	≤ 125	0.284
		Asia	Natural	>125	0.323
			Natural	≤ 125	0.246
	Tropical Dry	Africa	Natural	>125	0.332
			Natural	≤ 125	0.379

[10] Domke, G., Brandon, A., Diaz-Lasco, R., Federici, S., Garcia-Apaza, E., Grassi, G., Gschwantner, T., Herold, M., Hirata, Y., Kasimir, Å., Kinyanjui, M. J., Krisnawati, H., Lehtonen, A., Malimbwi, R. E., Niinistö, S., Ogle, S. M., Paul, T., Ravindranath, N. H., Rock, J., Sanquetta, C. R., Sanz Sanchez, M. J., Vitullo, M., Wakelin, S. J., and Zhu, J. (2019) '2019 Refinement to the 2006 IPCC Guidelines for National Greenhouse Gas Inventories.' Volume 4: Agriculture, Forestry and Other Land Use, Chapter 4: Forest Land, Table 4.4, pp. 4.18–4.21. Available at: URL (Accessed 15/08/2025).

Domain	Ecological zone	Continent	Origin (Natural/ Plantation)	Above- ground biomass (tonnes ha^{-1})	R [tonne root d.m. (tonne shoot d.m.)$^{-1}$]
		North and South America	Natural	>125	0.334
			Natural	≤ 125	0.379
		Asia	Natural	>125	0.440
			Natural	≤ 125	0.379
	Tropical Mountain	North and South America	Natural	≤ 125	0.348
			Planted	≤ 125	0.205
			Natural	>125	0.283
		Asia	Natural	≤ 125	0.322
			Natural	>125	0.345

Appendix III: Livestock Grazing Emissions

This appendix describes the procedure for developers to collect and use data required for quantifying emissions from livestock grazing when this activity is included in the project scope and is not considered *de minimis*.

Emissions from livestock grazing are calculated by:

1) Determining the livestock population present within the PA; and
2) Applying the relevant default emission factors from the 2006 IPCC Guidelines for National Greenhouse Gas Inventories.

Livestock Sampling

Developers must compile a complete list of all livestock species and populations present within the PA boundary.

To determine the number of livestock heads being grazed:

- Conduct a direct headcount of each livestock species within the PA, where possible.
- Ensure that population numbers reflect any changes over the monitoring period, including births and deaths.
- Where direct counting is not feasible, use sampling methods that can be reliably extrapolated to the entire population.
- It is always conservative to slightly overestimate the number of livestock heads.

Once livestock numbers are established, apply the relevant emission factors provided in the following tables to estimate annual CH_4 emissions.

Livestock Emission Factors

The tables below contain the default emission factors for livestock, which represent the amount of methane emitted per animal per year and vary by species, country development status, and (for cattle) region and production category.

IPCC Default Emission Factors for Livestock by Country Development Status[11] (kg CH_4 $head^{-1}$ yr^{-1})		
Livestock	**Developed countries**	**Developing countries**
Buffalo	55	55
Sheep	8	5
Goats	5	5
Camels	46	46
Horses	18	18
Mules and Donkeys	10	10
Deer	20	20
Alpacas	8	8
Swine	1.5	1

IPCC Default Emission Factors for Cattle by Region and Category[12] (kg CH_4 $head^{-1}$ yr^{-1})		
Region	**Cattle Category**	**Emission factor**
North America	Dairy	128
	Other Cattle	53
Western Europe	Dairy	117
	Other cattle	57

[11] Eggleston, H. S., Buendia, L., Miwa, K., Ngara, T., and Tanabe, K. (2006) 'IPCC Guidelines for National Greenhouse Gas Inventories.' Volume 4: Agriculture, Forestry and Other Land Use, Chapter 10: Emissions from Livestock and Manure Management, Table 10.10, p. 10.28. Available at: URL (Accessed 19/08/2025).

[12] Eggleston, H. S., Buendia, L., Miwa, K., Ngara, T., and Tanabe, K. (2006) 'IPCC Guidelines for National Greenhouse Gas Inventories.' Volume 4: Agriculture, Forestry and Other Land Use, Chapter 10: Emissions from Livestock and Manure Management, Table 10.11, p. 10.29. Available at: URL (Accessed 19/08/2025).

IPCC Default Emission Factors for Cattle by Region and Category[12] (kg CH_4 $head^{-1}$ yr^{-1})		
Eastern Europe	Dairy	99
	Other cattle	58
Oceania	Dairy	100
	Other cattle	60
Latin America	Dairy	72
	Other cattle	56
Asia	Dairy	68
	Other cattle	47
Africa and Middle East	Dairy	46
	Other cattle	31
Indian subcontinent	Dairy	58
	Other cattle	27

Appendix IV: Carbon Parameters

Parameters Available at Validation

Data/ Parameter	Description	Unit	Data Source
$E_{B\,AUDD}$	AUDD project baseline for monitoring period $[m]$, derived from the JRL and allocated to the project using the BAAR model	tCO_2e / yr	Monitored and calculated by Equitable Earth
$r_{cf\,b}$	Carbon fraction of biomass for burned wood or herbaceous material b	Dimensionless	Monitored by Developers; literature estimates or direct measurement
$\left(\frac{44}{12}\right)$	Ratio of mass of carbon dioxide to the mass of carbon, used to units of convert carbon to CO_2	Dimensionless	Default Factor
$f_{LS\,i}$	Emission factor for the defined livestock population i. Default values from IPCC as shown in *Appendix III*	Kg CH_4 * $Head^{-1}$ * $Year^{-1}$	IPCC (*Appendix III*)
$SE_{pixel,0}$	Standard error from the AGB provider for each pixel	tDM	AGB provider
ϱ	Correlation factor between the pixels	Dimensionless	AGB provider (E.1)
RS	Root-to-shoot ratio. The root-to-shoot ratios applied are based on the 2019 updated values	Dimensionless	IPCC 2019 Refinement to the 2006 Guidelines for National Greenhouse Gas Inventories

Data/ Parameter	Description	Unit	Data Source
	from the IPCC, which provides root-to-shoot (RS) values for each ecological zone across continents (Asia, Africa, North and South America), distinguishing between above-ground biomass values less than and greater than 125 $tDM \cdot Ha^{-1}$. Equitable Earth uses values specific to natural origins[13]		
GWP_g	Global warming potential per gas *g*	Dimensionless	IPCC's Sixth Assessment Report (AR6)

[13] Calvo Buendia, E., Tanabe, K., Kranjc, A., Baasansuren, J., Fukuda, M., Ngarize, S., Osako, A., Pyrozhenko, Y., Shermanau, P. and Federici, S. (2019). 'IPCC 2019, 2019 Refinement to the 2006 IPCC Guidelines for National Greenhouse Gas Inventories'. Published: IPCC, Switzerland. Volume 4, Chapter 4, Table 4.4, p 4.18. Available at: URL (Accessed 14/08/2025).


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