PLAN VIVO

PV Climate

Methodology Requirements

Version 1.2

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INTRODUCTION

The *Carbon Benefits* of *Projects Registered* under the Plan Vivo Carbon Standard (PV Climate) must be calculated using an approved *Methodology*. *Methodologies* must describe all procedures, data and parameters needed to estimate and monitor *Carbon Benefits* and can refer to approved *Modules* and *Tools*. Approved *Methodologies, Modules* and *Tools* are published on the Plan Vivo website and are available for use by all PV Climate projects that meet the specified applicability conditions. Plan Vivo *Methodologies* can also refer to *Modules* and *Tools* approved by other GHG Programs. For more information, please contact the Plan Vivo Secretariat by emailing info@planvivofoundation.org

If an existing *Methodology* for calculating *Carbon Benefits* that is applicable to the *Project Area* (s) and *Project Intervention* is not available, new *Methodologies*, *Modules* and *Tools* can be submitted to Plan Vivo for approval. The process for submitting a new *Methodology* is described in the PV Climate Procedures Manual. *Methodologies*, *Modules* and *Tools* must meet all Methodology Requirements.

These Methodology Requirements describe the criteria against which all *Methodologies, Modules* and *Tools* are assessed. They are aligned with ISO 14064:2:2019, and The Greenhouse Gas Protocol; and are designed to ensure that *Carbon Benefits* are real, additional, measurable and verifiable, in line with the following principles:

- **Relevance and Completeness** – Selection of *Carbon Pools* and emission sources, and approaches for estimating *Carbon Benefits*, that are appropriate to the *Project Intervention* and the *Project Area*.
- **Consistency** – Use of uniform approaches for estimating *Carbon Benefits* among projects.
- **Accuracy** – Avoiding or eliminating bias from inputs used to estimate or quantify *Carbon Benefits*.
- **Transparency** – Maintaining a clear record of approaches, data and assumptions used to quantify *Carbon Benefits*.
- **Conservativeness** – Managing uncertainty to minimise potential for overestimation of *Carbon Benefits*.

Since PV Climate targets *Projects* working with smallholders and community groups, the Methodology Requirements represent a balance between providing the accuracy and precision required for robust claims of GHG emission reductions and removals, and the cost of estimation and monitoring. The importance of minimising the potential for overestimating *Carbon Benefits* is

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recognised, as well as the importance of low-cost approaches to enable projects that would otherwise be unable to go ahead.

Methodology Requirements

1 General Requirements

1.1 Methodology structure

Requirements

1.1.1   *Methodologies, Modules* and *Tools* must be prepared using the most recent PV Climate [Methodology/Module/Tool Template](#) and must include sufficient information to enable their consistent application by *Projects*, and to enable reviewers to assess whether they meet the PV Climate *Methodology Requirements*..

Guidance

Methodology/Module/Tool Templates are available on the Plan Vivo website.

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1.2   Uncertainty

Requirements

1.2.1   If models or sampling are used to estimate parameters used to calculate *Carbon Benefits*, *Methodologies* must describe approaches for estimating model and/or sampling uncertainty associated with each parameter at a 90% confidence level.

1.2.2   *Methodologies* must describe approaches for combining the model and/or sampling uncertainty associated with all parameters that are measured or modelled to estimate *Carbon Benefits* to calculate a total uncertainty of the *Carbon Benefit* (U). This uncertainty must be expressed as a percentage of the *Carbon Benefit.*

1.2.3   Uncertainty adjustments must be applied to deduct a proportion of *Carbon Benefits* that is equal to or greater than 0.25 x (U - 0.5) where U is the uncertainty as a percentage of the measured *Carbon Benefit.*

1.2.4   Sources of uncertainty in estimated *Carbon Benefits* that cannot be readily quantified must be controlled through the use of best practice approaches (e.g. to reduce measurement error), appropriate default values, proxies that are strongly correlated with the values they are used to predict, and robust assumptions.

1.2.5   Conservative approaches must be used for estimating expected *Carbon Benefits*.

1.2.6   Approaches used for estimating uncertainty associated with modelled or sampled parameters and combining uncertainty from different parameters used to estimate carbon benefits, must be consistent with international good practices in greenhouse gas accounting.

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- Example of minimum uncertainty adjustment for measured Carbon Benefits where the uncertainty at a 90% confidence level was 70% of the measured value. U = 0.7, so the minimum adjustment would be 0.25 × (0.7-0.5) = 0.05, so the Carbon Benefit the Project could claim would be reduced by 5%.
- The uncertainty adjustment applied cannot result in a negative carbon benefit. If the equation 0.25 x (U - 0.5) returns a negative value, the uncertainty adjustment is 0% and if the equation returns a value greater than 1, the uncertainty adjustment is 100%.
- Examples of international good practice for quantifying uncertainty in greenhouse gas accounting include the IPCC 2019 refinement to 2006 Guidelines for National GHG Inventories, Equations 5.1 to 5.4.

1.3 Quantifying emissions and removals

Requirements

1.3.1 Approaches used for quantifying greenhouse gas emissions and changes in carbon stocks must be consistent with international good practices in greenhouse gas accounting.

1.3.2 *Methodologies* must quantify greenhouse gas emissions and changes in carbon stocks separately for each *Carbon Pool* and emissions source.

1.3.3 All greenhouse gas emissions must be converted to CO_2 equivalent using 100-year global warming potentials from the most recent IPCC Assessment Report.

1.3.4 *Methodologies* must identify, describe and justify all data, parameters, assumptions, and calculations used to estimate and measure *Carbon Benefits*.

Guidance

- Examples of international good practice for quantifying greenhouse gas emissions and change in carbon stocks include IPCC 2019 refinement to 2006 Guidelines for National GHG Inventories.[1]
- For *Carbon Pools* and emissions sources to include see Section 2.2.

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[1] https://www.ipcc-nggip.iges.or.jp/public/2019rf/index.html

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1.4 Measurements and sampling

Requirements

1.4.1   If *Methodologies* include direct measurements of greenhouse gas emissions and carbon stocks, the methods to be used for data collection, analysis and uncertainty estimation must be specified and comply with international best practice; and adjustments to avoid over-estimation of *Carbon Benefits* must be applied (see Section 1.2).

Guidance

- Stratified sampling is recommended to reduce levels of uncertainty.

1.5 Models, default factors and proxies

Requirements

1.5.1   If *Methodologies* use models to simulate greenhouse gas emissions or removals, the models must: i) be publicly available; ii) have been reviewed and tested for use across the full scope described in the *Methodology*'s applicability criteria; and iii) apply conservative assumptions, parameters, and adjustments to avoid over-estimation of *Carbon Benefits* (see Section 1.2).

1.5.2   If *Methodologies* use third-party default factors to quantify greenhouse gas emissions or removals, they must be publicly available from a recognised and credible source and also the most current (up-to-date) versions.

1.5.3   If *Methodologies* include novel default factors, full details of the methods and data used to establish the default factors must be provided.

1.5.4   If *Methodologies* allow the use of *Project*-specific default factors, full details of the approaches for establishing the default factors must be provided and comply with international best practice.

1.5.5   If *Methodologies* use proxies, they must be strongly correlated with the value they are used to quantify.

Guidance

- Although models must be publicly available, they do not have to be free to use

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2   Methodology Components

2.1   Applicability conditions

Requirements

2.1.1   *Methodologies* must specify the *Project Intervention(s)* and geographical location(s) they are applicable to, and any other criteria for determining the situations in which they can or cannot be applied.

2.1.2   *Methodologies* must specify the type(s) of *Plan Vivo Certificate* they can be used to claim (i.e. fPVCs, rPVCs, or vPVCs).

Guidance

- *Carbon Benefits* from greenhouse gas emission reductions are only eligible for reported *Plan Vivo Certificates* (rPVCs) after the emission reduction has occurred.
- Verified *Plan Vivo Certificates* (vPVCs) are issued once a *Carbon Benefit* has been achieved and *Verified*.
- For rPVCs to be converted to vPVCs they must be *Verified* within 5-years of issuance.
- fPVCs can be issued for *Carbon Benefits* that are expected to be achieved within a *Crediting Period* that does not exceed 50-years*.*

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2.2   Carbon pools and emissions sources

Requirements

2.2.1   *Methodologies* must identify the *Carbon Pools* and emission sources that will be assessed, or the criteria and approaches for determining these.

2.2.2   The following *Carbon Pools* and emission sources must be considered for inclusion in the *Methodology*, and justification must be provided for any excluded *Carbon Pools* or emission sources: *Carbon Pools* – Aboveground woody biomass, Aboveground non-woody biomass, Belowground biomass, Litter, Deadwood, Soil organic carbon, Wood products; Emission sources – Nitrogen fertilisers (N_2O), Nitrogen fixing species (N_2O), Biomass burning (CH_4), Fossil fuel use (CO_2), Enteric fermentation (CH_4), Manure deposition (CH_4, N_2O), Soil methanogenesis (CH_4).

2.2.3   *Carbon Pools* and emission sources must be included if the *Project Scenario* emissions from that *Carbon Pool* or emission source are greater than in the *Baseline Scenario*.

2.2.4   *Carbon Pools* and emission sources that generate more emissions in the *Project Scenario* than the *Baseline Scenario* can be excluded if the total difference in emissions between the *Baseline Scenario* and *Project Scenario* for all excluded *Carbon Pools* and emission sources does not exceed 5% of the total expected *Carbon Benefits* of the *Project*.

2.2.5   The same *Carbon Pools* and emission sources must be assessed for quantifying the *Carbon Baseline*, *Project* emissions and removals, and *Leakage*.

Guidance

- The tool for testing significance of GHG emissions in A/R CDM project activities[2] can be used to determine whether omitted *Carbon Pools* and emission sources could reduce *Carbon Benefits* by more than 5%.
- **Only long-**term storage of carbon in harvested wood products (i.e. >50 years) can be included when estimating the *Carbon Benefits* from this *Carbon Pool*.

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[2] https://cdm.unfccc.int/methodologies/ARmethodologies/tools/ar-am-tool-04-v1.pdf

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2.3   Baseline scenario and additionality

Requirements

2.3.1   *Methodologies* must describe approaches for describing the most likely land use and land management in the absence of *Project Intervention*(s) for each *Project Area.*

2.3.2   *Methodologies* must describe approaches for demonstrating the *Additionality* of *Carbon Benefits* by showing that *Project Interventions* would not be feasible for *Project Participants* to implement in the absence of the *Project.*

2.3.3   *Methodologies* must describe approaches for updating the *Baseline Scenario* and re-assessing *Additionality* whenever a *Crediting Period* is renewed, and at least every 10-years throughout the *Project Period.*

Guidance

- The *Baseline Scenario* and *Additionality* assessment must be updated to incorporate the impacts of any material changes that affect the most likely land use and land management scenario in the absence of *Project Interventions* e.g. policy or legal changes, or new developments that affect the *Project Region.*

2.4   Carbon baseline

Requirements

2.4.1   *Methodologies* must describe approaches for estimating the *Carbon Baseline* for all relevant *Carbon Pools* and emission sources in each year of the *Crediting Period.*

2.4.2   *The Carbon Baseline* must reflect the *Baseline Scenario*, and can be informed by historical, measured, or modelled activity data describing conditions in the *Project Area*(s) prior to the establishment of the *Project Intervention*(s).

2.4.3   If the *Carbon Baseline* is developed using historical data to establish an average or trend, the historical reference period must start within 10-years and end within 2-years of the *Start Date.*

2.4.4   *Methodologies* must describe approaches for reviewing and updating the *Carbon Baseline* whenever a *Crediting* Period is renewed, and at least every 10-years throughout the *Crediting Period.*

Guidance

- Approaches for reviewing the *Carbon Baseline* could include direct or indirect measurements at control sites, and/or a reassessment of whether key assumptions remain valid, using data collected during the *Crediting Period*.

2.5 Project emissions and removals

Requirements

2.5.1 *Methodologies* must describe approaches for estimating the expected *Carbon Benefits* for all relevant *Carbon Pools* and emission sources for each year of the *Crediting Period*.

2.5.2 If *Methodologies* are used to claim fPVCs, approaches used to estimate the expected *Carbon Benefits* must conform with Requirement 1.2.5.

2.5.3 *Methodologies* for claiming vPVCs must identify *Carbon Indicators* for each relevant *Carbon Pool* and emission source and describe approaches for estimating *Project* emissions and removals achieved in each *Verification Period*.

Guidance

- If the estimated *Project* emissions and removals will not be used to claim fPVCs, estimates of expected *Carbon Benefits* do not need to conform with Requirement 1.2.5.

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2.6   Harvesting

Requirements

2.6.1   *Plan Vivo Certificates* cannot be claimed for *Carbon Benefits* that will be reversed as a result of tree harvesting within 50-years of the Start Date.

2.6.2   If *quantifying* carbon stocks for a Project *Scenario* that includes harvesting with even-aged management, the number of Plan Vivo Certificates claimed must not exceed the average *Carbon Benefit* over at least one full rotation that includes the final harvest.

2.6.3   If quantifying carbon stocks for a Project *Scenario* includes thinning or partial felling, the number of P*lan Vivo Certificates* claimed must not exceed the minimum post-harvest Carbon Be-=nefit.

Guidance

- The number of full rotations included when calculating average *Carbon Benefits* of even-aged management systems must not exceed the number of full or partial rotations included within a 50-year period. E.g. if the rotation length is 30-years, average *Carbon Benefit* should be calculated over 2 full rotations.
- Emissions from partial felling can also be calculated using IPCC gain-loss approaches, which may be more suitable for *Projects* that focus on improved forest management.

2.7   Leakage

Requirements

2.7.1   *Methodologies* must describe approaches to estimate potential *Leakage* and/or applying an appropriate *Leakage Discount* in each year of the *Crediting Period*.

2.7.2   *Methodologies* for claiming vPVCs must describe approaches for estimating *Leakage* that occurs, or for applying an appropriate *Leakage Discount* during each *Verification* period.

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Guidance

- *Leakage* beyond national boundaries does not need to be considered.
- Potential sources of *Leakage* include displacement of agricultural production, wood harvesting, firewood gathering, livestock, mining, and other activities or events that degrade carbon stocks from the *Project Area* to other areas as a direct and/or indirect result of the *Project Intervention*.
- If *Leakage Discounts* are used instead of measuring Leakage that occurs, the *Leakage Discount* should represent the maximum *Leakage* emissions that could be attributed to the *Project Intervention(s)*.

2.8 Calculation of carbon benefits

Requirements

2.8.1 *Methodologies* must describe approaches to calculate expected *Carbon Benefits* for each year of the *Crediting Period* by subtracting expected *Project Scenario* and *Leakage* emissions from the *Carbon Baseline* emissions.

2.8.2 *Methodologies* for claiming vPVCs must describe approaches to calculate *Carbon Benefits* achieved during each *Verification* period by subtracting measured *Project Scenario* emissions and measured or maximum-potential *Leakage* emissions from the *Carbon Baseline* emissions.

Annex 1 – Version Control

Version Number	Date of release (DD/MM/YYYY)	Changes and additions since previous version
V1.0	11/05/2022	n/a
V1.1	01/11/2023	Rebranded from the "Plan Vivo Standard" to the "Plan Vivo Carbon Standard (PV Climate)"
V1.2	03/09/2024	- Removed *allowance* of some *Methodologies* from other Standards being automatically approved for use. - Removed Section 1.2 Guidance point 1, and Section 2.6 Guidance point 3 - Equation in Requirement 1.2.3 changed from "0.25 x U - 0.5" to "0.25 x (U - 0.5)" effective immediately

- New Requirement 1.2.6 requesting that all approaches to estimating uncertainty are aligned with international good practices in greenhouse gas accounting.
- Guidance in Section 1.2 adjusted to:
  - Remove reference to the Plan Vivo Methodology Guidance, as this does not yet exist.
  - Clarify that the uncertainty adjustment applied cannot result in a negative *Carbon Benefit*.
  - Refer to IPCC guidelines for examples of international good practices in greenhouse gas accounting.
- References to "forward crediting period" have been removed from Guidance for Requirements 2.1, and Requirements 2.4.1, 2.5.1, 2.7.1 and 2.8.1.
- Scope of Requirement 1.2.1 changed to include model uncertainty and remove minimum threshold of "50% of measured value" before uncertainty adjustments are required.
- Clarity added to Requirement 1.2.2 that error must be propagated to estimate the total uncertainty of the *Carbon Benefit* (U).
- Reference to the Plan Vivo Methodology Guidance has been removed from the Guidance of Requirements 2.6, as this does not yet exist.
- Requirement 2.8.1 separated into two requirements, 2.8.1 and 2.8.2, to clarify the ways in which vPVC *Carbon Benefits* should be calculated differently than fPVC and rPVC *Carbon Benefits*.