

VCS MODULE VMD0034 METHODS FOR DEVELOPING A MONITORING PLAN

Version 1.0

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Sectoral Scope 14



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1 SOURCES

VCS methodology *VM0015 Methodology for Avoided Unplanned Deforestation*

2 SUMMARY DESCRIPTION OF THE MODULE

This module sets out the methods and requirements for creating a monitoring plan for the project.

3 DEFINITIONS

Baseline Scenario:	The most likely sequence of events and actions which would be expected to occur within the project area in the absence of the project.
Carbon Stock:	See <i>VCS Program Definitions</i> .
Leakage:	See <i>VCS Program Definitions</i> .
Monitoring Plan:	The plan in which a monitoring schedule and methods are documented.
Project Area:	The area or areas of land on which the project proponent will undertake the project activities.
Project Scenario:	The actions and events which are expected to occur as a result of implementing the project.

4 APPLICABILITY CONDITIONS

None

5 PROCEDURES

5.1 Monitoring Plan

The monitoring plan must detail how the following will be monitored:

- a) Project implementation.
- b) Accounted pools and emissions, as chosen following module *VMD0020 Methods to Determine the Project Boundary*.
- c) Natural disturbance.
- d) Leakage.

These are expanded upon in the sections below. The project proponent must prepare a monitoring plan describing (for each separately) the following:

- a) Purpose of the monitoring.
- b) Technical description of the monitoring task.

- c) Data to be collected.
- d) Overview of data collection procedures.
- e) Frequency of the monitoring.
- f) Quality control and quality assurance procedure.
- g) Data archiving.
- h) Organization and responsibilities of the parties involved in all the above.

Project Implementation

The rationale of monitoring project implementation is to document all project activities implemented by the project (including leakage prevention measures) that could cause an increase in GHG emissions compared to the baseline scenario.

The project proponent must perform the following:

- a) Describe, date and geo-reference, as necessary, all measures implemented by the project.
- b) Collect all relevant data to estimate carbon stock changes due to project activities and displacement of baseline activities, as well as GHG emissions due to leakage prevention measures. Refer to the relevant modules for the variables to be measured.
- c) State whether the measures deviate from those described in the project description.
- d) Record and justify any deviation to the interventions planned.

Accounted Pools and Emissions

The monitoring plan must include the following:

- a) A description of the estimation, modeling, measurement or calculation approaches to be used in monitoring the variable.
- b) A description of how methods and procedures given in each relevant module will be used to estimate the values of monitored variables.
- c) A description of how a requirement for re-stratification will be identified for all monitored variables, and how the re-stratification will be undertaken.
- d) Where applicable, the standards to be used for derivation of data from remote sensing, if remote sensing is to be used. The standards given should be consistent with those used during the preparation of ex-ante projections.
- e) Procedures to be followed in the case of an improvement of the quality of data and data analysis methods during the project crediting period.

Natural Disturbance

Natural disturbances such as tsunamis, sea level rise, volcanic eruption, landslide, flooding, permafrost melting, and pest and disease can impact the carbon stocks and non-CO₂ GHG emissions of a project. Such changes can be abrupt or gradual and when significant, they must be factored out from the estimation of ex post net anthropogenic GHG emission reductions, as follows:

- a) Where natural disturbances reduce the area within which the project activities are undertaken, or within which they have effect, measure the boundary of the polygons lost from the project area and

exclude the area within such polygons from the project area in both the baseline and project scenarios.

- b) Where natural disturbances have an impact on carbon stocks, measure the boundary of the polygons where such changes happened and the change in carbon stock within each polygon. Assume that a similar carbon stock change would have happened in the project area under the baseline scenario.

Leakage

All sources of leakage identified as significant in the ex-ante assessment are subject to monitoring. The monitoring plan must detail the methods to be used to monitor leakage.

5.2 Monitoring Frequency

The following table sets out the monitoring frequency of the data for each module used. The project proponent must ensure that data collection for each module used complies with monitoring frequencies set out below.

The methodology requires project proponents to monitor, recalculate and repeat measurements of certain components of the project through the (re)application of entire or part of modules as set out in Table 1 below, except where specific pools are not being accounted.

Table 1: Monitoring frequency per module

Module name	Monitoring Frequency
<i>VMD0020 Methods to Determine the Project Boundary</i>	Module can be applied at intervals of ≤ 5 years
<i>VMD0019 Methods to Project Future Conditions</i>	When baseline is required to be (re)assessed as per the latest version of the VCS rules
<i>VMD0018 Methods to Determine Stratification</i>	Module can be applied at intervals of ≤ 5 years
<i>VMD0021 Estimation of Stocks in the Soil Carbon Pool</i>	Data must be collected at intervals of ≤ 5 years
<i>VMD0022 Estimation of Carbon Stocks in Living Plant Biomass</i>	Data must be collected at intervals of ≤ 5 years
<i>VMD0023 Estimation of Carbon Stocks in the Litter Pool</i>	Data must be collected at intervals of ≤ 5 years
<i>VMD0024 Estimation of Carbon Stocks in the Dead-wood Pool</i>	Data must be collected at intervals of ≤ 5 years
<i>VMD0025 Estimation of Woody Biomass Harvesting and Utilization</i>	Data must be collected at intervals of ≤ 5 years
<i>VMD0026 Estimation of Carbon Stocks in the Long-</i>	Data must be collected at intervals of ≤ 5 years

<i>lived Wood Products Pool</i>	
<i>VMD0027 Estimation of Domesticated Animal Populations</i>	Data must be collected every year
<i>VMD0028 Estimation of Emissions from Domesticated Animals</i>	Data must be collected at intervals of ≤ 5 years
<i>VMD0029 Estimation of Emissions of non CO₂ GHGs from Soils</i>	Data must be collected at intervals of ≤ 5 years
<i>VMD0030 Estimation of Emissions from Power Equipment</i>	Data must be collected every year
<i>VMD0031 Estimation of Emissions from Biomass Burning</i>	Data must be collected after fire events
<i>VMD0032 Estimation of Emissions from Activity Shifting Leakage</i>	Data must be collected 1 year after the project start date and 5 years after the project start date
<i>VMD0033 Estimation of Emissions from Market Leakage</i>	Data must be collected at intervals of ≤ 5 years
<i>VMD0034 Methods for Developing a Monitoring Plan</i>	Not monitored. Projected at t=0
<i>VMD0035 Methods to Determine the Net Change in Atmospheric GHG Resulting from Project Activities</i>	Recalculated before every verification event

5.3 Quality Assurance and Quality Control

Project proponents must undertake ongoing QA/QC during the preparation of the project description and other project documents, including monitoring reports, as follows:

- a) Project proponents must document all steps undertaken during the use of this methodology, including the sources of data where data is not generated internally, and the methods used to generate data for data generated internally.
- b) Project proponents must describe specific quality criteria for tasks or data types are given in the modules. Where such criteria are given project proponents must document the steps taken to meet these quality criteria.
- c) Project proponents must undertake preparation and documentation of specific guidance on data collection techniques used, training of field crews in these techniques, and development of systematic procedures for checking on adherence to these standards.
- d) For data derived from external sources, project proponents must include in their documentation any assessment of uncertainty attached to that data.
- e) For data generated internally, project proponents must also generate uncertainty estimates for that data. During the preparation of project description and other documentation, project proponents will utilize and generate both qualitative and quantitative data. Depending on the type of data generated, uncertainty estimates must include one or both of the following elements:
 - i. For all data types: A qualitative data assessment. A qualitative data assessment is an assessment of the factors which might influence the accuracy of the data. For example:

- 1) Where the project proponent utilizes qualitative data on future management intentions of local farmers, gathered in interviews with farmers, the project proponent might assess factors such as:
 - The representativeness of the farmers interviewed, in relation to the total project area.
 - The conditions under which farmers were interviewed, including any possible biasing factors.
 - The range of conditions within which the answers are likely to remain valid.
- 2) Where the project proponent gathers quantitative data on soil carbon, the project proponent must assess factors such as:
 - The range of past soil forming conditions within which the data gathering methods used would not be expected to produce accurate data (for instance, where soils consist of uneven layers of high and low carbon alluvial deposits, such that the specified sampling depth fails to capture a specific carbon rich layer where active change is expected to occur).
 - The possible influence of local scale change (change at a scale smaller than the scale of stratification) on soil carbon values, and possible sampling bias arising from these changes.
 - The possibility that a systematic sampling method has given rise to a sampling bias.
 - The possibility that the sampling equipment used introduced some contamination or bias.

For all data types, the qualitative assessment of possible error is of primary importance, and will form the context for the quantitative assessment of error.

- ii. For quantitative data types: A quantitative data assessment. Where quantitative data is gathered, the project proponent should utilize appropriate statistical methods to assess the degree of certainty of the data generated. Specific modules give methods and allowable ranges of uncertainty for specific data types.

Based on the above, project proponents must include as an appendix to the project description, and to each monitoring report, an assessment of the overall uncertainty of the estimation of current conditions, and where applicable the baseline or project projections. This assessment must include:

- a) Documentation of the data gathering procedures used, and the results of the systematic checking procedures to ensure that these procedures were followed.
- b) A qualitative summary of the possible sources of error or uncertainty with relation to the baseline and project projections, including:
 - The possible sources of methodological error in the collection of internally generated data, and the steps taken to ensure that such errors do not, have not or are not occurring.
 - The range of possible conditions, under which the estimations or projections are expected to remain accurate, and the types and estimated likelihood of conditions under which either estimations of current conditions or projections of future conditions might be significantly inaccurate.
 - Future conditions under which a re-assessment of the baseline condition must be considered, due to significant deviation from the expected conditions.

Where appropriate, and recognizing the qualitative assessment undertaken above, a quantitative assessment of the range of uncertainty associated with the assessment of current conditions, or the baseline or project projections must be undertaken. Care must be taken not to rely on such quantitative assessments where factors identified in the qualitative assessment may limit the reliability of statistical procedures.

6 PARAMETERS

All parameters are set out in the respective modules.

7 REFERENCES AND OTHER INFORMATION

None

DOCUMENT HISTORY

Version	Date	Comment
v1.0	16 Nov 2012	Initial version released