METHODOLOGY REVISIONS FOR VM0009 V1.1: AVOIDED DEFORESTATION OF TROPICAL FORESTS

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Methodology Element Title	Methodology Revisions for VM0009 v1.1: Avoided Deforestation of Tropical Forests	
Version	2.154	
Methodology Element Category	Methodology	
	Methodology Revision	
	Module	
	Tool	
Sectoral Scope(s)	3: Agriculture, Forestry, and other Land Use	

Report Title	METHODOLOGY REVISIONS FOR VM0009 V1.1: AVOIDED DEFORESTATION OF TROPICAL FORESTS
Report Version	Version 2
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Work Carried Out By	Edwin Aalders: Lead VCS Validator Pablo Reed: VCS Validator Under Training Guy Pinjuv: Technical Reviewer

Summary:

Det Norske Veritas (U.S.A.), Inc (DNV) has performed a validation of "Methodology Revisions for VM0009 v1.1: Avoided Deforestation of Tropical Forests" to confirm that the methodology design, as documented, is sound and reasonable and meets the identified criteria. The validation was performed on the basis of VCSA requirements for VCS methodologies, as well as criteria given to provide for consistent project operations, monitoring and reporting.

The validation was conducted by means of document review, follow-up interviews, and the resolution of outstanding issues. The review of the project design documentation and the subsequent follow-up interviews have provided DNV with sufficient evidence to determine the fulfilment of stated criteria.

The project consists of validating revisions to VM0009 v1.1 in order to allow for baseline types which include logging and frontier-type deforestation. This revision also includes accounting and mensuration methodology to allow all permitted end land uses other than projects with peat soils in the baseline.

In summary, it is DNV's opinion that the "Methodology for Avoided Deforestation of Tropical Forests". Version 2.154" as described in the VCS PD version 2.154 of 25-07-2012, meets all relevant VCSA requirements set out in the VCS Program Guide version 3.2 and VCS Standard version 3.2. Hence, DNV recommends the approval of the revisions as this VCS REDD Methodology.

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1   INTRODUCTION

Wildlife Works Carbon has commissioned Det Norsle Veritas USA Inc (DNV) to perform a validation of Methodology Revisions for VM0009 v1.1: Avoided Deforestation of Tropical Forests. This report summarizes the findings of the validation of the revisions, performed on the basis of VCSA criteria for VCS methodologies, as well as criteria given to provide for consistent project operations, monitoring and reporting. VCSA criteria refer to VCS 3.2. The methodological revisions consist of allowing for baseline types which include logging and frontier-type deforestation. This revision also includes accounting and mensuration methodology to allow all permitted end land uses, other than projects with peat soils in the baseline.

1.1   Objective

The purpose of a validation is to have an independent third party assess the methodology revisions and design. In particular, the methodology's new allowable baselines, mensuration methodologies, and compliance with relevant VCSA criteria are validated in order to confirm that the revisions, as documented, are sound and reasonable and meet the identified criteria. Validation is a requirement for all VCS methodology revisions and is necessary to provide assurance to stakeholders of the quality of the projects that use this methodology and their intended generation of the Verified Carbon Units (VCUs).

1.2   Scope and Criteria

The validation scope is defined as an independent and objective review of the VCS methodology revision project document (VCS PD). The VCS PD is reviewed against the criteria stated in the VCS Version 3.2 and the relevant documents and policy announcements made by the VCSA.

The validation does not include methodological consulting. However, requests for clarifications and/or corrective actions may have provided input for improvement of the methodology design.

1.3   Summary Description of the Methodology Element

This methodology provides a means to quantify Net GHG Emission Reductions and Removals (NERs) from project activities that prevent conversion of forest to non-forest. The methodology accounts for emissions from all allowable pools specified by the VCS AFOLU Requirements for the REDD project category, with the exception of peat soils and litter. This methodology can be applied to account for avoided emissions from planned deforestation and degradation (APD) and unplanned deforestation and degradation (AUDD) baseline scenarios.

This methodology differentiates between five baseline types based on the proximate agent of deforestation, the drivers of deforestation, whether the specific agent of deforestation can be identified and the progression of deforestation. The agent of deforestation can include a primary agent and secondary agents which contribute to a cascade of degradation ultimately leading to a non-forest state.

Under this methodology, project proponents implement project activities in the project area and surrounding region that address the agents and drivers of deforestation. When the agents and drivers of deforestation are not known, they can be identified using expert knowledge or a participatory rural

appraisal, which is a type of community survey. In some cases related to planned deforestation, the specific agent of deforestation may be known. Identifying the agents and drivers of deforestation is essential to designing effective project activities to mitigate deforestation.

Based on the proposed revision this methodology can now be applied to account for avoided emissions from planned deforestation and degradation (APD) and unplanned deforestation and degradation (AUDD) baseline scenarios.

2   ASSESSMENT APPROACH

2.1   Method and Criteria

The validation consisted of the following three phases:

- A desk review of the new methodology.
- Follow-up interviews.
- The resolution of outstanding issues and the issuance of the final assessment report and opinion.

The following sections outline each step in more detail.

2.2   Document Review

The following tables list the documentation that was reviewed during the validation.

2.2.1   Documentation provided by the project participants

/1/   Wildlife Works Carbon LLC: "Methodology for Avoided Deforestation of Tropical Forests". Version 2.154 dated: 25 July 2012.

/2/   Wildlife Works Carbon LLC: "Methodology for Avoided Deforestation of Tropical Forests". Version 2.76 dated: 29 February 2012.

/3/   Wildlife Works Carbon LLC: Methodology for Avoided Mosaic Deforestation of Tropical Forests, Version 1.1, 10 November 2011

2.2.2   Standards, methodologies, and other guidance by the VCSA

/4/   VCSA: VCS Program Guide, version 3.2., 1 February 2012

/5/   VCSA: VCS Standard, version 3.2., 1 February 2012

/6/   VCSA: AFOLU Requirements, version 3.2., 1 February 2012

/7/   VCSA: Program Definitions, version 3.2., 1 February 2012

/8/   VCSA: Methodology Approval Process, version 3.3., 1 February 2012

/9/   VCSA: Methodology Template, version 3.1., 1 February 2012

2.3   Interviews

On March 5-9, 2012 DNV visited the offices of Wildlife Works Carbon and performed interviews with the methodology developers.

	Date	Name	Organization		Topic
/10/	March 5-9, 2012	Jeremy Freund	Wildlife Carbon	Works	Meth Revision
/11/	March 5-9, 2012	Michael Korchinsky	Wildlife Carbon	Works	Meth Revision
/12/	March 5-9, 2012	Gordon Smith	Wildlife Carbon	Works	Meth Revision
/13/	March 5-9, 2012	Kyle Holland	EcoPartners		Meth Revision
/14/	March 5-9, 2012	Ben Caldwell	EcoPartners		Meth Revision

2.4   Use of VCS-Approved Expert

Mr Aalders was the lead auditor responsible for undertaking and supervising the assessment. Mr Aalders has 20 years of experience as an assessor in Forestry/Environmental Auditing and Policy and Management. Throughout his career Mr Aalders lived and worked in the various developing and developed countries, particularly Latin America, Africa and Australasia, involved in developing new environmental markets services. His work included the development of the SGS' Services in for Climate Change, Marine Stewardship Council (MSC), Organic, GLOBALGAP and Forest Stewardship Council (FSC). Mr Aalders is and has been an elected member of roster of experts for the Methodology & Accreditation Panel Expert of the CDM & JI, member of the JI Accreditation Panel, and is currently member of the VCSa AFOLU Steering Committee and the Pacific Carbon Trust Advisory Panel.

2.5   Resolution of Any Material Discrepancy

The objective of this phase of the validation was to resolve any outstanding issues that needed be clarified prior to DNV's positive conclusion on the project design. In order to ensure transparency, a validation protocol was customized for the project. The protocol shows in a transparent manner the criteria (requirements), means of verification and the results from validating the identified criteria. The validation protocol serves the following purposes:

- It organizes, details and clarifies the requirements a VCS project is expected to meet.
- It ensures a transparent validation process where the validator will document how a particular requirement has been validated and the result of the validation.

A corrective action request (CAR) is issued if one of the following occurs:

- The project participants have made mistakes that will influence the ability of the project activity to achieve real, measurable additional emission reductions.
- The VCS requirements have not been met.

- There is a risk that emission reductions cannot be monitored or calculated.

A clarification request (CL) is raised if information is insufficient or not clear enough to determine whether the applicable VCS requirements have been met

2.6   Internal Quality Control

The assessment report underwent a technical review before DNV approved the methodology. The technical review was performed by a qualified technical reviewer in accordance with DNV's qualification scheme.

2.7   Assessment Team

Listed below are the members of the assessment team, their roles, and the nature of their involvement.

Role/Qualification	*Last Name*	*First Name*	Desk review	Interviews	Reporting	Supervision of work	Technical review
Project Manager	Reed	Pablo		√		√	
VCS Validator	Aalders	Edwin	√	√	√		
VCS Validator (under training)	Reed	Pablo	√	√	√		
Technical Reviewer	Pinjuv	Guy					√

3   ASSESSMENT FINDINGS

3.1   Applicability Conditions

For this methodology to be applied, project activities shall satisfy the following conditions:

1. This methodology was developed for avoiding deforestation and assumes that degradation and deforestation occur as a result of land use conversion to non-forest. This methodology may be used if all the drivers and agents of deforestation are consistent with those described in section 6 of this methodology /1/ and the end land use in the baseline scenario is non-forest.

2. Land in all project accounting areas has qualified as forest as defined by FAO 2010 or that of the definition of forest set by the residing designated national authority (DNA) for the project country for a minimum of 10 years prior to the project start date.

3. In the case of baseline types that are type U, unplanned deforestation, deforestation exists at some point within 120 meters of the perimeter of the project accounting area such that without the implementation of the project activity the project accounting area would be immediately threatened by the agent of deforestation as of the project start date.

4. In the case of baseline type U1 at least 25% of the project boundary is within 120 meters of deforestation.

5. In the case of baseline type U2, at least 25% of the project boundary is within 120 meters of deforestation and at least 25% of the reference area is adjacent to the project area.

6. If foreign agents have been identified as an agent of deforestation, they are unlikely to shift their activities outside the activity-shifting leakage area.

7. The project accounting area(s) shall not contain organic or peat soil.

8. For each baseline scenario, a reference area can be delineated for each baseline scenario that meets the requirements of section 6.7.1 of this methodology /1/ including the minimum size requirement.

9. As of the project start date, historic imagery of the reference area exists with sufficient coverage to meet the requirements of section 6.7.4 of this methodology /1/.

10. Project activities are planned or implemented to mitigate deforestation by addressing the agents and drivers of deforestation as described in section 8.3.1 of this methodology /1/.

11. The project proponent has access to the activity-shifting leakage area(s) and proxy areas (s) to implement monitoring (see sections 8.3.2.1 and 6.4 of the methodology /1/), or has access to monitoring data from these areas for every monitoring event.

12. If logging is included in the baseline scenario and a market-effects leakage area is required per section 8.3 of the methodology /1/, then the project proponent has access to the market-effects leakage area (see section 8.3.3 of the methodology /1/).

DNV confirms that the applicability criteria 1, 2, 6, 7, 8, 9, 10, 11 of the revised methodology /1/ reflect the original applicability requirements 1, 3, 6, 7, 8, 9, 10, 11 of the Version 1.1of the methodology /3/. Applicability requirements 3, 4, 5, and 12 of the revised methodology reflect changes needed to allow the inclusion avoided emissions from planned deforestation and degradation (APD) and unplanned deforestation and degradation (AUDD) baseline scenarios.

3.2   Project Boundary

- *Project's system boundary - Provide a statement on how this was assessed (including selected sources and gases) and DNV's opinion.*
- *Also specify how the validation of the project boundary has been performed (giving references to the Site visit and documentation verified)*
- *Provide DNV's opinion on the selected boundaries and whether it is justified.*

The system boundaries may be presented in tabular format:

Source		Gas	Included?	Justification/Explanation
Baseline	Emissions from AGMT	CO_2	Yes	If baseline scenario or project activity(ies) include the harvest of long-lived wood products, otherwise Not
		CH_4	No	Conservatively excluded
		N_2O	No	Conservatively excluded
	Emissions from AGOT	CO_2	Yes	Main major pool always to be considered
		CH_4	No	Conservatively excluded
		N_2O	No	Conservatively excluded
	Emissions from AGNT	CO_2	Yes	May be conservatively excluded
		CH_4	No	Conservatively excluded
		N_2O	No	Conservatively excluded
	Emissions from BGMT	CO_2	Yes	May be conservatively excluded
		CH_4	No	Conservatively excluded
		N_2O	No	Conservatively excluded
	Emissions from BGOT	CO_2	Yes	May be conservatively excluded
		CH_4	No	Conservatively excluded
		N_2O	No	Conservatively excluded
	Emissions from BGNT	CO_2	Yes	May be conservatively excluded
		CH_4	No	Conservatively excluded
		N_2O	No	Conservatively excluded
	Emissions from LTR	CO_2	Yes	May be significant reservoir from slash under the baseline scenario
		CH_4	No	Conservatively excluded
		N_2O	No	Conservatively excluded
	Emissions from DW	CO_2	Yes	May be conservatively excluded
		CH_4	No	Conservatively excluded
		N_2O	No	Conservatively excluded
	Emissions from SD	CO_2	Yes	May be conservatively excluded
		CH_4	No	Conservatively excluded
		N_2O	No	Conservatively excluded
	Emissions from LD	CO_2	Yes	May be conservatively excluded
		CH_4	No	Conservatively excluded

Source		Gas	Included?	Justification/Explanation
		N_2O	No	Conservatively excluded
	Emissions from SOC	CO_2	Yes	May be conservatively excluded
		CH_4	No	Conservatively excluded
		N_2O	No	Conservatively excluded
	Emissions from WP	CO_2	Yes	May be significant reservoir under the baseline scenario
		CH_4	No	Conservatively excluded
		N_2O	No	Conservatively excluded
Project	Emissions from AGMT	CO_2	Yes	If baseline scenario or project activity(ies) include the harvest of long-lived wood products, otherwise Not
		CH_4	No	Conservatively excluded
		N_2O	No	Conservatively excluded
	Emissions from AGOT	CO_2	Yes	Main major pool always to be considered
		CH_4	No	Conservatively excluded
		N_2O	No	Conservatively excluded
	Emissions from AGNT	CO_2	Yes	May be conservatively excluded
		CH_4	No	Conservatively excluded
		N_2O	No	Conservatively excluded
	Emissions from BGMT	CO_2	Yes	May be conservatively excluded
		CH_4	No	Conservatively excluded
		N_2O	No	Conservatively excluded
	Emissions from BGOT	CO_2	Yes	May be conservatively excluded
		CH_4	No	Conservatively excluded
		N_2O	No	Conservatively excluded
	Emissions from BGNT	CO_2	Yes	May be conservatively excluded
		CH_4	No	Conservatively excluded
		N_2O	No	Conservatively excluded
	Emissions from LTR	CO_2	Yes	May be significant reservoir from slash under the baseline scenario
		CH_4	No	Conservatively excluded

Source		Gas	Included?	Justification/Explanation
		N_2O	No	Conservatively excluded
	Emissions from DW	CO_2	Yes	May be conservatively excluded
		CH_4	No	Conservatively excluded
		N_2O	No	Conservatively excluded
	Emissions from SD	CO_2	Yes	May be conservatively excluded
		CH_4	No	Conservatively excluded
		N_2O	No	Conservatively excluded
	Emissions from LD	CO_2	Yes	May be conservatively excluded
		CH_4	No	Conservatively excluded
		N_2O	No	Conservatively excluded
	Emissions from SOC	CO_2	Yes	May be conservatively excluded
		CH_4	No	Conservatively excluded
		N_2O	No	Conservatively excluded
	Emissions from WP	CO_2	Yes	May be significant reservoir under the baseline scenario
		CH_4	No	Conservatively excluded
		N_2O	No	Conservatively excluded

3.3 Procedure for Determining the Baseline Scenario

The baseline scenario is determined through the identification of the agents and drivers and an understanding of how, when and where they might have acted and consequently have impact on the selected project area. Under this concept there might be multiple groups of agents which as a group or individually may act differently in the baseline scenario. As a consequence the project area may have more than one "project accounting area". Each "project accounting area" is the area for which a unique set agents and drivers exist that for the basis of the respective baseline emissions model for which a parameterization has applied to determine baseline emissions.

Where the agents are sequential, and have a cascaded contribution to the degradation, the methodology requires that the primary agent and the subsequent agents, secondary agents, are identified with their specific different drivers, and to characterize the correct baseline scenario.
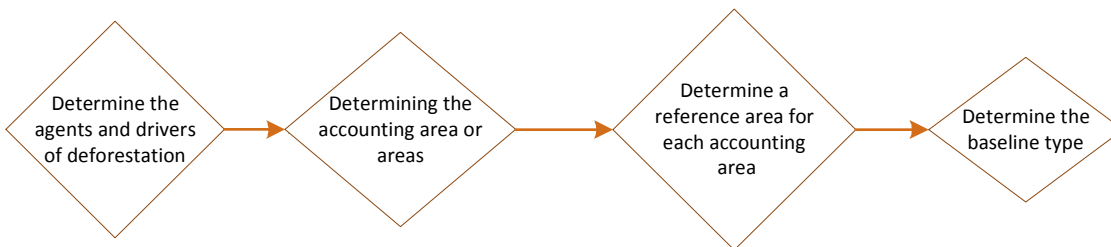
Figure 1: Determination of the baseline type

For the project area determine the agents and drivers in the baseline scenario using expert knowledge or a PRA (see Appendix E of the revised methodology /1/). Then, delineate the project accounting area or areas for these agents and drivers based on identified constraints to deforestation (see section 6.2 of the revised methodology /1/). Based on this information, the baseline type can be determined for each accounting area.

The process of the identification of the baseline scenarios has fundamentally not changed from Version 1.1 of the Methodology for Avoided Mosaic Deforestation of Tropical Forests /3/ the revised methodology has expanded the identification process to allow the expansion of the applicability of the methodology where by both avoided emissions from planned deforestation and degradation (APD) and unplanned deforestation and degradation (AUDD) baseline scenarios are now included.
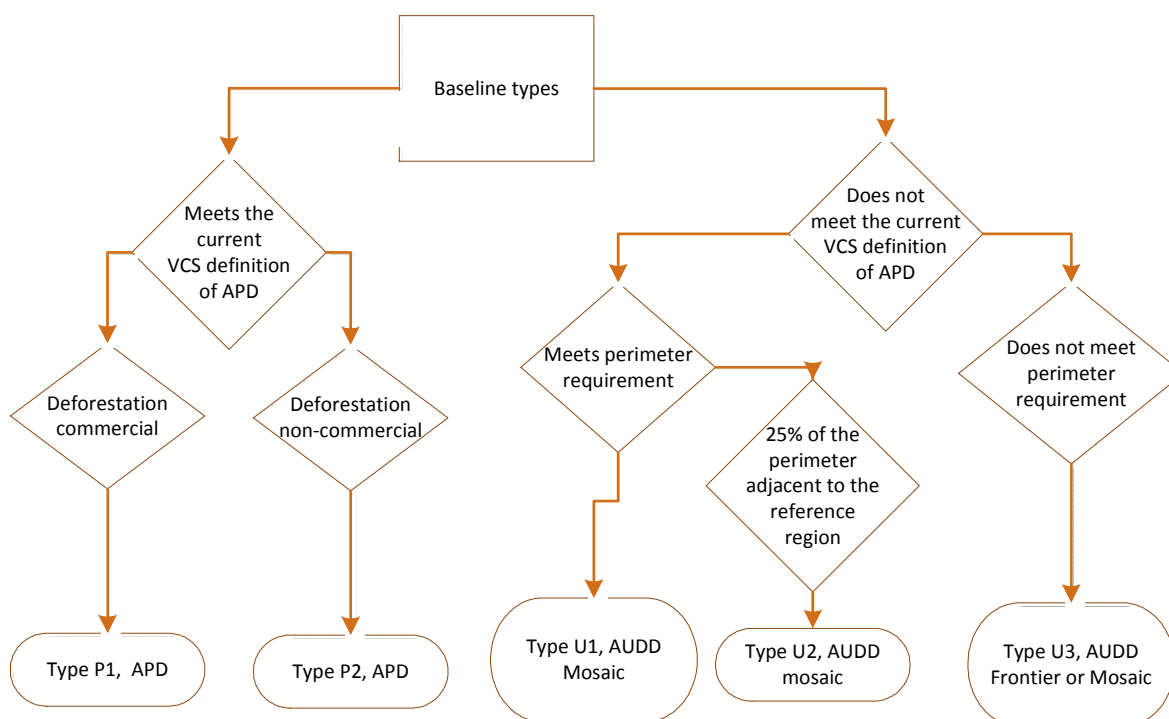
Figure 2: Decision tree to determine baseline types.

The baseline type is determined first by whether the baseline scenario for a particular project accounting area meets the current VCS definition of APD. If it does, then the type is either P1 if deforestation incorporates a legally-sanctioned logging component, and P2 if otherwise. If it does meet the current APD definition and the perimeter requirement is met, it is U1, or U2 if the reference area proximity is met. If the perimeter requirement is not met, then it is U3.

3.4   Procedure for Demonstrating Additionality

The methodology requires that the Project proponents shall demonstrate additionality using the latest version of the VCS "Tool for the Demonstration and Assessment of Additionality in VCS Agriculture, Forestry and Other Land Use (AFOLU) Project Activities" (VCS 2010). The methodology has identified the following relevant applicability conditions:

- Within the project area, project activities shall not lead to the violation of any law, even those laws which are not enforced.
- The most conservative baseline scenario is defined by deforestation.

The common practice test is being applied by the methodology to demonstrate that project activities will address at least one driver of deforestation in such a way that the driver would not have been addressed had the project not been undertaken.

DNV confirms that this is in line with the requirements set out in the VCS Program Guidelines version 3.2 /4/ and VCS Standard version 3.2 /5/ and that no changes have been made from the Version 1.1 of the Methodology for Avoided Mosaic Deforestation of Tropical Forests /3/

3.5   Baseline Emissions

In line with Version 1.1 of the Methodology for Avoided Mosaic Deforestation of Tropical Forests /3/ the revised methodology uses a series of statistical algorithms to determine the baseline emissions whereby each "project accounting area" has an allocated baseline reference area outside the project area which is systematically sampled in order to obtain the relevant parameter values needed to run the algorithms of the baseline emissions. To calculate the baselines the Methodology requires the project to identify a number of permanent sample plots outside the project area which represent the baseline scenario(s) which during each monitoring period are assessed and the collected data is included in the baseline calculations.

3.6   Project Emissions

In line with Version 1.1 of the Methodology for Avoided Mosaic Deforestation of Tropical Forests /3/ the revised methodology uses a series of statistical algorithms to determine the project emissions for each "project accounting area". To calculate the project emissions the Methodology requires the project to identify a number of permanent sample plots within the respective "project accounting areas" which during each monitoring period are assessed and the collected data is included in the project emission calculations.

3.7   Leakage

In line with Version 1.1 of the Methodology for Avoided Mosaic Deforestation of Tropical Forests /3/ the revised methodology uses a series of statistical algorithms to determine the different types of leakage whereby each "project accounting area" has an allocated reference area outside the project area which is systematically sampled in order to obtain the relevant parameter values needed to run the algorithms to

determine the leakage effect. As such Emissions from activity-shifting leakage are calculated using the Leakage Emissions Model and an activity-shifting leakage area while emissions from market-effects leakage are estimated using a market-effect leakage area and default values specified in the VCS AFOLU requirements.

The methodology uses a decision tree for the different Baseline scenarios i.e. Figure 3 and Figure 4 in order to determine whether the market-effect leakage should be accounted for, and/or whether the VCS AFOLU default values is to apply or the observed values from the reference area(s).
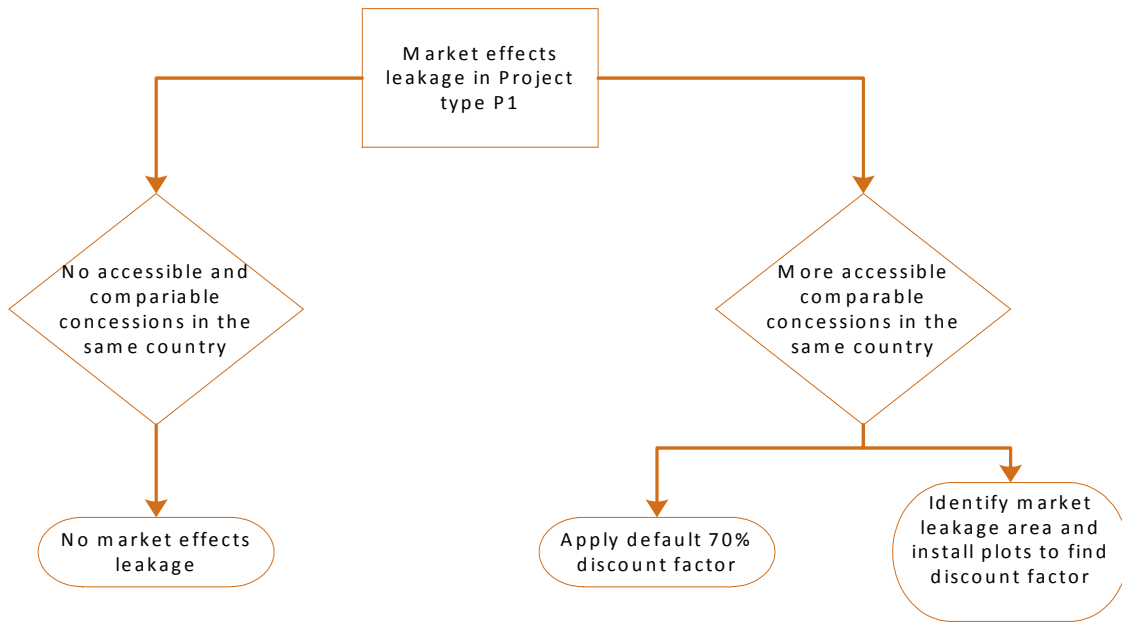
Figure 3: Decision tree for market effects leakage in baseline type P1

This is a decision tree for baseline type P1, in which there is commercial logging in the baseline. If there are no more comparable concessions within the same national boundaries to which the primary agent can move, then market effects **leakage** is precluded because legal logging cannot increase.
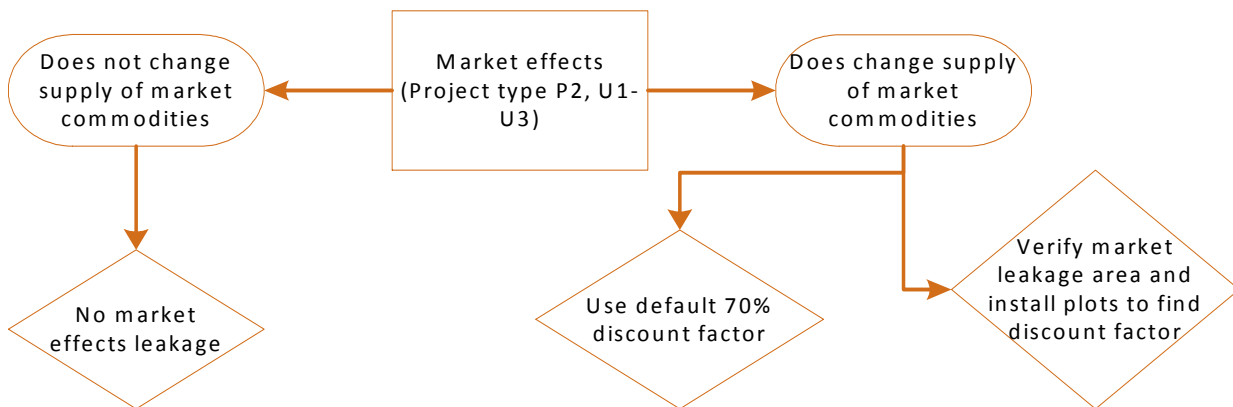
Figure 4: Decision tree for baseline types P2, U1, U2 and U3

In the case that the project does not affect the supply of market commodities, then market effects leakage does not occur.

3.8 Quantification of Net GHG Emission Reductions and/or Removals

In line with Version 1.1 of the Methodology for Avoided Mosaic Deforestation of Tropical Forests /3/ the revised methodology uses the same principle where by the total Gross Emission Reductions (GERs) are a result of the Baseline emissions (BE) – Project Emissions (PE) – Leakage (L). This overall GER total is reduced by the overall buffer percentage based on the VCS AFOLU Buffer Approach /6/ in order to get a Net Emission Reduction total (NERs). As both the Baseline Emission and Project Emissions are dynamic within the methodology, the methodology also identifies two different types of reversals that can occur within the project life time:

a) Reversals within the project boundaries where by the project area has seen an loss of forest since the last monitoring period, and

b) Reversals within the Baseline scenario where by during a Baseline re-evaluation shows that the predicted deforestation levels did not occur.

In both cases where the calculation results in a negative GER total the methodology will be considered a reversal and as such the VCS reversal policy /6/ will be applicable.

3.9 Monitoring

The parameters to be monitored and the data/parameters available at validation are defined appropriately and clearly listed in the methodology, which will ensure that the emission reductions from the project activity are estimated properly. The parameters to be monitored and the corresponding monitoring methods are outlined in Appendix A (Validation Variables) and Appendix B (Monitoring Variables) of this report.

3.10 Data and Parameters

The parameters to be monitored and the data/parameters available at validation are appropriately defined and clearly listed in the methodology, which will ensure that the emission reductions from the project activity are estimated properly. The parameters to be monitored and the corresponding monitoring methods are outlined in Appendix A (Validation Variables) and Appendix B (Monitoring Variables) of this report. DNV confirms that they comply with the requirements set VCS.

3.11 Use of Tools/Modules

The revised methodology use the VCS "Tool for the Demonstration and Assessment of Additionality in VCS Agriculture, Forestry and Other Land Use (AFOLU) Project Activities" (VCS, 2012) for the assessement of additionality, other tools applied by the methodology are specifically developed for the methodology and an integral part of the methodology.

3.12 Adherence to the Project Principles of the VCS Program

The revised methodology was developed on the basis of the approved Methodology for Avoided Mosaic Deforestation of Tropical Forests, Version 1.1, 10 November 2011 and in line with the project-level principles of VCS Version 3.2, as elaborated above. It is also deemed by DNV that the principles of relevance, completeness, consistency and accuracy, transparency, and conservativeness are properly addressed in the methodology.

3.13 Relationship to Approved or Pending Methodologies

DNV confirms that the revised methodology does not have a relationship with other methodologies which are impacted at the time of the revision.

3.14 Stakeholder Comments

The revised methodology has been publicised on the VCS website on the 6th of March for the period of 30 days during which no comments were posted on the VCS website nor were there any comments sent to the methodology developed.

4 RESOLUTION OF CORRECTIVE ACTION REQUESTS AND CLARIFICATION REQUESTS

During the assessment DNV identified and raised 5 Corrective Actions Requests (CARs) and 6 Clarification (CL) which can be find in Table 1 of the report. All CARs and CLs have been satisfactory resolved by the methodology developer and respective close out information can be found in Table 1 of the report.

5 ASSESSMENT CONCLUSION

Det Norske Veritas (U.S.A.), Inc (DNV) has performed a validation of the "Methodology Revisions for VM0009 v1.1: Avoided Deforestation of Tropical Forests". The validation was performed on the basis of VCSA criteria for methodologies as well as criteria given to provide for consistent project operations, monitoring and reporting.

The review of the methodology documentation and subsequent follow-up interviews has provided DNV with sufficient evidence to determine the fulfilment of stated criteria.

The Methodology for Avoided Deforestation of Tropical Forests", Version 2.154   correctly applies the requirements set out under the VCS Program Guide, version 3.2 /4/, VCS Standard, version 3.2 /5/, AFOLU Requirements, version 3.2. /6/.

Description of Methodology. Projects applying the methodology will result in reductions of CO_2 / CH_4 / N_2O emissions which are real, measurable and give long-term benefits to the mitigation of climate change. It is demonstrated that by applying the methodology projects are able to demonstrate that they are not likely to be the baseline scenario. Emission reductions attributable to the project applying and meeting the requirements of the methodology are hence additional to any that would occur in the absence of the project activity.

In summary, it is DNV's opinion that the revisions proposed by "Methodology for Avoided Deforestation of Tropical Forests" in Version 2.154 25 July 2012 as described therein, meets all relevant VCSA requirements for the VCS Methodologies. Hence, DNV recommends the approval of the revision as the revised VCS VM0009 Methodology.

6   REPORT RECONCILIATION

7   EVIDENCE OF FULFILMENT OF VVB ELIGIBILITY REQUIREMENTS

Det Norske Veritas (U.S.A.), Inc holds accreditation to perform validation for projects under sectoral scopes 3 (agriculture, forestry, other land use) under the American National Standards Institute (ANSI). DNV, therefore, is eligible under the VCS Program to perform assessments for the MED, which falls under the sectoral scope 3.

8   SIGNATURE

Signed for and on behalf of:

Name of entity: DNV KEMA

Signature:

Name of signatory: Edwin Aalders, Lead Validator

Date: 27 August 2012

Table 1   Resolution of Corrective Action Requests and Clarification Requests

Corrective action and/ or clarification request #s	Corrective action and/ or clarification requests	Response by project participants	Validation conclusion
CAR 1	**Requirement**: In line with section 4.1.3 of the VCS Standard that methodology shall follow VCS Methodology Template. **Non-Compliance**: Methodology does not follow the template and provide the information needed in each section of the template **Objective evidence**: 1. Section 9.1. and 9.2 of the Methodology provide a reference that all the variables can be found in Appendix F of the methodology. • In the case of 9.1. whilst Appendix F does list all the parameters it does not make specify which parameters are required at Validation nor does the table provide the Justification of choice of date or description of measurements methods and procedures applied: In the case of 9.2 whilst Appendix F does list all the parameters it does not specify the "Description of measurement methods and procedures to be applied" and "QA/QC procedures to applied"	This is now found in appendix G&H; the appropriate columns and the description of the monitoring and measurements for each variable per the VCS template for parameters and for monitoring are now explicit in the table.	The methodology developer has revised the methodology and has included Appendix G (Validated Parameters) & H (Monitored Parameters) containing all the parameters and the way they are to be determined and monitored. Parameters are properly referenced to the respective equations as well as providing all required information under the VCS **CAR: Closed**
CAR 2	**Requirement**: Section 3.3.4 "Public Stakeholder Consultation" of the VCS Methodology Approval Process. The Methodology shall be available on the VCS website	The methodology will be posted for a month, until April 7, 2012.	Following the passing of the 30 days deadline on the 7th of April 2012 no comments were posted on the VCS website nor were there any

Corrective action and/ or clarification request #s	Corrective action and/ or clarification requests	Response by project participants	Validation conclusion
	for 30 days **Non-Compliance**: Methodology has not been public for 30 days on the VCS website. **Objective evidence:** The Methodology was published on 6th of March 2012.		comments received by the methodology developed. **CAR: Closed**
CAR 3	**Requirement**: VCS Methodology Template chapter 6 - Describe the criteria and procedures for identifying alternative baseline scenarios and determining the most plausible scenario. **Non-Compliance**: Methodology does not require the full definition of the baseline scenario/type **Objective evidence:** PDR 19 to PDR 22 require that evidence is provided for P1, P2, U1 and U2 but does not require a justification for the selection of U3;	Type U3 is the least restrictive of all the baseline types, and the only requirements for this type are that the project meets the applicability conditions of the methodology. We have included the stipulation in PDR 26 that type U3 must meet the 120 meter adjacency requirement.	Updated methodology version now finish all the applicability criteria for P1, P2, U1, U2 and U3 through the PDR requirements 22 to 26 **CAR: Closed**
CAR 4	**Requirement**: VCS Methodology Template Section 8.2 - Describe the criteria and procedures, including relevant equations, for the quantification of GHG emissions and/or removals for the selected GHG sources, sinks and/or reservoirs for the project. **Non-Compliance**: Equations are missing or incomplete and descriptions	Equations have been updated and revised so that they now meet the requirements of the template. Monitoring requirements have been separated from the PD requirements into separate tables as necessary.	Methodology now contains within the respective sections 8.2.1 and 8.2.3 direct reference to the equations or reference to a calculation tool. For 8.2.1 this means equation F41 listed in appendix F and for 8.2.3 Appendix C. In addition section 8 lists the monitoring requirements that are to be included in the MP.

Corrective action and/ or clarification request #s	Corrective action and/ or clarification requests	Response by project participants	Validation conclusion
	incomplete in relation to the occurrence of project emissions **Objective evidence:** 1. Methodology section 8.2.1 and 8.2.3 does not contain equation 2. Methodology section 8.2.2 equation does not calculate correctly the emissions PD Requirements listed do not completely outline all the procedures actions to be taken to record and events and required changes needed within the monitoring plan		
CAR 5	**Requirement**: VCS Methodology Template Chapter 6 & 8 **Non-Compliance**: Parameters and formula are not all included **Objective evidence:** In the methodology all the formula are moved to Appendix F and referenced within the methodology. Consequently Appendix F is to hold all the formula and parameters used in the methodology. It is found that Appendix F is not complete were not all the parameters are included or incorrectly reference in relation to the formula in which it is used or calculated • $c_{PD}^{[m]}$ referenced to [E.12.] where it is calculated in [E.13.] c_{LBM} in equation [E.42] not listed	The parameters and formula are now all included and this appendix is complete.	The methodology developer has updated Appendix F which now holds all the formula. Within the respective sections of the report all relevant equations are adequately referenced to the Appendix F. **CAR: Closed**

Corrective action and/ or clarification request #s	Corrective action and/ or clarification requests	Response by project participants	Validation conclusion
	in Appendix F		
CL 1	**Requirements**: VCS Methodology Template Chapter 3 Definitions requires a list of definitions used in the report. **Potential non-compliance:** 1. Accounting area is defined in the definitions as "*The area to which the baseline emissions models are applied. The forested area within the project area that is subject to deforestation in the baseline scenario delineated in Section 5.1.1. A project area can contain more than one accounting area.*" 2. Table 1 refers to "Project Accounting areas" and provides same definition as accounting area under Definitions 3. Table 1 refers to Project Area but not defined in Definitions **Clarification**: 1. Section 5.1.1 defines accounting area as "The forested area within the project area that is subject to deforestation in the baseline scenario must be delineated as the accounting area" the Methodology developer is requested to clarify how these two definitions will result in "accounting areas" that have universal characteristics of Biomass volumes. 2. Methodology developer to	Project area is now defined in the definitions as it is defined in table 1. It is the intent that the project proponent only apply the baseline model (and receive credits) for the subset of the project area that would have been deforested in the baseline scenario. The first part of section 6 (and throughout the rest of the text) has been modified to clarify the distinction between project area and project accounting area, and to improve the clarity of the intended process.	The Methodology has now been correctly amended where by the project area represents the area in which the project is operating, and the project accounting area is the area for which a certain baseline type is being identified within the project area. **CL1: Closed**

Corrective action and/ or clarification request #s	Corrective action and/ or clarification requests	Response by project participants	Validation conclusion
	clarify which definition is consistently used within the methodology. Methodology developer to clarify if project area how this terminology is used within the methodology.		
CL 2	**Requirement:** VCS standard 4.3.1 The methodology shall use applicability conditions to specify the project activities **Potential non-compliance:** Methodology applicability criteria 13 states "*If the Leakage Emissions Model is estimated after the project start date but before the end of the first monitoring period (see Section 10.3.3), then activity-shifting leakage has not occurred prior to the estimation of the leakage lag period.*" **Clarification:** The methodology developer is requested to clarify the how this applicability requirement is to be met in the event that the project is validated and first monitoring period has not yet been completed.	This text has been removed from the applicability conditions.	The CL has been removed and methodology has now clear applicability criteria. **CL2: Closed**
CL 3	**Requirement:** VCS Standard section 2.4 Principles – Accuracy **Potential non-compliance:** Methodology uses the terminology "may", "may not", "must" and "should" in order to define the requirements of the methodologies.	In the case where requirements are compulsory, language has been changed to "shall".	The methodology has been changed and the terminology is now consistently used with the compulsory "shall" requirements. **CL3: Closed**

Corrective action and/ or clarification request #s	Corrective action and/ or clarification requests	Response by project participants	Validation conclusion
	Clarification: The methodology developer is requested to clarify which of these requirements are compulsory with the methodology and which are available to the project developer to enhance the project but are not a requirement for the implementation of the methodology as defined by the use of "shall" in ISO audit language.		
CL 4	**Requirement:** VCS Standard section 2.4 Principles – Relevance, Completeness, Consistency & Accuracy **Potential non-compliance:** Methodology uses summary boxes to provide a list of requirements to comply with for a respective section of the Methodology i.e. the "PD Requirements: xxx" **Clarification:** The methodology developer is request to clarify how these "PD Requirements" should be used by the user of the methodology and whether only the requirements within the "PD requirement" boxes are to be compulsory or that both text within the "PD requirement" boxes and associate text under heading combined form the compulsory elements of the methodology	All requirements for the PD and monitoring report have been moved to their respective tables.	The methodology has been updated and DNV has checked that the PD Requirements are now completed in each section of the methodology **CL4: Closed**
CL 5	**Requirement:** VCS Methodology Template chapter 6 - Describe the criteria and procedures for identifying alternative baseline scenarios and determining the	There is now clear language in section 6.3 and 6.1 detailing the criteria and procedures for alternative baseline identification, its	The methodology has been split up so requirements from the tools that can be used to demonstrate compliance are now in an

Corrective action and/ or clarification request #s	Corrective action and/ or clarification requests	Response by project participants	Validation conclusion
	most plausible scenario. **Potential non-compliance:** Section 6.4 Identification of the Agents and Drivers & 6.5. The Participatory Rural Appraisal **Clarification:** The methodology developer is requested to clarify a) the options of the determination of the Agents and their drivers and what needs to be established, and b) the way in which the relevant information can be obtained/justified.	justification, and the requirements (in PDR16-19 an 22-26). The guidelines for the participatory rural appraisal can now be found in appendix E.	appendix. **CL5: Closed**
CL 6	**Requirement:** VCS Standard section 2.4 Principles - Accuracy **Potential non-compliance:** The methodology currently uses words like "adequate", "independent" "useful" **Clarification:** The Methodology developer is to provide clarification as to what is intended by the terminology in order to provide clarity as to how the requirements are to be met by the Project Developer when implementing the methodology.	In many cases, instances of use of the words "independent", or "useful" are meant to indicate suggestions or options for the project proponent. The word "adequate" has been removed where its use could be construed as a requirement. In other cases, references to objective indicators for "adequate", "independent" and "useful" have been added.	The methodology is now using language that is more appropriate with the requirements and provides a better description of the way the methodology is being applied. As such the words no longer result in uncertainty as to what the methodology requires from the PP. **CL6: Closed**

Table 2   Forward Action Request

Forward action requests	Reference to Table 1	Response by project participants	Validation conclusion
None raised			

APPENDIX A: VALIDATION VARIABLES

Data / Parameter	Unit	Description	Source of Data	Justification
α	unitless	Combined effects of β and θ at the start of the historic reference period	Reference area and historic reference period	Time and place in which the logistic model is fit
β	unitless	Effect of time on the cumulative proportion of deforestation over time	Reference area and historic reference period	Time and place in which the logistic model is fit
γ	days	Time shift from beginning of historic reference period to project start date	Historic reference period	Time in which the logistic model is fit
θ	unitless	Effect of certain covariates on the cumulative proportion of deforestation over time	Reference area and historic reference period	Time and place in which the logistic model is fit
λ_{SOC}	proportion (unitless)	Exponential soil carbon decay parameter	Default values, literature estimates or empirical estimation based on reference area sampling	A conservative default or values derived from direct measurement by the project proponent or from the literature are acceptable
$\hat{\sigma}_{EM}$	standard deviation (unitless)	The estimated standard deviation of the state observations used to fit the logistic function	Remote sensing image interpretation	-
$\mathcal{B}$	set	The set of all selected carbon pools in biomass. Is a subset of $\mathcal{C}$	PDD	-
$\mathcal{C}$	set	The set of all selected carbon pools	Monitoring records	-

Data / Parameter	Unit	Description	Source of Data	Justification
$\mathcal{I}$	set	The set of all observations of deforestation. When superscripted with a monitoring period, the deforestation observations are taken for leakage analysis.	Remote sensing image interpretation or field observations in the leakage area.	-
$\mathcal{M}$	set	The set of all monitoring periods	Monitoring records	-
A_{PAA}	ha	Area of project accounting area	GIS analysis prior to sampling	-
A_{PX}	ha	Area of proxy area	GIS analysis prior to sampling	-
A_{DF}	ha	Deforested area in the project area at the project start date	Remote sensing image interpretation	-
c_{Lp}	tCO2e/ha	Carbon stocks in project leakage	Leakage area sampling	Direct measurement
m	tCO2e/ha/yr	Average carbon in merchantable trees cut each year as a result of legally-sanctioned commercial logging	Timber harvest plans or measurement of carbon stocks in merchantable trees in the project accounting area	Should use the most accurate of the two data sources if both are available
n_d		Number of spatial points in the reference area	Remote sensing image interpretation	-
o_i	binary	State observation for the ith sample point in the reference area	Remote sensing image interpretation	-
p_{LME}	proportion (unitless)	Portion of leakage related to market effects	8.3.3	-

Data / Parameter	Unit	Description	Source of Data	Justification
q	days	Lag between start of degradation and deforestation	Expert knowledge, results from the PRA or reports from peer-reviewed literature	Commonly accepted methods in the social sciences, choice determined and justified by project proponent
r_{CFb}	unitless	Carbon fraction of biomass for burned wood b	Literature estimates or direct measurement	-
r_{RS}	unitless	Expansion factor for above-ground biomass to total biomass (root/shoot ratio)	Reviewed literature or allometry	-
t	days	Time since project start date	Monitoring records	-
t_i	days	The point in time of the observation made at point i	Remote sensing image interpretation	-
t_{PA}	days	Time prior to the project start date when the primary agent began commercial logging in the project accounting area	Harvest plans prepared for the project accounting area, or by public record	Should use the most accurate of the two data sources if both are available
t_{PL}	days	Length of project	PDD	
t_{SA}	days	Arrival time of secondary agents after start of commercial logging	Participatory rural appraisal, or expert knowledge	Should use the most accurate of the two data sources if both are available
w_i	unitless	weight applied to the ith sample point in the reference area	Remote sensing image interpretation	

Data / Parameter	Unit	Description	Source of Data	Justification
x	unitless	Covariate values	Participatory Rural Appraisal, analysis of public records, and/or expert interpretation of inventory data or remotely sensed imagery	Should use the most accurate of the data sources if both are available
x_i	geographic coordinates	Latitude of the ith sample point	Remote sensing image interpretation	-
x_o	unitless	Covariate values as of the project start date	Participatory Rural Appraisal, analysis of public records, and/or expert interpretation of inventory data or remotely sensed imagery	Should use the most accurate of the data sources if both are available
x_{SA}	unitless	Covariate values of secondary agents	Participatory Rural Appraisal, analysis of public records, and/or expert interpretation of inventory data or remotely sensed imagery	Should use the most accurate of the data sources if both are available
y_i	geographic coordinates	Longitude of the ith sample point	Remote sensing image interpretation	-

APPENDIX B: MONITORING VARIABLES

Data / Parameter	Unit	Description	Source of Data	Frequency of Monitoring/ Recording	QA/QC
$\mathcal{W}^{[m]}$	set	The set of all burned wood	Monitoring records	Every monitoring period	Review of monitoring records
$A_{P\,1}^{[m=0]}$	ha	Area of project area stratum 1 at project start	GIS analysis prior to sampling	At project start	Cross-check of GIS analysis
$A_{P\,2}^{[m=0]}$	ha	Area of project area stratum 2 at project start	GIS analysis prior to sampling	At project start	Cross-check of GIS analysis
$A_{P\,n}^{[m=0]}$	ha	Area of project area stratum n at project start	GIS analysis prior to sampling	At project start	Cross-check of GIS analysis
$B_{b}^{[m]}$	tonnes	Biomass in burned wood b	Measurements of biomass	Every monitoring period	Review of monitoring records
$c_{B}^{[m]}$	tCO2e/ha	Baseline carbon stocks at the end of the current monitoring period	Proxy area sampling	Every monitoring period	Review of monitoring records
$C_{B\,\Delta\,BGB}^{[m]}$	tCO2e	Change in below-ground biomass carbon stocks at the end of the current monitoring period	Proxy area sampling	Every monitoring period	Review of monitoring records
$C_{B\,\Delta\,DW}^{[m]}$	tCO2e	Change in dead wood carbon stocks at the end of the current monitoring period	Proxy area sampling	Every monitoring period	Review of monitoring records

Data / Parameter	Unit	Description	Source of Data	Frequency of Monitoring/ Recording	QA/QC
$C_{BASOC}^{[m]}$	tCO2e	Change in soil carbon stocks at the end of the current monitoring period	Proxy area sampling	Every monitoring period	Review of monitoring records
$C_{BAWP}^{[m]}$	tCO2e	Change in wood products carbon stocks at the end of the current monitoring period	Proxy area sampling	Every monitoring period	Review of monitoring records
$C_{BAGMT}^{[m]}$	tCO2e/ha	Baseline carbon stocks in above-ground merchantable trees at the end of the current monitoring period	Proxy area sampling	Every monitoring period	Review of monitoring records
$C_{PAGMT}^{[m=0]}$	tCO2e	Project carbon stocks in above-ground merchantable trees at project start	Project accounting area sampling	At project start	Review of monitoring records
$C_{PBGMT}^{[m=0]}$	tCO2e	Project carbon stocks in below-ground merchantable trees at project start	Project accounting area sampling	At project start	Review of monitoring records
$C_{Bh}^{[m]}$	tCO2e/ha	Baseline scenario average carbon stock in selected carbon pools	Proxy area sampling	Every monitoring period	Review of monitoring records
$C_{BBM}^{[m]}$	tCO2e/ha	Baseline carbon stocks in biomass at the end of the current monitoring period	Proxy area sampling	Every monitoring period	Review of monitoring records
$C_{BSOC}^{[m]}$	tCO2e/ha	Baseline soil carbon stocks at the end of the current monitoring period	Proxy area sampling	Every monitoring period	Review of monitoring records
$C_{BWP}^{[m]}$	tCO2e	Baseline carbon stocks in wood products at the end of the current monitoring period	Proxy area sampling	Every monitoring period	Review of monitoring records

Data / Parameter	Unit	Description	Source of Data	Frequency of Monitoring/ Recording	QA/QC
$C_{BWP}^{[m-1]}$	tCO2e	Cumulative baseline carbon stocks in wood products at the beginning of the current monitoring period	Proxy area sampling	Already monitored	Review of monitoring records
$C_P^{[m]}$	tCO2e/ha	Project carbon stocks at the end of the current monitoring period	Project accounting area sampling	Every monitoring period	Review of monitoring records
$C_P^{[m-1]}$	tCO2e/ha	Project carbon stocks at the beginning of the current monitoring period	Project accounting area sampling	Already monitored	Already reviewed
$C_P^{[m=0]}$	tCO2e/ha	Project carbon stocks at project start	Project accounting area sampling	At project start	Review of monitoring records
$C_{P1BM}^{[m=0]}$	tCO2e/ha	Project carbon stocks in biomass in stratum 1 at project start	Project accounting area sampling	At project start	Review of monitoring records
$C_{P2BM}^{[m=0]}$	tCO2e/ha	Project carbon stocks in biomass in stratum 2 at project start	Project accounting area sampling	At project start	Review of monitoring records
$C_{P3BM}^{[m=0]}$	tCO2e/ha	Project carbon stocks in biomass in stratum 3 at project start	Project accounting area sampling	At project start	Review of monitoring records
$C_{PnBM}^{[m=0]}$	tCO2e/ha	Project carbon stocks in biomass in stratum n at project start	Project accounting area sampling	At project start	Review of monitoring records
$C_{PAGMT}^{[m=0]}$	tCO2e/ha	Project carbon stocks in above-ground merchantable trees at project start	Project accounting area sampling	At project start	Review of monitoring records

Data / Parameter	Unit	Description	Source of Data	Frequency of Monitoring/ Recording	QA/QC
$C_{PBM}^{[m=0]}$	tCO2e	Project carbon stocks in biomass at the end of the current monitoring period	Project accounting area sampling	At project start	Review of monitoring records
$C_{Pb}^{[m]}$	tCO2e/ha	Average carbon in biomass in the project accounting area	Project accounting area sampling	Every monitoring period	Review of monitoring records
$C_{Psb}^{[m]}$	tCO2e/ha	Average carbon in biomass for each project accounting area stratum s	Project accounting area sampling	Every monitoring period	Review of monitoring records
$C_{PSOC}^{[m=0]}$	tCO2e/ha	Project soil carbon stocks at project start	Project accounting area sampling	At project start	Review of monitoring records
$C_{P\Delta WP}^{[m]}$	tCO2e	Project carbon stocks in wood products at the end of the current monitoring period	Project accounting area sampling	Every monitoring period	Review of monitoring records
$E_{\Delta GER}^{[m]}$	tCO2e	GERs for the current monitoring period	Area measurements	Every monitoring period	Review of GER calculations
$E_{\Delta GER}^{[i]}$	tCO2e	GERs for monitoring period i	Area measurements	Already monitored	Review of GER calculations
$E_{\Delta NER}^{[i]}$	tCO2e	NERs for monitoring period i	Area measurements	Already monitored	Review of NER calculations
$E_{B\Delta}^{[m]}$	tCO2e	Change in baseline emissions	Proxy area measurements	Every monitoring period	Review of monitoring records

Data / Parameter	Unit	Description	Source of Data	Frequency of Monitoring/ Recording	QA/QC
$E_{B\,\Delta\,BGB}^{[i]}$	tCO2e	Change in baseline emissions from below-ground biomass during monitoring period i	Monitoring the proxy area	Already monitored	Review of monitoring records
$E_{B\,\Delta\,BM}^{[m]}$	tCO2e	Change in emissions from biomass in the baseline	Proxy area measurements	Every monitoring period	Review of monitoring records
$E_{B\,\Delta\,DW}^{[i]}$	tCO2e	Baseline emissions from dead wood in monitoring period i	Measurements in the proxy area	Already monitored	Review of monitoring records
$E_{B\,\Delta\,SOC}^{[m]}$	tCO2e	Baseline change in emissions from soil carbon	Measurements in the proxy area	Every monitoring period	Review of monitoring records
$E_{B\,\Delta\,SOC}^{[i]}$	tCO2e	Baseline emissions from soil carbon in monitoring period i	Measurements in the proxy area	Already monitored	Review of monitoring records
$E_{B\,AGMT}^{[m]}$	tCO2e	Cumulative baseline emissions from above-ground commercial trees at the end of the current monitoring period	Measurements in the proxy area	Every monitoring period	Review of monitoring records
$E_{B\,BGB}^{[m]}$	tCO2e	Cumulative baseline emissions from below-ground biomass at the end of the current monitoring period	Measurements in the proxy area	Every monitoring period	Review of monitoring records
$E_{B\,BGB}^{[m-1]}$	tCO2e	Cumulative baseline emissions from below-ground biomass at the beginning of the current monitoring period	Measurements in the proxy area	Already monitored	N/A
$E_{B\,BM}^{[m]}$	tCO2e	Cumulative baseline emissions from biomass at the end of the current monitoring period	Measurements in the proxy area	Every monitoring period	Review of monitoring records

Data / Parameter	Unit	Description	Source of Data	Frequency of Monitoring/ Recording	QA/QC
$E_{B\,BM}^{\lfloor m-1 \rfloor}$	tCO2e	Cumulative baseline emissions from biomass at the beginning of the current monitoring period	Measurements in the proxy area	Already monitored	N/A
$E_{B\,DW}^{\lfloor m \rfloor}$	tCO2e	Cumulative baseline emissions from dead wood at the end of the current monitoring period	Measurements in the proxy area	Every monitoring period	Review of monitoring records
$E_{B\,DW}^{\lfloor m-1 \rfloor}$	tCO2e	Cumulative baseline emissions from dead wood at the beginning of the current monitoring period	Measurements in the proxy area	Already monitored	N/A
$E_{B\,SOC}^{\lfloor m \rfloor}$	tCO2e	Cumulative baseline emissions from soil carbon at the end of the current monitoring period	Measurements in the proxy area	Every monitoring period	Review of monitoring records
$E_{B\,SOC}^{\lfloor m-1 \rfloor}$	tCO2e	Cumulative baseline emissions from soil carbon at the beginning of the current monitoring period	Measurements in the proxy area	Already monitored	N/A
$E_{BA}^{\lfloor m \rfloor}$	tCO2e	Cumulative emissions allocated to the buffer pool at the end of the current monitoring period	N/A	Every monitoring period	Review of monitoring records
$E_{L}^{\lfloor m \rfloor}$	tCO2e	Cumulative emissions from leakage at the end of the current monitoring period	Measurements in the leakage area(s)	Every monitoring period	Review of monitoring records
$E_{L}^{\lfloor m-1 \rfloor}$	tCO2e	Cumulative emissions from leakage at the beginning of the current monitoring period	Measurements in the leakage area(s)	Already monitored	N/A
$E_{L\Delta}^{\lfloor m \rfloor}$	tCO2e	Change in emissions due to leakage	N/A	Every monitoring period	Review of monitoring records

Data / Parameter	Unit	Description	Source of Data	Frequency of Monitoring/ Recording	QA/QC
$E_{LAS}^{[m]}$	tCO2e	Cumulative emissions from activity-shifting leakage at the end of the current monitoring period	Measurements in the activity-shifting leakage area	Every monitoring period	Review of monitoring records
$E_{LME}^{[m]}$	tCO2e	Cumulative emissions from market effects leakage at the end of the current monitoring period	Measurements in the market-effects leakage area	Every monitoring period	Review of monitoring records
$E_{P\Delta}^{[m]}$	tCO2e	Change in project emissions	Monitoring records for Forest Fire, Burning, logging, wood products, and natural disturbance events	Every monitoring period	Review of monitoring records
$E_{P\Delta BRN}^{[m]}$	tCO2e	Cumulative project emissions due to burning at the end of the current monitoring period	Monitoring plots in the project	Every monitoring period	Review of monitoring records
$E_{U}^{[m]}$	tCO2e	Cumulative confidence deduction at the end of the current monitoring period	N/A	Every monitoring period	Review of monitoring records
$p_{LDEG}^{[m]}$	proportion (unitless)	Portion of leakage due to degradation at the end of the current monitoring period	Monitoring in the leakage area	Every monitoring period	Review of monitoring records
$p_{LDEG}^{[m=0]}$	proportion (unitless)	Portion of leakage due to degradation at project start	Monitoring in the leakage area	At project start	Project verification
$p_{SL}^{[m]}$	proportion (unit-less)	Proportion of AGMT that is not merchantable and goes into slash estimated from inventory	Estimated from inventory	Every monitoring period	Review of monitoring records
$t^{[i-1]}$	days	Time from project start date to beginning of monitoring period i	Monitoring records	Already monitored	N/A
$t^{[m]}$	days	Time from project start date to end of current monitoring period	Monitoring records	Every monitoring period	Review of monitoring records

Data / Parameter	Unit	Description	Source of Data	Frequency of Monitoring/ Recording	QA/QC
$t^{[m-1]}$	days	Time from project start date to beginning of current monitoring period	Monitoring records	Already monitored	N/A
$U_B^{[m]}$	uncertainty (unitless)	Total baseline uncertainty	N/A	Every monitoring period	Review of monitoring records
$U_{EM}^{[M]}$	uncertainty (unitless)	Uncertainty in Emissions Model	N/A	Every monitoring period	Review of monitoring records
$U_P^{[m]}$	uncertainty (unitless)	Total project uncertainty	N/A	Every monitoring period	Review of monitoring records
$x^{[m]}$	unitless	Covariate values	Participatory Rural Appraisal, analysis of public records, and/or expert interpretation of inventory data or remotely sensed imagery	Every monitoring period	Review of monitoring records