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Voluntary Carbon Standard Methodology Assessment Report for:

Fundação Amazonas Sustentável and World Bank's Methodology for Estimating Reductions of GHG Emissions from Unplanned Deforestation Version: 01.1, dated 11 May 2011

FAS and WB Frontier and Mosaic	Final Report	22 June 2011
	Draft Final Report	27 May 2011
FAS Frontier Methodology	Final Report Issued:	15 April 2011
	Consolidated Draft Final Report	14 March 2011
	Draft Final Report Issued: Draft Report Issued: First Audit Dates:	08 February 2011 08 October 2010 10 – 27 September 2010
	Assessment team:	Adam Gibbon, Manuel Estrada, Frank Werner
	Approved by:	Jeffrey Hayward
	Assessment standard: *Voluntary Carbon Standard, 2007.1 (November 18, 2008)* *Voluntary Carbon Standard, Guidance for Agriculture, Forestry, and Other Land Use, 2007.1 (November 18, 2008)* *Voluntary Carbon Standard, Tool for AFOLU Methodological Issues, (November 18, 2008)*	
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1 INTRODUCTION

1.1 Objective

The purpose of this report is to document conformance of the *'Methodology for Estimating Reductions of GHG Emissions from Unplanned Deforestation'* (v01.1 dated 11 May 2011) with the requirements of the Voluntary Carbon Standard (VCS) 2007.1. This methodology assessment was requested by Fundação Amazonas Sustentável (FAS) and the World Bank (WB), hereafter referred to as the "Methodology Developers". This report represents the second validator assessment of the VCS double approval process.

This methodology represents an expansion in scope of FAS's methodology titled, *'Methodology for Estimating Reductions of GHG Emissions from Frontier Deforestation'* v02.2, dated 10 March 2011, to include mosaic configurations. This expansion was achieved by merging the methodology with the WB's methodology titled, *'Methodology for Estimating Reductions of GHG Emissions from Mosaic Deforestation'* v0.13, dated 24 December 2010. Rainforest Alliance had previously assessed this WB methodology and found it to be in conformance with the VCS standard 2007.1. This conclusion was reached in the audit report dated 14 January 2011.

This report represents an additional round of assessment of FAS's methodology, with the previous rounds findings also being retained.

Before the merge occurred both methodologies were identical except for the following differences:

- Different authors and acknowledgements on title page
- A different Figure 1, one showing a mosaic configuration, one showing a frontier.
- Each had an applicability condition limiting the use to mosaic and frontier configurations respectively.
- The FAS methodology has a different Figure of Merit requirement.

This additional assessment is to determine if the expansion of scope of the FAS Methodology to include mosaic configurations using the World Bank approach has been executed in a manner that maintains conformance.

This report presents the findings of qualified Rainforest Alliance program auditors and technical experts in methodologies for greenhouse gas emissions and removals or who have assessed the methodology under review according to the applicable standard(s) and protocols of the Voluntary Carbon Standard. Section 2 below provides the assessment conclusions. Rainforest Alliance carbon evaluation reports will be available to the public only upon finalization and after agreement of both the proponents and the Rainforest Alliance, or as required by the VCS.

The Rainforest Alliance's SmartWood program was founded in 1989 to certify forestry practices conforming to Forest Stewardship Council (FSC) standards and now focuses on providing a variety of forest auditing services. The Rainforest Alliance SmartWood program is a member of the Climate, Community, and Biodiversity Alliance (CCBA) and approved verifier to CCB standards, an accredited verifier with the Chicago Climate Change (CCX), a verifier with the Plan Vivo (PV) standards, and an accredited verifier with the Voluntary Carbon Standard (VCS).

Dispute resolution: If Rainforest Alliance clients encounter organizations or individuals having concerns or comments about Rainforest Alliance / SmartWood and our services, these parties are strongly encouraged to contact the SmartWood program headquarters directly. Formal complaints or concerns should be sent in writing and may simultaneously been sent to the Voluntary Carbon Standard Association.

1.2 Scope and Criteria

Scope:

This assessment of a new methodology will evaluate whether or not the methodology has been prepared in line with guidance given under the VCS Program, including Section 5 (project level requirements) and Section 6 (methodologies) of the VCS 2007.1 document.

The scope of this assessment includes:

1. Eligibility criteria. Assessment of whether the methodology's eligibility criteria are appropriate and adequate.

2. Baseline approach: Assessment of whether the approach for determining the project baseline is appropriate and adequate.

3. Additionality: Assessment of whether the approach/tools for determining whether the project is additional are appropriate and adequate.

4. Project boundary: Assessment of whether an appropriate and adequate approach is provided for the definition of the project's physical boundary and sources and types of gases included.

5. Emissions: Assessment of whether an appropriate and adequate approach is provided for calculating baseline emissions, project emissions and emission reductions.

6. Leakage: Assessment of whether the approach for calculating leakage is appropriate and adequate.

7. Monitoring: Assessment of whether the monitoring approach is appropriate and adequate.

8. Data and parameters: Assessment of whether monitored and not monitored data and parameters used in emissions calculations are appropriate and adequate.

9. Adherence to the project-level principles of the VCS Program: Assessment of whether the methodology adheres to the project-level principles of the VCS Program.

10. Special case of rejection from other GHG programs: Assessment in the special case that the methodology had been rejected by another GHG program.

11. Public Review: Under the double approval process, new methodologies must be posted for public comment prior to the first assessment. Any comments made during this process will be reported here and addressed.

The methodology was assessed against these eleven criteria. The first nine were referred to specifically by the VCS in section 5.1.2 of the VCS Program Normative Document: Double Approval Process as the minimum to review. The special case of rejection from other GHG programs is also a VCS requirement. There follows a 'Public Review' section that documents findings from the public comment period which all VCS methodologies are subject to. Each of the criteria are followed by more specific points that pertain to Section 5 and/or Section 6 of the VCS 2007.1 standards and where appropriate the relevant section of the VCS Tool for AFOLU Methodological Issues.

The following project level principles, based upon ISO 14064-2:2006, from Section 5 of the VCS 2007.1, were the principles considered in evaluating the methodology and determining conformance against the checklist criteria:

i. General: The application of principles is fundamental to ensure that GHG-related information is a true and fair account. The principles are the basis for, and will guide the application of, requirements in this part of ISO 14064:2006 and the VCS 2007.1.

ii. Relevance: Select the GHG sources, GHG sinks, GHG reservoirs, data and methodologies appropriate to the needs of the intended user.

iii. Completeness: Include all relevant GHG emissions and removals. Include all relevant information to support criteria and procedures.

iv. Consistency: Enable meaningful comparisons in GHG-related information.

v. Accuracy: Reduce bias and uncertainties as far as is practical.

vi. Transparency: Disclose sufficient and appropriate GHG-related information to allow intended users to make decisions with reasonable confidence; and

vii. Conservativeness: Use conservative assumptions, values and procedures to ensure that GHG emission reductions or removal enhancements are not overestimated

Standard criteria:

This assessment follows the guidance provided within the following standards:

Voluntary Carbon Standard, 2007.1 (November 18, 2008)

Voluntary Carbon Standard, Guidance for Agriculture, Forestry, and Other Land Use, 2007.1 (November 18, 2008)

Voluntary Carbon Standard, Tool for AFOLU Methodological Issues, (November 18, 2008)

VCS Program Normative Document: Double Approval Process Version 1.0 (June 18, 2009)

Special Notice Regarding Program Updates

This assessment follows the guidance provided by VCS Program Update 06 July 2010 with respect to the treatment of new VCS requirements that have been introduced since the first approval of the methodology.

As such the following guidance will be adhered to and is noted:

"*Methodology elements being developed under the double approval process, where the first assessment report has been submitted to the VCSA in accordance with the VCS rules, do not have to comply with any new requirements issued by the VCSA. However, such methodology elements, where finally approved by the VCSA, shall be valid for 12 months (non-AFOLU projects) or 18 months (AFOLU projects) from the date that the new requirements were issued by the VCSA. After such time period, projects cannot use the methodology element and it is considered withdrawn. It can be reinstated or revised via the process set out above." VCS Program Update 06 July 2010*

Therefore, since Bureau Veritas approved the methodology in a report dated 24 May 2010, only program updates dated 23 May and earlier are eligible for consideration in this assessment. However, we note that it may be in the interest of the methodology developer to follow later dated program updates to be prepared for having a compliant methodology and avoid being put on hold once the grace period ends.

1.3 Methodology Description

Audit Resulting in Draft Final Report Dated 27 May 2011 and Final Report Dated 22 June 2011

From: Methodology for Estimating Reductions of GHG Emissions from Unplanned Deforestation', FAS and WB, v01.1, 11 May 2011

"The methodology is for estimating and monitoring greenhouse gas (GHG) emissions of project activities that avoid unplanned deforestation (AUD) and enhance carbon stocks of forests that would be deforested in the baseline case. The forest landscape configuration can be either

mosaic or frontier1. Credits for reducing GHG emissions from avoided degradation are excluded in this methodology."

Second Audit Resulting in Draft Final Report Dated 08 February 2011, Consolidated Report of 14 March 2011 and the Final Report Dated 15 April 2011

From: Methodology for Estimating Reductions of GHG Emissions from Unplanned Frontier Deforestation, FAS, v0.20, 21 January 2011:

"*The methodology is for estimating and monitoring greenhouse gas (GHG) emissions of project activities that avoid unplanned frontier[2] deforestation (AUFD) and enhance carbon stocks of forests that would be deforested in the baseline case. Credits for reducing GHG emissions from avoided degradation are excluded in this methodology*."

First Audit Resulting in Draft Report Dated 08 October 2010

From Methodology for Estimating Reductions of GHG Emissions from Frontier Deforestation, FAS, REDD-NM-002 / VERSION 01.3:

"This methodology is for project activities that reduce emissions of greenhouse gases (GHG) from frontier deforestation and, where significant and measurable, increase carbon stocks of degraded and secondary forests that would be deforested in the absence of the project activity."

2 ASSESSMENT CONCLUSIONS

Assessment Conclusions from the Draft Final Report Dated 27 May 2011

The following changes were found since the previously approved version of the methodology:

- The addition of the World Bank as an authors and related acknowledgements on the title page.
- An expansion of the scope to allow frontier and mosaic deforestation configurations. This was achieved by including mosaic in the two scope sections, removing the condition that the deforestation configuration must be frontier from the summary and then replacing the acronym AUFD with AUD.
- An additional Figure 1, there is now one showing a mosaic configuration, one showing a frontier.

The changes represent a merging with the World Bank Mosaic Methodology mentioned above (which in every other manner was identical to the FAS methodology).

[1] The most recent VCS definitions of "mosaic deforestation" and "frontier configuration" shall be used in applying this methodology. According to the VCS Program Update of May 24th, 2010 "Mosaic configurations are defined as any landscape in which no patch of forest in the project area exceeds 1000 ha and forest patches are surrounded by anthropogenically cleared land. "Frontier configurations are defined as any landscape in which all forest areas in the project area have no current direct physical connection with areas anthropogenically deforested".

[2] The most recent VCS definition of "frontier configuration" shall be used in applying this methodology. According to the VCS Program Update of May 24th, 2010 "Frontier configurations are defined as any

These changes were found to be sufficient to expand the scope and thus the methodology is deemed to be in conformance with the VCS standard 2007.1.

Given the minor nature of the changes it was not found necessary to raise any CARs or re-assess each criterion in Appendix B of this report.

Consolidation with First Verifier's Findings Resulting in the Consolidated Final Report dated 22 June 2011.

The first Verifier, Bureau Veritas issued Appendix A to Report No. Brazil-BR.1029573 on 21 June 2011. This report concluded the following regarding the assessment of Version: 01.1, dated 11 May 2011 of the methodology:

"It is the BVC opinion that the expansion of the methodology scope to include also the mosaic forest landscape configuration, did not affect the methodology procedures and technical steps regarding baseline, leakage and project emission calculation, neither the project boundary definition, monitoring procedures nor additionality assessment."

Assessment Conclusions from the Final Report Dated 15 April 2011

Following an internal assessment the report was finalized. The conclusion is that the 'Methodology for Estimating Reductions of GHG Emissions from Unplanned Frontier Deforestation' Version 02.2, dated 10 March 2011 is in conformance with the VCS 2007.1 standard. This was the same version approved by Bureau Veritas in their report dated 11 March 2011 (Report Number: BRAZIL-5166/2009).

Consolidation with First Verifiers Findings Resulting in the Consolidated Draft Final Report dated 14 March 2011.

The first Verifier, Bureau Veritas issued minor change requests in a report dated 11 March 2011. In order to address these changes a new version of the methodology, "Version 02.2, dated 10 March 2011" was produced. Rainforest Alliance assessed these changes and concluded that no changes were needed to this assessment report or the conclusions reached in the previous audit.

In addition, the Methodology Developers chose to alter the threshold for an acceptable 'Figure of Merit' in section 4.2.3 of the methodology as follows,

"The minimum threshold for the best fit as measured by the Figure of Merit (FOM) must be 80%. Where this minimum standard is not met the project shall be considered ineligible."

To

"The minimum threshold for the best fit as measured by the Figure of Merit (FOM) must be more than 50%, which means there is more correctly simulated change than error. Where this minimum standard is not met, the project proposers must explain why."

This was in response to expert consultation on the subject that had suggested the current thresholds higher than the current methods can reasonably be expected to produce in most circumstances. Rainforest Alliance reviewed the new threshold text, a justification document

that was presented (Justification - FOM issue_10Mar11 (2)) and literature on the topic and were satisfied that the change does not introduce non-conservative uncertainty. Allowing lower FOMs means that models with less accurate predictive abilities of the location of deforestation are allowed, it does not affect the uncertainty associated with the rate of deforestation. If the model had an error bias away in relation to placing deforestation near the project area or in high carbon stock areas, the project validators would need to address this.

Assessment Conclusions from the Draft Final Report Dated 08 February 2011

The FAS methodology was comprehensively revised in order to address the previous corrective action requests. As a result of these changes, all but 1 CAR was addressed. The one remaining CAR (13/10) was open because the methodology does not include clear guidance about the minimum reference region required. The Methodology developers made a small change, deleting an ambiguous footnote and closed this CAR. Therefore no CARs remain open and the methodology is found to be in compliance with the VCS standard.

Assessment Conclusions from the Draft Report Dated 08 October 2010

The FAS Frontier methodology was evaluated against the VCS criteria and found to have several elements that as presented in this version would result in non–conformities with the VCS standard. There are elements that are not yet complete, consistent, or adequately transparent with respects to sections treating eligibility, baseline approach, project boundary, emissions, data and parameters. In particular, at root of several issues is that the definition of the project area and selection of the reference region should be improved such that it articulates a transparent and well-defined method that would lead to suitable baselines being generated. With respects to leakage, a novel approach is advanced, which allows for time discounted leakage emissions accounting, although this requires further defense of the assumptions chosen or modification to ensure it is in compliance with the VCS standard.

Whilst a number of issues exist in the version assessed, the methodology was found to be well structured, clear and logical in most places.

2.1 Audit Team Recommendation

Based on an evaluation of the proponent's new methodology as related to the defined assessment scope and criteria, which assessed the credibility of all data, rationale, assumptions, justifications and documentation provided by the methodology proponent; the Rainforest Alliance new methodology assessment team finds that the proponent has:

☒ Demonstrated unqualified compliance/conformance with the standard

☐ Not demonstrated unqualified compliance/conformance with the standard.

2.2 Corrective Action Requests

Note: A non-conformance is defined in this report as a deficiency, discrepancy or misrepresentation that in all probability materially affects the methodology. CAR language uses "shall" to suggest its necessity and tries not to be prescriptive in terms of mechanisms to mitigate the CAR. Each CAR is brief and refers to a more detailed finding in the appendices.

Corrective action requests (CARs) identified during draft assessment reports must be successfully closed by the proponents before Rainforest Alliance issues a positive assessment decision. Any open CARs upon finalization of the assessment report will result in a qualified assessment statement which lists: (a) all qualifications, (b) rationale for each qualification, and (c) impact of each qualification on the methodology.

CAR 01/10	Reference Standard & Requirement: Eligibility Criteria 1.1, 4.2 Project Boundary
Description of Non-conformance: It is not clear if the project can influence peat areas and whether or not (and how) these emissions would need to be accounted for.	
Corrective Action Request: The FAS methodology shall clarify the applicability of the methodology to peat lands and account for any emissions that could occur.	
Timeline for conformance:	Applicability condition "f" ("h" in the previous version of the methodology) has been modified and now uses the same language as the approved methodology VM0003 to exclude peatland areas. This was found to be an improvement and addresses **CAR 01/10**.
Evidence to close CAR:	Pending
CAR Status:	**CLOSED**
Follow-up Actions:	N/A

CAR 02/10	Reference Standard & Requirement: Baseline Approach 2.1
Description of Non-conformance: Step 2.4 involves documenting the land-use change data from the reference region and project area. Given that by definition there can have been no deforestation in this area, and the project does not seek to claim credits from avoided degradation in the baseline, it is unclear why an assessment of the historical changes in the project area is necessary. Step 2.2 requires the proponent to "identify and describe the land-use and land-cover (*LU/LC*) *classes* present in the *reference region"* only. However, as the project area may not be part of the reference region, it is not clear why this is not necessary.	
Corrective Action Request: The FAS Methodology shall explain the rationale for the selection of different areas to conduct different aspects of the land classification and change detection exercise during the historical reference period or amend the methodology so that it is clear and consistent.	
Timeline for conformance:	Prior to approval
Evidence to close CAR:	**CAR 02/10** has been addressed by specifying that "In the case of the project area, LU/LC-change analysis is required to exclude any area with forests that are less than 10 years old at the project start date" (page 53). Moreover, text and Figure 1 have been added to clarify that the project area is a subset of the reference region (page 8)
CAR Status:	**CLOSED**

Follow-up Actions:	N/A

CAR 03/10	Reference Standard & Requirement: Baseline Approach 2.1
Description of Non-conformance: The methodology's framework for the selection of the method to project the baseline rate of deforestation into the future appears to lead to choices that may not be conservative. When deforestation rates are decreasing but the reason for the trend is unknown, a historical average can be used. This was found to be a non-conservative choice.	
Corrective Action Request: The FAS methodology shall provide guidance on selecting a method for baseline deforestation prediction that is conservative.	
Timeline for conformance:	Prior to approval
Evidence to close CAR:	A number of modifications to the methodology have been made to address **CAR 03/10**: • The authors decided to delete the discount factor in absence of literature supporting it, and, where no conclusive evidence emerges from the analysis of agents and drivers explaining the different historical deforestation rates, they now require repeating step 3 until finding conclusive evidence. • Where the evidence found in Step 3 on the most likely future deforestation trend within the reference region and project area is inconclusive and the trend is decreasing or about constant, the methodology now requires Step 3 to be repeated until conclusive evidence is found, and mentions that otherwise it is not be possible to continue with the next steps of the methodology. Moreover, it states that "*if the trend is increasing and the evidence is inconclusive, the deforestation rate to be used in the projections will be the average historical rate (see step 4.1.1)*". In addition, new equations (4a to 6c) were formulated in Section 4.1.3.1 to calculate the historical average (approach 'a') rate of deforestation based on the historical rate of deforestation in the three classes of land (optimal, average and sub-optimal) historically. The new equations correctly use a method derived from Puyravaud (2003). Equation 11, to calculate the rate of deforestation during the 'sub-optimal' period of approach 'b' was also changed, after it was discovered that the original equation did not produce the deforestation pattern that was intended. This change was found to be acceptable, as the curve that results is one that is more likely to occur in reality (smoother). Figure 4 was also added to the section on approach 'b'. This improves the clarity of the section.
CAR Status:	**CLOSED**
Follow-up Actions:	N/A

CAR 04/10	Reference Standard & Requirement: Baseline Approach 2.1
Description of Non-conformance: The methodology only considers biophysical and infrastructure constraints to the spatial extent of deforestation. Not considering other constraints (socio-economic) means the baseline may not be conservative.	
Corrective Action Request: The FAS methodology shall consider all relevant factors that could spatially constrain deforestation.	
Timeline for conformance:	Prior to approval
Evidence to close CAR:	**CAR 04/10** has been addressed by the inclusion of new text stating that "socio-economic constraints (mobility, land-use rights, areas with presence of conflicts and crime, etc)" must also be considered in section 4.1.2.
CAR Status:	**CLOSED**
Follow-up Actions:	N/A

CAR 05/10	Reference Standard & Requirement: 2.1 Baseline
Description of Non-conformance: If the projected trend of deforestation is decreasing then no constraint analysis is required by the methodology.	
Corrective Action Request: The FAS methodology shall mandate an analysis of constraints to the future expansion of deforestation if the rate of baseline deforestation is likely to be decreasing, of fully justify its omission.	
Timeline for conformance:	Prior to approval
Evidence to close CAR:	This CAR has been addressed by requiring cases where deforestation is found to be decreasing to carry out the analysis of constraints to the further expansion of deforestation in section 4.1.2.
CAR Status:	**CLOSED**
Follow-up Actions:	N/A

CAR 06/10	Reference Standard & Requirement: Baseline Approach 2.1
Description of Non-conformance: The methodology reduces the rate of deforestation in areas that are not optimal for deforestation by specific amounts without justifying why these amounts are suitable. To clarify, the factors the auditors are referring to are the 0.5 and 0.25 values used in equations 4 and 5 respectively.	
Corrective Action Request: The FAS methodology shall justify the amount by which it reduces the deforestation rate for areas that are not optimal for deforestation.	
Timeline for	Prior to approval

conformance:	
Evidence to close CAR:	The Methodology Developer provided the following explanation, "*The factors 0.5 and 0.25 in equations 4 and 5, respectively, are based on the conservative assumption that deforestation will be reduced by half of the historical average once all "optimal" areas will be deforested and by one quarter once all "optimal" and "average" areas will have been deforested. In reality deforestation will happen at the same time in "optimal", "average" and "sub-optimal" areas at the same time and in different and unpredictable proportions. There is no objective justification for these numbers (50% and 25%). However, it can be assumed that in very few cases "Toptimal" or "Toptimal + Taverage" will be a longer period of time than the fixed baseline period. Thus, in most cases, these factors will not have any impact on the numbers of VCUs actually issued to the project because the baseline will have to be revisited before these factors will have an impact on the projected baseline.*" The defense provided was found to be reasonable.
CAR Status:	**CLOSED**
Follow-up Actions:	N/A

CAR 07/10	Reference Standard & Requirement: 2.1 Baseline approach, 5.1 Emissions
Description of Non-conformance: Public comments received have indicated weaknesses in the statistical approach to baseline modeling. These need to be addressed by the methodology. The methodology suggests statistical tests that are not appropriate for the range of models and regressions that could be used. In addition, 'method 2 – modeling in section 5.2, does not have any requirements for testing of the models accuracy.	
Corrective Action Request: The FAS methodology shall provide guidance for the development of deforestation models that conform to statistical best practice. This includes model validation and selection.	
Timeline for conformance:	Prior to approval
Evidence to close CAR:	The methodology now includes text reading "*The model must demonstrably comply with statistical good practice, and evidence that such requirement has been met shall be provided to VCS verifiers at the time of validation*" with regard to approach 'b' and 'c'. Moreover, the text "The results of the analysis must produce a statistically significant model with a $p\leq$ and an adjusted r^2 of ≥0. 50. Seek assistance from an expert statistician as necessary", in approach "c" has been deleted.
CAR Status:	**CLOSED**
Follow-up Actions:	N/A

CAR 08/10	Reference Standard & Requirement: Baseline Approach 2.1
Description of Non-conformance: On page 61, Section 4.2.1 the methodology requires “Specifically, from at least five examples observed in the reference region or from literature sources appropriate to the reference region, estimate the length of secondary roads constructed per km of official roads constructed, or the length of secondary roads constructed per industrial facility/settlement, or per square kilometer within a certain type of land use (such as private land, forestry concessions, protected areas) during an historical time period”. Given that the feasibility and length of roads depends to a good extent on the geographic conditions in the area where they are built, the audit team considers that such conditions shall be considered while projecting the number, location and length of secondary roads.	
Corrective Action Request: The FAS Methodology shall include steps to ensure that reasonable proxy areas for estimating road density are selected.	
Timeline for conformance:	Prior to approval
Evidence to close CAR:	The methodology now includes provisions to consider geographic and socio-economic conditions unfavorable for infrastructure developments whilst projecting unplanned infrastructure development (page 79), thus addressing **CAR 08/10.** However, it was found by the audit team that not enough guidance is included in this section on how to determine the location of secondary roads – i.e. the fact that an area is suitable for such a road does not mean than in all suitable areas roads will need to be constructed, therefore it would be necessary to identify road patterns in the project region, Likewise, provisions to make the selection of possible paths conservative (i.e. to avoid presuming that all roads will be built near or across forested areas thus causing baseline deforestation) are lacking **(New OBS 19/11).**
CAR Status:	**CLOSED**
Follow-up Actions:	N/A

CAR 09/10	Reference Standard & Requirement: Baseline Approach 2.1
Description of Non-conformance: Step 4.2.4 requires that deforestation is assigned to the pixels with the highest risk rating within the reference region. In order to calculate the deforestation in the project area, "the annual maps of *baseline deforestation* for the *reference region* must be overlaid with a map layer corresponding only to the *project area*." This appears to assume that the project area is included in the reference region. However, on page 24, section 1.1.1 does not make the inclusion of the project area in the reference region mandatory (use of should language). The spatial linkage between project area and reference region must be explicit. This is because in this methodology deforestation is allocated to the most attractive areas for deforestation, so the calculated baseline deforestation rate in the project area will be strongly determined by the relative attractiveness of areas in the reference region. If the reference region is not spatially linked, this could introduce bias that has no basis in the reality of the likely deforestation pattern.	
Corrective Action Request: The FAS Methodology shall model deforestation in a manner that takes into account the expected frontier pattern and is not unduly influenced by the attractiveness of unconnected areas.	
Timeline for conformance:	Prior to approval
Evidence to close CAR:	The methodology has been modified to specify that the reference region "must be larger than the project area and include the project area" (page 35). With this and the inclusion of Figure 1 and the mention on page 8 that "The project area, leakage belt and leakage management areas are subsets of the reference region"
CAR Status:	**CLOSED**
Follow-up Actions:	N/A

CAR 10/10	Reference Standard & Requirement: 2.6
Description of Non-conformance: The methodology complies with this requirement by asking project participants to update the baseline with a periodicity not less than 5 years or more than 10 years, however the language used to reflect whether or not this is mandatory is not consistent. Page 113 states, "the *baseline* should be revisited every 5 to 10 years" which implies it is optional, whilst in Appendix 1, in the definition of, "fixed baseline period" it is clear that it is mandatory. In addition, Task 2.2.1 states that the baseline must be re-assessed, "at the end of each crediting period" and the crediting period will by definition be longer than 10 years.	
Corrective Action Request: The FAS methodology shall provide consistent guidance on the mandatory nature of baseline re-assessments.	
Timeline for conformance:	Prior to approval
Evidence to close CAR:	The methodology has been revised thoroughly in order to make clear that the reassessment of the baseline deforestation is mandatory

CAR Status:	**CLOSED**
Follow-up Actions:	N/A

CAR 11/10	Reference Standard & Requirement: 4.1 Project Boundary
Description of Non-conformance: Tables 3 and 4 contain exclusions and inclusions that are not consistent with the VCS Tool for Methodological Issues.	
Corrective Action Request: The FAS methodology shall be consistent with the VCS Tool for Methodological Issues regarding the carbon pools and GHG emission sinks/sources that need to be included by project developers.	
Timeline for conformance:	Prior to approval
Evidence to close CAR:	This CAR has been addressed by modifying the text to comply with the latest VCS AFOLU program update
CAR Status:	**CLOSED**
Follow-up Actions:	N/A

CAR 12/10	Reference Standard & Requirement: 4.2 Project Boundary
Description of non-conformance: It is understood by the auditors that the developers wish to prepare their methodology for future REDD policies and programs, by including provisions for the use of sub-national and national derived data. However, the modalities of linking project and (sub-) national baselines, monitoring and leakage, etc. have not been defined by the VCS yet. As such, the methodology must ensure full guidance for project specific steps and, following this, any provisions or placeholders for using (sub-)national data can be presented only if these are preceded by appropriate language stating that these are only to be used if there is approved VCS guidance on the subject.	
Corrective Action Request: The FAS methodology shall only contain references to the use of non-project specific (i.e., (sub-) national baselines, monitoring, reporting, verification, and leakage, etc.) where full guidance for the project specific case has been provided and it is preceded by a caveat on the need for VCS guidance to be developed and followed first.	
Timeline for conformance:	Prior to approval
Evidence to close CAR:	Full guidance on setting project specific baselines is now provided. The current version of the methodology has introduced the idea of "jurisdictional programs" in order to reflect the upcoming work on this issue under the VCS, instead of making reference to "sub-national activities" as in its previous version. Moreover, there is now text on page 33 stating that "*If sub-national or national baselines exist, that meet VCS specific guidance on applicability of existing baselines, such baselines must be used*".
CAR Status:	**CLOSED**

Follow-up Actions:	N/A

CAR 13/10	Reference Standard & Requirement: Project Boundary 4.2
Description of Non-conformance: In the methodology, deforestation that occurs historically in the reference region is used to create a model of the future in the project area. The reference region can be defined as somewhere the "drivers and patterns of *deforestation*" are "similar to those *existing* or expected to exist within the *project area*". (Section 1.1.1) However, since the project area, by definition, (100% forest) has no deforestation at the start of the project, it is not clear how it can have existing deforestation drivers and patterns. In addition, insufficient guidance is provided regarding the required size of the reference region and the steps to take when the circumstances are due to change during the project. Finally, the minimum size of the reference region (the project area) was not thought to be feasible. On page 23, the methodology establishes three main criteria relevant to demonstrate that the conditions determining the likelihood of deforestation within the project area are similar, or expected to become similar, to those found within the reference region yet the influence of infrastructure is not one of them. Given the importance of infrastructure establishment, it is not sufficiently explained why this does not appear as an explicit criterion for the demonstration of similar predisposing conditions between the reference region and the project area.	
Corrective Action Request: The FAS Methodology shall explain clearly the requirements for the selection of the reference region, with respect to its size and its similarity to conditions that are expected to prevail in the project area.	
Timeline for conformance:	Prior to approval
Evidence to close CAR:	The multiple issues associated to **CAR 13/10** have been addressed in the new version of the methodology as follows: • The text requiring that the likelihood of deforestation be "similar" in the reference region and the project area on page 24 (now 35) has been deleted. • The methodology now contains the following sentence providing more guidance on how to simulate chrono-sequences: "*The boundary of such strata may be static (fixed during a fixed baseline period) or dynamic[3] (changing every year), depending on the modeling approaches used*". Infrastructure drivers now appear as a specific sub-criterion for the demonstration of similar predisposing conditions between the reference region and the project area. (page 35).
CAR Status:	**CLOSED**
Follow-up Actions:	N/A

[3] Dynamic = with shifting boundaries, according to modeled changes at the level of driver variables such as population, infrastructure and other to be determined by the project proponent.

CAR 14/10	Reference Standard & Requirement: 4.2 Project Boundary

Description of Non-conformance:

Section 1.1.2 (page 28) describes the project boundaries, and establishes that "the project area must include areas projected to be deforested in the baseline case and may include some other areas that are not threatened according to the first baseline assessment. Such areas will not generate carbon credits, but they may be included if the project proponent considers that future baseline assessments, which have to be carried out at least every 10 years, are likely to indicate that a future deforestation threat will exist, also the demonstration is not possible at the time of validation. In our opinion, this provision could lead to a case where "intra-project" leakage (deforestation agents originally found in the threatened patches of forest of the project area moving to the non-threatened patches) could appear, which could inflate future baseline revisions. The methodology should provide guidance on how this situation should be avoided and/or accounted for by project developers.

Corrective Action Request:

The FAS methodology shall specify how the areas within the project boundary that are not under threat of deforestation during the initial baseline assessment will be treated when accounting for emission reductions in subsequent baseline periods, including any potential leakage and overestimation of future baselines.

Timeline for conformance:	Prior to approval
Evidence to close CAR:	The Methodology Developers provided the following additional explanation: *"Any "intra-project" leakage would have to be reported as project emission during the verifications. If deforestation is shifted from one place (Zone A) to another place (Zone B) within the project area (Zone A + Zone B) there will be no credits to claim; at the level of the project polygon baseline deforestation and project deforestation will be the same.* *If deforestation is greatly reduced in Zone A and slightly increased in Zone B (= "intra-project" leakage) but the overall result is a deforestation reduction within the project area, the project will get credits for the reduction achieved in total (see table below).*

year	DEFORESTATION IN THE PROJECT AREA						Reduction of deforestation
	Baseline			Project scenario			
	Zone A	Zone B	Total (Zone A + Zone B)	Zone A	Zone B	Total (Zone A + Zone B)	
	ha	ha	ha	ha	ha	ha	ha
1	4	0	4	1	1	2	2
2	4	0	4	1	1	2	2
3	4	0	4	1	1	2	2
4	4	0	4	1	1	2	2
5	4	0	4	1	1	2	2
6	4	0	4	1	1	2	2
7	4	0	4	1	1	2	2
8	4	0	4	1	1	2	2
9	4	0	4	1	1	2	2
10	4	0	4	1	1	2	2

We do not see that the baseline of the subsequent fixed baseline period will be inflated if due to the project activity some of the

	baseline deforestation is displaced inside the project area from Zone A to Zone B: such displaced deforestation is still baseline deforestation and there is no incentive for the project proponent to have more deforestation in Zone B. Therefore, if during the subsequent fixed baseline period the baseline deforestation that was displaced from Zone A to Zone B is effectively reduced, the project proponent shall deserve credits for it. *Based on the above explanation, we decided to keep our proposed text because spatial models cannot be 100% accurate, which is also acknowledged by the auditor (see CAR 45).”* (Response to CARs and OBS.doc.) This defense was found to be acceptable by the auditors
CAR Status:	**CLOSED**
Follow-up Actions:	N/A

CAR 15/10	Reference Standard & Requirement: 4.2 Project Boundary
Description of Non-conformance: Section 1.1.2 (page 28) states that “*Following VCS 2007.1 (2008 p.16-17), new discrete units of land (referred to as “new project area”) may be integrated into an existing project area if included in the monitoring report for the first verification.*” However page 17 of the VCS AFOLU guidance contains provisions that must be met in order for this to occur. Of these provisions, ‘B’, “*Assure that if the area is eventually smaller than intended, there are provisions that increased emissions attributable to the project activity in the areas that at verification have not come under control of project shall be considered as leakage. This requires the selection of the appropriate methodology beforehand for the eventuality that this may happen*”; requires that the methodology is compatible with the provision. The methodology does not explain how this provision would be met.	
Corrective Action Request: The FAS methodology shall include provisions to cover leakage in cases where there are increased emissions attributable to the project activity in areas that at verification have not come under control of project.	
Timeline for conformance:	Prior to approval
Evidence to close CAR:	The methodology now states that “*If at the first verification the project area is eventually smaller than intended at the validation date, the area left out must be included in the leakage belt area*.” (Section 1.1.2).
CAR Status:	**CLOSED**
Follow-up Actions:	N/A

CAR 16/10	Reference Standard & Requirement: 4.2 Project Boundary
Description of Non-conformance: The method used to determine the leakage belt does not consider that the opportunity cost of deforestation can change over time or that a mobility analysis will be necessary before defining a realistic area based on opportunity cost. Also, the criteria used to define the leakage belt limit it only to those areas with similar conditions to those found in the project area.	
Corrective Action Request: The FAS methodology shall revise the options proposed to define the boundaries of the leakage belt such that the opportunity cost analysis takes into account the mobility of the actors and criteria used to define the leakage belt are considering the overall suitability of lands for the activities of deforestation agents.	
Timeline for conformance:	Prior to approval
Evidence to close CAR:	The first issue contained in **CAR 16/10** regarding the use of a mobility analysis in Option I (opportunity cost assessment) has been addressed, the methodology no longer requires an assessment of mobility as part of option I**.** The second issue under **CAR 16/10** regarding the suitability of leakage belt areas whilst assessing the mobility of deforestation agents has now been fixed by including the text, "*The overall suitability of the land for the activities of deforestation agents shall be considered and the selection of criteria must be consistent with criteria used to assess deforestation constraints in Step 4.1.2*" and deleting the previous criteria.
CAR Status:	**CLOSED**
Follow-up Actions:	N/A

CAR 17/10	Reference Standard & Requirement: Emissions 5.1
Description of Non-conformance: In section 6.1, the requirement or timing for when the use field measurements is mandatory (versus purely optional or recommended best practice) was found to be unclear. The use of accurate and conservative carbon stock data is important in setting baselines and thus there must not be ambiguity around what constitutes the lower limit of adequate data for the estimation of carbon stocks.	
Corrective Action Request: The FAS Methodology shall clearly state when it is necessary to conduct field measurements such that adequately accurate and conservative data is always used.	
Timeline for conformance:	Prior to approval
Evidence to close CAR:	In response to **CAR 17/10** the Methodology Developer stated, "*We believe that the methodology is sufficiently clear as it states:* *"Assess and, where appropriate, use existing data. It is likely that some existing data could be used to quantify the carbon stocks of one or more classes. These data could be derived from a forest inventory or perhaps from scientific studies. Analyze these data and use them if the following criteria are fulfilled (2008):* *• The data are less than 10 years old;*

	• The data are derived from multiple measurement plots; *• All species above a minimum diameter are included in the inventories;* *• The minimum diameter for trees included is 30 cm or less at breast height (DBH);* *• Data are sampled from good coverage of the classes over which they will be extrapolated."* *If the project proponent decides to use literature data, the methodology provides the following guidance:* *"Literature estimates:* *• The use of carbon stock estimates in similar ecosystems derived from local studies, literature and IPCC defaults is permitted , provided the accuracy and conservativeness of the estimates are demonstrated. For instance, when defaults are used, the lowest value of the range given in the literature source (or the value reduced by 30%) should be used for the forest classes, and the highest value (or the value augmented by 30%) for non-forest classes."* *This text makes it clear that literature estimates can be used, but that there will be a 30% penalty in using them."* The Audit team accept this defense
CAR Status:	**CLOSED**
Follow-up Actions:	N/A

CAR 18/10	Reference Standard & Requirement: Emissions 5.1
Description of Non-conformance: The methodology does not give sufficient guidance on how allometric equations should be tested or what should be done in cases where the equation is found to be erroneous and non conservative.	
Corrective Action Request: The FAS methodology shall provide thorough guidance on allometric equation testing and handling of uncertainty.	
Timeline for conformance:	Prior to approval
Evidence to close CAR:	**CAR 18/10** has been addressed by including additional guidance on how to determine the size of the samples to be considered and requiring a full allometric model to be developed if the trees sampled fail to have biomasses within the allowed tolerances of error.
CAR Status:	**CLOSED**
Follow-up Actions:	N/A

CAR 19/10	Reference Standard & Requirement: Emissions 5.3
Description of Non-conformance: Equation 25 in Section 9.2 provides a detailed equation to calculate the ex ante estimate of GHG reductions due to the project using terms referred to in previous equations. However, it was unclear whether absolute values had to be used to make the equations work and some of the parameters in the equation appear nowhere else in the methodology (e.g. $EBSL_t$).	
Corrective Action Request: The FAS methodology shall present a clear flow of data between tables and equations (and appendices) to culminate in the number of VCUs that must be issued at a given verification event.	
Timeline for conformance:	Prior to approval
Evidence to close CAR:	**CAR 19/10** has been addressed by adding a note below Equation 23 specifying that "The absolute values of ΔCBSLPAt shall be used in equation 23" and that "*If $\Delta CPSPA_t$ represents a net increase in carbon stocks, a negative sign before the absolute value of $\Delta CPSPA_t$ shall be used. If $\Delta CPSPA_t$ represents a net decrease, the positive sign shall be used*". The flow of data has also been revised.
CAR Status:	**CLOSED**
Follow-up Actions:	N/A

CAR 20/10	Reference Standard & Requirement: Emissions 5.3
Description of Non-conformance: The FAS methodology provides the calculation steps to estimate ex-ante the number of VCUs that will be issued to the project (equations 26-27). However the language used in the equations and supporting text does not conform with the VCS language with respect to the issuance of carbon credits and VCUs. For example, the parameter $VCUB_t$ is stated as being, "Number of voluntary carbon units to be withheld in the VCS Buffer…", yet the VCS does not withhold VCUs in the buffer, rather it deposits "non-tradable AFOLU carbon credits". VCUs are always tradable when issued.	
Corrective Action Request: The FAS Methodology shall use language regarding carbon credits and VCUs in a manner that is consistent with the VCS standard.	
Timeline for conformance:	Prior to approval
Evidence to close CAR:	Equations 24 and 25 (previously equations 26-27) and the surrounding text has been changed to be in line with VCS language. Table 34 was also updated to be consistent with the equations that populate it.
CAR Status:	**CLOSED**
Follow-up Actions:	N/A

CAR 21/10	Reference Standard & Requirement: Leakage 6.1
Description of Non-conformance: The FAS methodology does not provide the steps for quantifying the emissions from leakage for all the activities it identifies as being potentially subject to leakage. There is a provision for leakage management areas not having to count leakage if deforestation was projected in the baseline. This was found not to be acceptable, since there could be further leakage from these areas that is not counted and there are no VCS provisions for doing such accounting.	
Corrective Action Request: The FAS methodology shall provide the steps necessary to calculate the emissions from any activity which would potentially be displaced as leakage.	
Timeline for conformance:	Prior to approval
Evidence to close CAR:	The issues relating to the exclusion of emissions from the leakage management area in the first ten years has been addressed by deleting the clause which allowed this. The methodology has been updated such that it is now clear where leakage management zones are located with respect to the reference region, leakage belt and project area.
CAR Status:	**CLOSED**
Follow-up Actions:	N/A

CAR 22/10	Reference Standard & Requirement: Leakage 6.1
Description of Non-conformance: The methodology does not consider the potential for market leakage.	
Corrective Action Request: The FAS Methodology shall consider the implications for market leakage under this methodology and provide appropriate guidance, if necessary. A VCS tool for calculating market leakage already exists which could be referenced.	
Timeline for conformance:	Prior to approval
Evidence to close CAR:	The revised methodology still does not contain any deductions for market leakage. The auditors acknowledge that for REDD projects the VCS guidance states that only illegal logging need be considered, and only if it is being counted in the baseline. The developer's defense of the market leakage omission is that logging is not counted in the baseline. This is shown in the graphs in the scope section of the methodology. Whilst baseline activities could still include logging (one of the applicability conditions on page 20 states that "*Baseline activities may include planned or unplanned logging for timber, fuel-wood collection, charcoal production, agricultural and grazing activities as long as the category is unplanned frontier deforestation according to the most recent VCS AFOLU guidelines*" no credits are claimed for their avoidance.
CAR Status:	**CLOSED**

Follow-up Actions:	N/A

CAR 23/10	Reference Standard & Requirement: Leakage
Description of Non-conformance: The FAS methodology presents a novel method for the calculation of activity shifting leakage. The auditors consider the approach worthy of serious consideration. However, there are a number of issues which must be resolved. Firstly, this method has no precedent in the VCS standard and appears to be in contradiction with the way VCS credits are generated. This is because the VCS standard issues ex-post verified emissions reductions, yet this method is based on the emissions reductions not occurring until a later date (after verification). Secondly, the assumptions made in the selection of the discount rate used are also not defended. If this method is to be pursued, it may be necessary for the methodology developer to seek VCS advice.	
Corrective Action Request: The FAS Methodology shall fully defend the assumptions used in the time-discount approach to activity shifting leakage and demonstrate that it is compatible with the VCS approach to credit issuance.	
Timeline for conformance:	Prior to approval
Evidence to close CAR:	**CAR 23/10** has been addressed by deleting the approach described above for activity shifting leakage calculation.
CAR Status:	**CLOSED**
Follow-up Actions:	N/A

CAR 24/10	Reference Standard & Requirement: Monitoring 7.1
Description of Non-conformance: When developers are monitoring land-use and land-cover changes they are instructed to use techniques such as those from Part 1, step 2.4. This is acceptable; however, step 2.4 does not include an accuracy assessment which would be required (as in step 2.5).	
Corrective Action Request: The FAS methodology shall provide guidance on the monitoring of each of the data and parameters necessary to calculate the avoided emissions ex post.	
Timeline for conformance:	Prior to approval
Evidence to close CAR:	**CAR 24/10** has been addressed by including the following text on page 136: "*Methods used to monitor LU/LC change categories and to assess accuracy must be similar to those explained in part I, step 2.4 and part I, step 2.5, respectively.*"
CAR Status:	**CLOSED**
Follow-up Actions:	N/A

CAR 25/10	Reference Standard & Requirement: 1.1 Eligibility Criteria, 7.1 Monitoring
Description of Non-conformance: Due to a lack of clarity around the definitions of (and thresholds between) deforestation and degradation, the methodology was found to potentially allow crediting for degradation that would not be subsequently tracked for project scenario emissions or leakage accounting purposes.	
Corrective Action Request: The FAS methodology shall only generate VCUs for the reduction of emissions related to land cover changes that are being accounted for as leakage.	
Timeline for conformance:	Prior to approval
Evidence to close CAR:	**CAR 25/10** has been addressed by adding a requirement to calculate the carbon stock loss at the time of deforestation taking into account any degradation that was projected to occur up to that date (see new text Step 5). Guidance on how to do this is provided in Step 2.2. In addition the graphs in the scope section have been revised to reflect the fact that only avoided deforestation and not degradation will be credited. Table 35 has remained the same. However, this is now acceptable due to the changes made to address **CAR 25/10** earlier in the methodology
CAR Status:	**CLOSED**
Follow-up Actions:	N/A

CAR 26/10	Reference Standard & Requirement: 7.1 Monitoring
Description of Non-conformance: The methodology allows losses due to natural disturbances to be excluded from emissions accounting using the assumption that the event would have happened in the baseline (Part 3, Task 2, Section 1.1.4). In addition, it is stated in the methodology that losses from forest fire do not need to be included if forest fires are not included in the baselines. The VCS has provided clarification directly to the Rainforest Alliance that until further guidance is produced, all losses are to be treated equally, and any loss to carbon stocks in the project area must be accounted for in the carbon accounting.	
Corrective Action Request: The FAS methodology shall revise its provisions on how to account for carbon stock decreases and GHG emissions due to natural disturbances to be compatible with the VCS AFOLU guidance.	
Timeline for conformance:	Prior to approval
Evidence to close CAR:	Changes have been made to sections 1.1.3 and 1.1.4. The methodology now requires all loses (whatever the location within the project area, and whatever the cause) to be quantified and accounted for.
CAR Status:	**CLOSED**

Follow-up Actions:	N/A

CAR 27/10	Reference Standard & Requirement: 7.1 Monitoring
Description of Non-conformance: The methodology requires that all deforestation occurring in the leakage belt is accounted for as leakage (Section 1.2.2). This is because the leakage belt was previously defined as forested areas modeled to remain forest at the end of the crediting period according to the baseline projections (Part 1, 1.1.3). This approach was found to suffer from two main problems. First, it assumes that the spatial modeling of deforestation is accurate, whereas deforestation will not occur exactly where predicted. The result of this is that a situation where a project that successfully mitigated leakage, but had poor spatial mapping of deforestation in the baseline, could suffer significant leakage deductions. Second, the methodology has an option to estimate emissions and removals for each year of the fixed baseline period only (section 4.1.3.3), which means that the location of deforestation would not be estimated up to the end of the crediting period. This would mean that the leakage belt, which is defined as forest projected to remain as forest at the end of the crediting period, could not be defined.	
Corrective Action Request: The FAS Methodology shall include ex-post leakage quantification steps that are compatible with the options for baseline projection and take into account the fact that there may be errors in the spatial estimates of baseline deforestation estimation.	
Timeline for conformance:	Prior to approval
Evidence to close CAR:	The leakage belt is no longer assumed to be constituted of forests remaining at the end of the crediting period, instead, a baseline is estimated for such areas and leakage emissions are assumed to be those monitored above such baseline levels. The option of not carrying out spatial modeling has been deleted, as well as the option to estimate emissions and removals for each year of the fixed baseline period only (section 4.1.3.3). The accuracy of spatial modeling within the leakage belt is no longer a concern because it is the total deforestation that occurs within the leakage belt that is monitored, and its exact location does not affect the calculations (Part 3, Section 1.2.2). A new table has been provided (Table 36) for recording *ex post* leakage data.
CAR Status:	**CLOSED**
Follow-up Actions:	N/A

CAR 28/10	Reference Standard & Requirement: 7.1 Monitoring
Description of Non-conformance: It is not explicitly stated that when re-assessing the baseline, credits cannot be earned from areas that have already generated credits through their protection in the first period. This could happen, if Part 2 was followed exactly again.	
Corrective Action Request: The FAS Methodology shall not allow double counting of avoided emissions from the same	

piece of land in different fixed baseline periods.	
Timeline for conformance:	Prior to approval
Evidence to close CAR:	**CAR28/10** has been addressed by inserting the following note "*A map showing Cumulative Areas Credited within the project area shall be updated and presented to VCS verifiers at each verification event. The cumulative area cannot generate additional VCUs in future periods*" (page 146). This CAR was further addressed by including text in section 2.2.2 of Part 3 reading "*All areas credited for avoided deforestation in past fixed baseline periods must be excluded from the revisited baseline projections as these areas cannot be credited again. To perform this exclusion use the map of "cumulative areas credited*" that was updated in all previous verification events".
CAR Status:	**CLOSED**

CAR 29/10	Reference Standard & Requirement: Monitoring 7.2
Description of Non-conformance: The section on uncertainty was very limited in scope and did not cover the most significant and possible ways that uncertainty is introduced into the methodology.	
Corrective Action Request: The FAS methodology shall expand the section on treatment of uncertainties considering the different types of uncertainty that are introduced by the variety of different data sources.	
Timeline for conformance:	Prior to approval
Evidence to close CAR:	The methodology states in section 6.1.1 that "*Carbon stock estimates are subject to uncertainty assessment as indicated in appendix 2, Box 2. If the uncertainty of the total average carbon stock (Ctotcl) of a class cl is less than 10% of the average value, the average carbon stock value can be used. If the uncertainty is higher than 10%, the lower boundary of the 90% confidence interval must be considered in the calculations if the class is an initial forest class in the project area or a final non-forest class in the leakage belt, and the higher boundary of the 90% confidence interval if the class is an initial forest class in the leakage belt or a final non-forest class in the project area."* This modification was found acceptable by the audit team
CAR Status:	**CLOSED**
Follow-up Actions:	N/A

CAR 30/10	Reference Standard & Requirement: 9.2 Adherence to the project-level principles of the VCS Program
Description of Non-conformance: The methodology contains numerous typographical errors and inconsistencies	
Corrective Action Request: The FAS methodology shall be presented free of typographical errors and inconsistencies.	

Timeline for conformance:	Prior to approval
Evidence to close CAR:	The typos and inconsistencies have been addressed.
CAR Status:	**CLOSED**
Follow-up Actions:	N/A

CAR 31/10	Reference Standard & Requirement: 11 Public Review
Description of Non-conformance: The Developers have not responded in a fully transparent manner, or with specific reference to language revised within the current methodology, on the public comments regarding the definition of legal boundaries and also concerning the handling of statistical tests or validation of models and regressions used.	
Corrective Action Request: The methodology developers and/or the FAS methodology shall demonstrate all of the public comments received have been addressed.	
Timeline for conformance:	Prior to approval
Evidence to close CAR:	The Methodology Developer has submitted responses to all of the public comments received. These are summarized in Table 1 of this report. All comments were adequately addressed.
CAR Status:	**CLOSED**
Follow-up Actions:	N/A

2.2.1 Observations

Note: Observations are issued for areas that the auditor sees the potential for improvement in implementing standard requirements or in the quality system.

OBS 01/10	Reference Standard & Requirement: 1. Eligibility
Description of findings leading to observation: The use of the term “may or may not…” was found to cause ambiguity in the scope section of the methodology.	
Observation: The FAS methodology should revise the wording regarding the applicability conditions in the section “Scope” on page 1 to eliminate ambiguity around what “may or may not” be allowed.	

OBS 02/10	Reference Standard & Requirement: 1. Eligibility
Description of findings leading to observation: The language used in the applicability conditions is ambiguous, and further the latest VCS definition of mosaic deforestation is not clearly followed (See program update 24 May 2010). There is also ambiguity of whether the methodology applies to areas with planned or unplanned logging and how this affects the methodology's applicability to the VCS REDD project type. In addition, it is not clear from the applicability conditions of the methodology that it applies to areas where frontier deforestation configurations are found.	
Observation: The FAS methodology should revise the wording regarding the applicability conditions in the section "Scope" on page 1 to eliminate ambiguity around the definition of Frontier deforestation.	

OBS 03/10	Reference Standard & Requirement: 1. Eligibility
Description of findings leading to observation: The scope section presented before the main part of the methodology would benefit from inclusion in the main text of the document, so that it's importance is fully demonstrated.	
Observation: The FAS methodology should include the restrictions stated in the scope section into the applicability conditions.	

OBS 04/10	Reference Standard & Requirement: Eligibility Criteria 1.1
Description of findings leading to observation: On page 1 (Scope), footnote 2, the methodology mentions that if project proponents seek credits from avoided degradation "(…) an approved VCS methodology for Improved Forestry Management (IFM) shall be applied in the strata of the *project area* where degradation is reduced and the *baseline* is not *deforestation*." However, current VCS IFM methodologies apply only to planned degradation (legally sanctioned logging), and would be unlikely to be applicable where unplanned frontier deforestation is expected to happen.	
Observation: The FAS Methodology should provide that generic guidance within the methodology will be viable and consistent with VCS project types for general use, rather than a small proportion of cases.	

OBS 05/10	Reference Standard & Requirement: Baseline Approach 2.1
Description of findings leading to observation: On page 48, Section 3.5, the methodology states that "For a conservative *baseline* projection, the project proponent shall consider that in all the scenarios the agents and drivers of the *deforestation* activities are realistic, based on published and reliable data, and including other agents which do not cause *deforestation* in the *baseline* scenarios, (e.g. concrete actions and laws avoiding *deforestation*, such as effective surveillance and law enforcement), thus averting an induced argument". It s not clear how these "other agents which do not cause deforestation in the baseline scenarios" may be identified, since no criteria to do so are provided. The examples in brackets appear to be barriers rather than agents *per se*.	

Observation: The FAS Methodology should clearly explain how to construct conservative baseline scenarios with respect to the identification of those agents that do not cause deforestation.

OBS 06/10	Reference Standard & Requirement: Baseline Approach 2.1
Description of findings leading to observation: In Section 3.5, in cases where evidence is inconclusive no reference is given to section 4.1.1, where guidance is provided on how to proceed in such cases. This could cause confusion amongst Project Proponents.	
Observation: The FAS Methodology should reference section 4.1.1 in Section 3.5	

OBS 07/10	Reference Standard & Requirement: 2.1 Baseline
Description of findings leading to observation: The auditors found that insufficient guidance on what constitutes a 'trend' in historical deforestation rates was provided by the methodology. This is because it is likely project will only obtain 3 historical images, which provide only 2 data points for deforestation rates, unless a more complicated spatial approach is taken.	
Observation: The FAS should define the minimum requirements for identifying trends from historical data on deforestation rates.	

OBS 08/10	Reference Standard & Requirement: 2.1 Baseline
Description of findings leading to observation: Section 4.1.3.2 does not contain any steps to execute, but simply references step 4.2. Therefore it appears unnecessary, or out of order.	
Observation: The FAS should consider the necessity and location of step 4.1.3.2.	

OBS 09/10	Reference Standard & Requirement: 2.1 Baseline
Description of findings leading to observation: Section 4.2, on page 61, states that the model/software used to project the location of future deforestation "must be peer-reviewed and must be consistent with the methodology (to be proven at validation)", but provides no guidance on what type of models may be suitable.	
Observation: The FAS methodology should provide some guidance on what features a model/software used to project the location of future deforestation would need to have in order to be consistent with the methodology.	

OBS 10/10	Reference Standard & Requirement: Baseline Approach 2.4
Description of findings leading to observation: Whilst no geographical restrictions are set by the methodology, thus implicitly global scope, it would improve clarity if there was an explicit statement declaring the global applicability of the methodology, especially as some may perceive the scope to be Brazil.	
Observation:	

The FAS methodology should explicitly state its geographical scope.

OBS 11/10	Reference Standard & Requirement: Additionality 3
Description of findings leading to observation: The methodology uses its own additionality tool when a very similar VCS approved one already exists.	
Observation: The FAS Methodology should consider using the VCS tool for additionality.	

OBS 12/10	Reference Standard & Requirement: Project Boundary 4.1
Description of findings leading to observation: The methodology leaves the decision of including N_2O emissions from fertilizers to project developers, whilst the VCS AFOLU program update states that "Emissions of N_2O from project activities within the project area, including from application of all N-containing soil amendments (e.g., inorganic fertilizer, organic fertilizer, manure and plant residues), and N_2O emissions caused by microbial decomposition of any plant material including trees, shrubs, and herbaceous vegetation that fix nitrogen, may be considered insignificant for ARR, IFM and REDD projects and do not have to be accounted for".	
Observation: The FAS Methodology should align the requirements around emissions sources and sinks with the latest VCS program updates.	

OBS 13/10	Reference Standard & Requirement: Project Boundary 4.2
Description of findings leading to observation: On page 28, section 1.1.4, the methodology establishes the concept of leakage management areas. These are areas outside the project boundary and outside the leakage belt area in which the project proponent intends to implement activities that will reduce the risk of activity displacement leakage. However, it is not clear how project participants will be able to identify the specific deforestation agents that will act in the project area (particularly immigrant deforestation agents) and involve them in such leakage management activities, which also appear to be elements of project design and validation.	
Observation: The FAS methodology should provide guidance on how the leakage management zone will be used in cases where immigrant deforestation agents dominate.	

OBS 14/10	Reference Standard & Requirement: Baseline Approach 2.1
Description of findings leading to observation: Step 5 (pages 64-65) provides two methods to identify the forest classes that will be deforested and the non-forest classes. However, the methodology does not provide guidance on under which conditions each one of such methods shall be applied, and it would seem that Method 1 may be preferable by project participants, as it demands less effort, but at the same time is less accurate.	
Observation: The FAS Methodology should provide guidance on the selection of methods in step 5.	

OBS 15/10	Reference Standard & Requirement: Emissions 5.1
Description of findings leading to observation: Forest inventory data can have significant variation, depending upon the quality of the inventory procedures.	
Observation: The FAS methodology should provide guidance for suitable validation procedures of forest inventory data.	

OBS 16/10	Reference Standard & Requirement: Emissions 5.1
Description of findings leading to observation: In a public comment it was suggested there would be efficiency gains from the separation of deadwood transects and soil sampling from live tree plots.	
Observation: The FAS methodology should allow for the separation of deadwood transects and soil sampling from live tree plots.	

OBS 17/10	Reference Standard & Requirement: Emissions 5.3
Description of findings leading to observation: The methodology states that “Only significant sources and pools need to be accounted in the calculation of ex ante and ex post net anthropogenic GHG emission reductions”, however, the ex ante estimates are needed to determine the significance of sources and pools, as per the requirements of the CDM AR significance tool, according to which “The sum of decreases in carbon pools and increases in emissions that may be neglected shall be less than 5% of the total decreases in carbon pools and increases in emissions, or less than 5% of net anthropogenic removals by sinks, whichever is lower.”	
Observation: The FAS Methodology should provide clear guidance stating that ex-ante emissions sources and pools will need to be quantified before the insignificant ones can be disregarded in accordance with the significance tool.	

3 AUDIT METHODOLOGY

3.1 Assessment Team

Assessor(s)	Qualifications
Adam Gibbon, MSci. Rainforest Alliance Technical Specialist, Climate Program **Lead Auditor** Involved in Assessments of: 08 October 2010 08 February 2011 14 March 2011 27 May 2011	Adam has led the technical climate change related of over ten CCBA validations. He has also led five VCS methodology assessments, two VCS validations and been involved in one Plan Vivo verification. Adam is a qualified lead auditor for the Climate Action Reserve, and has been appointed to the Plan Vivo Technical Advisory panel. Adam has trained over 100 people in Bali, Rwanda, Spain, and Vietnam in AFOLU project auditing and project development. Recipients of the training included Rainforest Alliance auditors, government officials, private consultants and NGO representatives. Adam has been the lead author of recent Rainforest Alliance publications such as, "Guidance on coffee carbon project development using the (CDM) simplified agroforestry methodology", and "Forest Carbon Project Feasibility Study in Quang Tri Province, Vietnam". He has also had published work peer reviewed scientific journals, for example; Gibbon *et al., 2010;* Ecosystem Carbon Storage Across the Grassland–Forest Transition in the High Andes of Manu National Park, Peru. Before joining Rainforest Alliance Adam worked at Oxford University as a researcher. His research emphasized the potential of carbon markets to finance sustainable management of forest resources. Adam earned a distinction on the Environmental Change and Management MSc. Program at Oxford University, winning prizes for his dissertation and overall performance. He was awarded the Sir Walter Raleigh Scholarship at Oriel College, Oxford. He graduated with a first class degree from Durham University, with a BSc in Natural Sciences, specializing in Geology, Chemistry & Geography.
Jeff Hayward, Msci. Rainforest Alliance Director, Climate Program **Senior Report Reviewer** Involved as reviewer in the Assessments of: 8 October 2010	Jeff is based in Washington, DC, though his work has a worldwide focus, especially in Asia, Africa, Latin America, leading development of a cross-program initiative including carbon verification, best practices and standards for climate mitigation and adaptation, climate-oriented capacity building, and facilitation of carbon forestry and agroforestry projects. For nearly six years he managed the Rainforest Alliance forest certification programs in the Asia-Pacific region from Jakarta, Indonesia. In forest certification and carbon verification, he has conducted over 25 forest management assessments and/or audits and over 60 chain-of-custody assessments and/or audits. He has led forest

08 February 2011 14 March 2011	certification awareness training courses in Malaysia, Indonesia, Japan, Fiji, and China. Prior to working for the Rainforest Alliance, he conducted silviculture and ecology research for the University of British Columbia's Alex Fraser Research Forest in Canada. In Oregon, he worked for the U.S. Bureau of Land Management in forest inventory and timber sale administration. For three years he was with the U.S. Peace Corps serving as a community forester in Guatemala in an agroforestry and conservation of natural resources program. Jeff earned an Msci in forestry, (Univ. of British Columbia, Canada); and a B.A. in Latin American development with a specialization on forestry (Univ. of Washington, USA).
Manuel Estrada, Independent Climate Change consultant Involved in Assessments of: 8 October 2010 08 February 2011 14 March 2011	Manuel Estrada started working on climate change issues in 1996, when he was involved in the definition and establishment of an ad-hoc process for approving projects under the AIJ pilot phase, and provided technical guidance for the Mexican Delegation during the Kyoto Protocol negotiations. As Climate Change Director of the International Affairs Unit of the Ministry of Environment of Mexico, he was the lead CDM and LULUCF negotiator from COP7 (Marrakesh) to COP10 (Buenos Aires). After COP10, he continued involved in the international climate change negotiations as Advisor to the Mexican Government until COP13 (Bali) on, amongst other, CDM and Avoided Deforestation issues. He also advised the Paraguayan Delegation on REDD in 2008. He is a co-author of the "nested approach" to REDD, which is one of the mechanisms currently being discussed in the UNFCCC negotiations on this issue. As an independent consultant, he has collaborated with several regional organizations in Latin America, including CATIE, UN-ECLAC, UNEP, the North American Commission for Environmental Cooperation and the IDB, and has been involved in projects in a number of areas (going from climate policy, low carbon economies and the Gleneagles Dialogue to REDD and forestry CDM) with Energeias, DEFRA, the Organisation Nationale des Forests (ONFi), Climate Focus, CIFOR, Climate Decisions, Cambridge University, WWF and Silvestrum. He has also acted as consultant of TerraCarbon in many projects in the land use, land use change and forestry sector, including activities related to REDD, AR CDM, baseline methodologies in peatlands and carbon market analysis. He participated in the expert groups on Afforestation, Reforestation and Revegetation and REDD of the Voluntary Carbon Standard, currently considered one of the most reliable and innovative carbon standards in the voluntary market.
Frank Werner, Dphil, MSc, Involved in Assessments of: 8 October 2010	Frank has been involved in the AFOLU project and methodology development and assessment since 1997 and is currently leading an A/R CDM project located in Colombia. From 2005 to 2007 he was a member of the UNFCCC A/R Working group, responsible for the assessment of CDM A/R methodologies and related

08 February 2011	guidance and tools. Frank was also member of the expert group and co-author of the section on Afforestation, Reforestation and Revegetation (ARR) of the VCS Guidance on AFOLU. Frank has also been involved in several European projects related to the integral evaluation of different forest management and wood use scenarios with regard to their impact on climate change. Before establishing his private consultancy, he was a researcher at the Swiss Federal Institute for Materials Testing and Research (EMPA). Research fields included the methodological development of life cycle assessment (LCA), comparative LCA and material flow analysis, as well as A/R project development under the emerging CDM rules. His PhD thesis on methodological aspects of LCA won the first EMPA research award in 2003. Frank also holds a master degree in environmental and natural sciences from the Swiss Federal Institute of Technologies (ETH) in Zurich.

3.2 Methodology Assessment Process

The methodology assessment was conducted from Rainforest Alliance offices and those of the contracted consultants. There was desk evaluation, along with correspondence with the developers.

3.3 Document Review

Document Date	Title, Author(s), Version
11 May 2011	*Methodology for Estimating Reductions of GHG Emissions from Deforestation', FAS/WB* v01.1 dated
21 January 2011 (updated 05 February, but date remained the same)	Methodology for Estimating Reductions of GHG Emissions from Unplanned Frontier Deforestation, FAS, Version 02.0 (This version had some typos fixed, and also the deletion of some text in footnote 15)
21 January 2011	Frontier Methodology_CARs-OBS responses-21jan11
21 January 2011	Methodology for Estimating Reductions of GHG Emissions from Unplanned Frontier Deforestation, FAS, Version 02.0
17 May 2010	Methodology for Estimating Reductions of GHG Emissions from Frontier Deforestation, FAS, REDD-NM-002 / Version 01.3
Date not provided.	Report of Bureau Veritas Certification's public consultation assessment process to the REDD-NM-002 , BVC, Version 1
Date not provided.	Addressing Public Consultation Comments on the "Methodology for Estimating Reductions of Greenhouse Gases Emissions from Frontier Deforestation" (REDD-NM-002), FAS, Version 1

11 May 2000	Accounting for time in mitigating global warming through land-use change and forestry, Fearnside, et al., Version 1
2 April 2009	Carbon benefits from Amazonian forest reserves: leakage accounting and the value of time, Fearnside, Version 1
4 February 2007	Uso da Terra na Amazônia e as mudanças climáticas globais, Fernside, Version 1
29 July 2009	Public Comment: Methodology for Estimating Reductions of Greenhouse Gases Emissions from Mosaic Deforestation, Thoumi – MGM International, Version 1

Appendix A: PROPONENT CONTACT AND DETAILS

Contacts

Methodology name:	Methodology for Estimating Reductions of GHG Emissions from Deforestation

Developers & Proponent:	Fundação Amazonas Sustentável and World bank

Proponent	Fundação Amazonas Sustentável
Type of organization:	NGO
Contact person, Title:	Mr. Gabriel Ribenboim, Special Projects Manager
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Billing contact:	As above.
Methodology developer:	FAS
Type of organization:	NGO
Contact person, Title:	As above
Address:	“
Tel/Fax/Email:	“

Proponent	World Bank
Type of organization:	Development Bank
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Methodology developer:	As above
Type of organization:	As above
Contact person, Title:	As above
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Appendix B: DETAILED ASSESSMENT FINDINGS TO THE STANDARDS

Introduction to the findings presented in the Report

The methodology's structure and main steps and the place where they are assessed within this assessment report are provided in the table below to aid navigation through the assessment of VCS criteria within this report.

Methodology Section	Location of findings in this Report
Part 1 – Applicability conditions and additionality	
1 Applicability conditions	1. Eligibility Criteria
2 Additionality	3. Additionality
Part 2 – Methodology steps for validation:	
Step 1: Definition of boundaries	4. Project Boundaries
Step 2: Analysis of historical land-use and land-cover change	2. Baseline Approach
Step 3: Analysis of agents, drivers and underlying causes of deforestation	2. Baseline Approach
Step 4: Projection of future deforestation	2. Baseline Approach
Step 5: Definition of the land-use and land-cover change component of the baseline	5.1 Emissions
Step 6: Estimation of baseline carbon stock changes and non-CO_2 emissions	5.1 Emissions
Step 7: Ex ante estimation of actual carbon stock changes and non-CO_2 emissions in the project area	5.2 Emissions
Step 8: Estimation of potential decrease in carbon stock and increase in GHG emissions due to leakage	6. Leakage
Step 9: Ex ante total net anthropogenic GHG emission reductions	5.3 Emissions
Part 3:	
Task 1: Monitoring	7. Monitoring
Task 2: Revisiting the baseline projections for future fixed baseline periods	7. Monitoring

1 Eligibility criteria

The methodology shall contain eligibility criteria which are appropriate and adequate.

1.1 The methodology shall ensure compatibility with VCS Tool for AFOLU methodological issues (II. Step 1)

Findings from Audit Report 8 October 2010
On page 1 (Scope) the methodology states "The project area in the baseline case may or may not

be a mosaic of old growth-forests, degraded (and perhaps still degrading) forests, and secondary (growing) forests with more than 10 years of age at the project start date." This wording was found to be ambiguous (i.e, the text refers to 'mosaics' of forests, whereas the methodology is for frontier deforestation) and may lead to confusion regarding:

1. The application of the methodology exclusively to frontier deforestation (i.e. by the definition given by the VCS AFOLU program update (May 2010) "Frontier configurations are defined as any landscape in which all forest areas in the project area have no current direct physical connection with areas anthropogenically deforested" therefore the project area in the baseline case cannot be a mosaic of any type of forest.
2. The demonstration that all areas included within the REDD project boundary have qualified as a forest for a minimum of 10 years before the project start date, as required by the VCS Tool for methodological issues, given the reference to the age of the forest instead of to the length of time that the project area has qualified as forest. (**OBS 01/10**)

As a consequence of 1 above, it is not clear by the applicability conditions of the methodology that it applies to areas where frontier deforestation configurations are found as per the recent VCS definition of "frontier deforestation" published in the VCS AFOLU program update. Applicability in the methodology differs in point a) of the summary and of clause 1; the latter does not include expansion of the agricultural frontier. (**OBS 02/10**)

Applicability condition "e" requires that "changes in the ground water table are excluded in both the baseline and project scenarios or must be the same under the two scenarios". However, this does not restrict the use of the methodology to non-peatland areas or provide guidance on how to measure and monitor water levels if the project is developed on peatland so as to ensure that they will remain the same in the two scenarios. Additionally, exclusion of changes in ground water table by projects on peatlands would not ensure that the project will not generate GHG emissions due to changes in the water table. (**CAR 01/10**)

The methodology presents the applicability conditions in a dispersed manner which is potentially confusing. Applicability conditions (or similar statements) are found in: Part 1.1 'Applicability conditions', 'Summary' and 'Scope'. (**OBS 03/10**)

Also on page 1 (Scope), footnote 2, the methodology states that if project proponents seek credits from avoided degradation "(…) an approved VCS methodology for Improved Forestry Management (IFM) shall be applied in the strata of the *project area* where degradation is reduced and the *baseline* is not *deforestation*." However, current VCS project types and VCS IFM methodologies apply only to **planned** degradation (i.e., from legally sanctioned logging), and would be unlikely to apply where **unplanned** frontier deforestation is expected. (**OBS 04/10**)

Conformance	Yes ☐	No ☒	N/A ☐
CAR/OBS	**CAR 01/10** **OBS 01/10, OBS 02/10, OBS 03/10, OBS 04/10**		

Findings from Audit Report 08 February 2011
Applicability condition "f" ("h" in the previous version of the methodology) has been modified and now uses the same language as the approved methodology VM0003 to exclude peatland areas.

This was found to be an improvement and addresses **CAR 01/10**.			
Conformance	Yes ☒	No ☐	N/A ☐
CAR/OBS	No CARs or OBS raised.		

2 Baseline approach:

The methodology shall contain an approach for determining the project baseline which is appropriate and adequate.

2.1 The methodology shall state the process for the selection of most conservative baseline scenario. This shall reflect what most likely would have occurred in the absence of the project. (6.3)

Findings from Audit Report 8 October 2010

In order to provide a structure that is easier for the Methodology Developer to follow, the findings related to conservative baseline selection will be presented according to the relevant steps in the report. These steps are steps 2, 3, 4 and 5. Steps 6 and 7 where baseline emissions are quantified are assessed in section 5 of this report.

Step 2: Analysis of historical land-use change

The section is clear, logical and follows best practices. Step 2.4 involves documenting the land-use change data from the reference region and project area. Given that by definition there can have been no deforestation in the project area, and the project does not seek to claim credits from avoided degradation in the baseline, it is unclear why an assessment of the historical changes in the project area is necessary. Step 2.2 requires the proponent t, "Identify and describe the land-use and land-cover (*LU/LC*) *classes* present in the *reference region" (*only) "at the project start date". However, as the project area may not be part of the reference region, it is not clear why it is not necessary to document the LU/LC classes of the project area at the project start date. (**CAR 02/10**)

Step 3: Analysis of agents, drivers and underlying causes of deforestation

On page 48, Section 3.5, the methodology states that "For a conservative *baseline* projection, the project proponent shall consider that in all the scenarios the agents and drivers of the *deforestation* activities are realistic, based on published and reliable data, and including other agents which do not cause *deforestation* in the *baseline* scenarios, (e.g. concrete actions and laws avoiding *deforestation*, such as effective surveillance and law enforcement), thus averting an induced argument". It s not clear how these "other agents which do not cause deforestation in the baseline scenarios" may be identified, since no criteria to do so are provided. The examples in brackets appear to be barriers rather than agents *per se*. This sentence should be revised to clearly explain how to construct conservative baseline scenarios, with respect to the identification of agents that do not cause deforestation. **(OBS 05/10)**

Also in Section 3.5, in cases where evidence is inconclusive no reference to section 4.1.1, where guidance is provided on how to proceed in such cases, is given. This could cause confusion amongst Project Proponents **(OBS 06/10).**

Step 4: Projection of future deforestation

The methodology states that if VCS or UNFCCC approved baselines exist these can be used. Through the specification (on page 49) that where a baseline has been established complying with the criteria determining the applicability of existing national and subnational baselines contained in Table 2 (page 23), such baseline should be used. However, while the suggestions presented are reasonable, such criteria need to be determined by the VCS (or, in its case, by the UNFCCC and approved by the VCS) and not by individual methodologies. Otherwise, each methodology could establish its own modalities for accepting national and sub-national baselines according to its particular circumstances. Without VCS approval of such an approach, the criteria cannot be said to demonstrate the validity of the approach (due to the VCS currently containing no guidance on the matter). Consequently, since no guidance exists so far for the development of conservative (sub) national baselines in the VCS (or in the UNFCCC), assuming that nationally determined baselines will be conservative by definition is not correct. Therefore, the references to future cases with established national and sub-national baselines should be deleted until the VCS publishes guidance on if and how existing subnational and national baselines established under the UNFCCC will interact with VCS REDD methodologies or, alternatively, a placeholder to use such baselines - only when VCS issues specific guidance on the matter - could be inserted.

When no baseline already exists the three options for projecting deforestation are presented, (a) historical average approach, (b) Time function approach, and (c) modeling approach. The method for selecting an approach is provided in step 4.1.1 and relates to the past trend identified in deforestation and the ability of the developer to conclusively explain the past deforestation rates. The auditors found that insufficient guidance on what constitutes a 'trend' in historical deforestation rates was provided by the methodology. This is because it is likely project will only obtain 3 historical images, which provide only 2 data points for deforestation rates, unless a more complicated spatial approach is taken. Two points are not sufficient to start projecting a trend, thus, the requirements to define a trend need to be stated, in the methodology. (**OBS 07/10**)

In cases when the deforestation rates measured in different historical sub-periods in the reference region (or its strata) do not reveal any trend and there is inconclusive evidence in step 3, the methodology recommends using approach "a" (historical average) and proposes to use a discount factor equal to 50% of the 90% confidence interval of the mean area deforested annually in stratum *i* during the *historical reference period* to allow conservative estimates, which is applied in Equation 2 (page 50). An example of what "50% of the 90% confidence interval" is required, as confidence intervals are often understood as ranges, and taking half of one could be interpreted differently be different developers. If the annual area of baseline deforestation in stratum *i* within the reference region at a year *t* ($ABSLRR_{i,t}$); calculated with this discount factor is lower than the lowest annual historical deforestation area, $ABSLRR_{i,t}$ shall be set equal to the lowest annual deforestation area. In our view, even assuming the lowest annual deforestation area, the fact that neither the trend nor the causes of deforestation trends in the reference region are well understood does not guarantee that the resulting baseline will be conservative (e.g. deforestation could stop at some point, or decrease below historical levels during the fixed baseline period). The methodology must propose additional or different provisions to address this case in a manner that ensures conservativeness (**CAR 03/10**).

When the constraints to an increasing or steady rate of deforestation are assessed in section 4.1.2, only biophysical constraints are considered. The methodology authors state that "The goal

of step 4.1.2 is to assess, based on biophysical constraints, if there is sufficient forest land that could be converted to non-forest land to establish agriculture and grazing activities. This does not imply that "Factor Maps" in Step 4.2 will not include socio-economic variable to model the spatial location of future deforestation." However, if the rate is not constrained by analyzing socio-economic factors, factor maps will not change that rate later, as they can only change where the deforestation happens. Therefore, in our view, socio-economic constraints must be considered in Section 4.1.2 together with biophysical barriers. (**CAR 04/10**)

In Section 4.1.2 (page 52) the methodology states that this step (Analysis of constraints to the further expansion of deforestation) "only applies if the conclusion of Step 3, which is based on socio-economic criteria, is that the rate of baseline deforestation is likely to be "constant" or "increasing" in the whole reference region or in some of its strata. If the conclusion was "decreasing" continue with step 5 (Definition of the land-use and land-cover change component of the baseline)" and goes on to mention that, "a continuation or increase of deforestation due to socio-economic criteria compared to past trends can only be justified if there are no biophysical constraints to the continuation of deforestation and where the proposed project area is located in a country or region with still significant forest cover (Olander et al., 2006)". In our view, the authors should justify this exception, since a decreasing deforestation rate also implies that deforestation continues (i.e. expands geographically) and it is as relevant as in the other two cases to know its future location, both to increase the accuracy of the baseline and to design project activities to reduce deforestation. Additionally, a decreasing deforestation trend facing biophysical (and socioeconomic) constraints could lead to an even lower (or inexistent) deforestation in the future, so the consideration of this situation whilst developing the baseline is critical. (**CAR 05/10**)

4.1.3 Quantification of Baseline Deforestation Projections

Section 4.1.3 elaborates the technical details of the three approaches "a", "b", and "c" for projecting the annual rates of deforestation.

In approach, "a" (historical average) the selection of factors (0.5 and 0.25) used to calculate the rate of deforestation in "average areas" and "sub-optimal areas" through equations 4 and 5 in the current version of the text, respectively, have not been justified. (**CAR 06/10**)

Approach, "b" (time function), allows for both a logistic or linear regression to be used (bound by the availability of suitable land). It was not found to be acceptable to have the statistical significance be determined by having a p value < 0.05 and an r^2 value $>= 0.75$ (p58). p values are not appropriate for testing non linear regressions. (**CAR 07/10**)

Approach, "c" modeling essentially allows any modeling to be conducted provided it is documented and defendable. The model would need to be checked during a validation audit. However, there are similar concerns regarding the prescription of statistical checks that may not be suitable in all cases.

Section 4.1.3.2 Projection of the location of future deforestation in the project area

Section 4.1.3.2 does not contain any steps to execute, but simply references step 4.2. Therefore it appears unnecessary, or out of order. (**OBS 08/10**)

Section 4.2

Section 4.2, on page 61, states that the model/software used to project the location of future deforestation "must be peer-reviewed and must be consistent with the methodology (to be proven at validation)". It would be advisable for the authors to provide some guidance on what features a model would need to have in order to be consistent with the methodology. (see **OBS 09/10**)

The methodology suggests several techniques for assessing the goodness of fit for projections of deforestation including 'Figure of Merit'.

On page 61, Section 4.2.1 the methodology requires "Specifically, from at least five examples observed in the reference region or from literature sources appropriate to the reference region, estimate the length of secondary roads constructed per km of official roads constructed, or the length of secondary roads constructed per industrial facility/settlement, or per square kilometer within a certain type of land use (such as private land, forestry concessions, protected areas) during an historical time period". Given that the feasibility and length of roads depends to a good extent on the geo-physical and/or topographic conditions in the area where they are built, the audit team considers that such conditions be considered in projecting the number, location and length of secondary roads. (**CAR 08/10**)

Step 4.2.4 requires that deforestation is assigned to the pixels with the highest risk rating within the reference region. In order to calculate the deforestation in the project area, "the annual maps of *baseline deforestation* for the *reference region* must be overlaid with a map layer corresponding only to the *project area*." This appears to assume that the project area is included in the reference region. However, on page 24, section 1.1.1 does not make the inclusion of the project area in the reference region mandatory (use of should language). The spatial linkage between project area and reference region must be explicit. This is because in this methodology deforestation is allocated to the most attractive areas for deforestation, so calculated baseline deforestation rate in the project area be strongly determined by the relative attractiveness of areas in the reference region. If the reference region is not spatially linked, this could introduce a bias that has no basis in the reality of the likely deforestation pattern (See **CAR 09/10**).

Public comments on the baseline

The Methodology Developers have not provided clear, well-explained responses to all the public comments. This is required to demonstrate that they have been addressed. Please see comments **KH4**, **KH5**, **KH6**, and **KH6** in this report, Table 1 of Section 11 'Public Comments', for more details (see **CAR 07/10**).

Conformance	Yes ☐	No ☒	N/A ☐
CAR/OBS	**CAR 02/10, CAR 03/10, CAR 04/10, CAR 05/10, CAR 06/10, CAR 07/10, CAR 08/10, CAR 09/10** **OBS 05/10, OBS 06/10, OBS 07/10, OBS 08/10, OBS 09/10**		

Findings from Audit Report 8 February 2011

Step 2: Analysis of historical land-use change

CAR 02/10 has been addressed by specifying that "In the case of the project area, LU/LC-change analysis is required to exclude any area with forests that are less than 10 years old at the project start date" (page 53). Moreover, text and Figure 1 have been added to clarify that the project area

is a subset of the reference region (page 8). With this, this CAR is now closed.

Step 4: Projection of future deforestation

A number of modifications to the methodology have been made to address **CAR 03/10**:

- The authors decided to delete the discount factor in absence of literature supporting it, and, where no conclusive evidence emerges from the analysis of agents and drivers explaining the different historical deforestation rates, they now require repeating step 3 until finding conclusive evidence.
- Where the evidence found in Step 3 on the most likely future deforestation trend within the reference region and project area is inconclusive and the trend is decreasing or about constant, the methodology now requires Step 3 to be repeated until conclusive evidence is found, and mentions that otherwise it is not be possible to continue with the next steps of the methodology. Moreover, it states that "*if the trend is increasing and the evidence is inconclusive, the deforestation rate to be used in the projections will be the average historical rate (see step 4.1.1)*".

In addition, new equations (4a to 6c) were formulated in Section 4.1.3.1 to calculate the historical average (approach 'a') rate of deforestation based on the historical rate of deforestation in the three classes of land (optimal, average and sub-optimal) historically. The new equations correctly use a method derived from Puyravaud (2003). Equation 11, to calculate the rate of deforestation during the 'sub-optimal' period of approach 'b' was also changed, after it was discovered that the original equation did not produce the deforestation pattern that was intended. This change was found to be acceptable, as the curve that results is one that is more likely to occur in reality (smoother). Figure 4 was also added to the section on approach 'b'. This improves the clarity of the section.

CAR 04/10 has been addressed by the inclusion of new text stating that "socio-economic constraints (mobility, land-use rights, areas with presence of conflicts and crime, etc)" must also be considered in section 4.1.2.

CAR 05/10 has been covered by requiring cases where deforestation is found to be decreasing to carry out the analysis of constraints to the further expansion of deforestation in section 4.1.2.

4.1.3 Quantification of Baseline Deforestation Projections

In response to **CAR 06/10** the Methodology Developer provided the following explanation, "*The factors 0.5 and 0.25 in equations 4 and 5, respectively, are based on the conservative assumption that deforestation will be reduced by half of the historical average once all "optimal" areas will be deforested and by one quarter once all "optimal" and "average" areas will have been deforested. In reality deforestation will happen at the same time in "optimal", "average" and "sub-optimal" areas at the same time and in different and unpredictable proportions. There is no objective justification for these numbers (50% and 25%). However, it can be assumed that in very few cases "Toptimal" or "Toptimal + Taverage" will be a longer period of time than the fixed baseline period. Thus, in most cases, these factors will not have any impact on the numbers of VCUs actually issued to the project because the baseline will have to be revisited before these factors will have an impact on the projected baseline.*"

The defense provided was found to be reasonable and thus closes **CAR 06/10**.

In order to address **CAR 07/10**, the methodology now includes text reading "*The model must demonstrably comply with statistical good practice, and evidence that such requirement has been met shall be provided to VCS verifiers at the time of validation*" with regard to approach 'b' and 'c'. Moreover, the text "The results of the analysis must produce a statistically significant model with a $p\leq$ and an adjusted r^2 of ≥0. 50. Seek assistance from an expert statistician as necessary", in approach "c" has been deleted. Therefore **CAR 07/10** is now closed.

Section 4.2

The methodology now includes provisions to consider geographic and socio-economic conditions unfavorable for infrastructure developments whilst projecting unplanned infrastructure development (page 79), thus addressing **CAR 08/10.** The approach to the estimation of road network intensity and placement was found to be thorough.

The methodology has been modified to specify that the reference region "must be larger than the project area and include the project area" (page 35). With this and the inclusion of Figure 1 and the mention on page 8 that "The project area, leakage belt and leakage management areas are subsets of the reference region", **CAR 09/10** is closed.

Conformance	Yes ☒	No ☐	N/A ☐
CAR/OBS	No CARs or OBS raised.		

2.2 The methodology shall provide guidance for the selection or establishment of criteria and procedures for identifying and assessing potential baseline scenarios considering the following:

- the project description, including identified GHG sources, sinks and reservoirs;
- existing and alternative project types, activities and technologies providing equivalent type and level of activity of products or services to the project;
- data availability, reliability and limitations;
- other relevant information concerning present or future conditions, such as legislative, technical, economic, socio-cultural, environmental, geographic, site specific and temporal assumptions or projections.

Findings from Audit Report 8 October 2010
The methodology identifies relevant GHG sources, sinks and reservoirs. The project type of avoiding frontier deforestation is used in the baseline generation. However, there were several CARs raised with respect to baseline generation under criteria 2.1 above. The methodology considers data availability, reliability and limitations. The methodology was not found to consider all potential constraints to deforestation. (See **CAR**

04/10)			
Conformance	Yes ☐	No ☒	N/A ☐
CAR/OBS	**CAR 04/10**, See CARs relating to baseline generation under criterion 2.1		

Findings from Audit Report 08 February 2011			
CAR 04/10 has been addressed by the inclusion of new text stating that "socio-economic constraints (mobility, land-use rights, areas with presence of conflicts and crime, etc)" must also be considered in section 4.1.2.			
Conformance	Yes ☒	No ☐	N/A ☐
CAR/OBS	No CARs or OBS raised.		

2.3 In defining the process for developing the baseline scenario, the methodology shall ensure that the selection of assumptions, values and procedures will help to ensure that GHG emission reductions or removal enhancements are not overestimated.

Findings from Audit Report 8 October 2010			
See criterion 2.1 of this report. Issues have been raised regarding some assumptions in the baseline development that could lead to the overestimation of emissions reductions.			
Conformance	Yes ☐	No ☒	N/A ☐
CAR/OBS	See CARs relating to conservative baseline generation under criterion 2.1		

Findings from Audit Report 08 February 2011			
Conformance	Yes ☒	No ☐	N/A ☐
CAR/OBS	No CARs or OBS raised.		

2.4 The methodology shall state the geographic scope for which it is relevant.

Findings from Audit Report 8 October 2010			
The methodology does not state the geographical scope for which it is relevant. The auditors assume that the scope is global. An explicit statement to clarify this would be an improvement. (**OBS 10/10**).			
Conformance	Yes ☒	No ☐	N/A ☐
CAR/OBS	**OBS 10/10**		

Findings from Audit Report 08 February 2011			
There is now a statement that the methodology is applicable globally.			
Conformance	Yes ☒	No ☐	N/A ☐
CAR/OBS	No CARs or OBS raised.		

2.5 The methodology shall be compatible with the VCS Tool for AFOLU methodological issues (II. Step 4, Establish a Project Baseline)

Findings from Audit Report 8 October 2010
Below, the relevant provisions of the Tool for AFOLU methodological issues (in *italics*) are presented followed by an assessment of the proposed methodology against these: (15) *Avoiding unplanned frontier deforestation and degradation (AUFDD): The project developer must demonstrate that the project area is located geographically where deforestation/degradation will likely happen during the crediting period. Where the expansion of the deforestation frontier into the project area is linked to the development of infrastructure that does not yet exist, evidence must be provided to the verifiers that such infrastructure would have been developed in the absence of the REDD project.* Section 4.2.1, 'Factor Maps' includes requirements for including evidence of planned infrastructure in the projection of deforestation location. (16) *For all REDD projects types, project proponents shall, for the duration of the project, reassess the project baseline at least once every 10 years and have this reassessment validated at the same time as the next VCS verification.* The methodology complies with this requirement by asking project participants to update the baseline with a periodicity not less than 5 years or more than 10 years (Task 2 p113), however the language used to reflect whether or not this is mandatory is not consistent. Page 113 states, "the *baseline* should be revisited every 5 to 10 years" which implies it is optional, whilst in Appendix 1, in the definition of, "fixed baseline period" it is clear that it is mandatory. (**CAR 10/10**) (16) *The baseline methodology must outline the measurements, calculations and assumptions used to estimate the annual amount and likely general location of the expected deforestation/degradation under baseline conditions.* The methodology requires spatial analysis when deforestation is projected in the baseline. The methodology outlines the measurements, calculations and assumptions it makes. Further assumptions and steps are required in the PD. (17) *The baseline net GHG emissions and removals must be estimated for each year of the proposed crediting period*. The revised methodology requires estimating baseline emissions and removals for at least the fixed baseline period and, optionally, the entire project crediting period. As long as the emissions are estimated for each fixed baseline period then, as these are renewed, estimates will be made for the whole crediting period. However, if the emissions are only estimated for the fixed baseline period it is not possible to define the leakage belt, since the leakage belt is defined as forest that is still forest at the end of the crediting period. (Please see **CAR 27/10** below for more details).

Conformance	Yes ☐	No ☒	N/A ☐

CAR/OBS	**CAR 10/10, CAR 27/10**

Findings from Audit Report 08 February 2011			
Regarding **CAR 10/10**, the methodology has been revised thoroughly in order to make clear that the reassessment of the baseline deforestation is mandatory: • Page 9: "The baseline projections must be revisited at least every 10 years and adjusted, as necessary" • Page 147: (Task 2) "the baseline must be revisited every 5 to 10 years" • Page 148: (section 2.2.2.1) "At the end of each fixed baseline period, the projected annual areas of baseline deforestation for the reference region need to be revisited and eventually adjusted for the subsequent fixed baseline period" • Page 43: (section 1.1.5.) the baseline projections must be reassessed at least every 10 years". With this, **CAR 10/10** is closed**.** **CAR 27/10** has been addressed. The leakage belt is no longer assumed to be constituted of forests remaining at the end of the crediting period, instead, a baseline is estimated for such areas and leakage emissions are assumed to be those monitored above such baseline levels. See also Section 7 of this report. .		
Conformance	Yes ☒	No ☐	N/A ☐
CAR/OBS	No CARs or OBS raised.		

3 Additionality:

The methodology shall contain appropriate and adequate approaches/tools for determining whether the project is additional.

Findings from Audit Report 8 October 2010			
The revised version of the methodology contains an adapted version of the "Tool for the demonstration and assessment of additionality for afforestation and reforestation CDM project activities" approved by the CDM Executive Board (Part 1.2). The adaptation was found to be in line with the original tool and therefore compliant with the VCS. We note that the VCS has developed a very similar tool to determine additionality. The Developers may want to consider if the use of this tool is appropriate to the methodology. (**OBS 11/10**)			
Conformance	Yes ☒	No ☐	N/A ☐
CAR/OBS	**OBS 11/10**		

Findings from Audit Report 08 February 2011			
Conformance	Yes ☒	No ☐	N/A ☐
CAR/OBS	No CARs or OBS raised.		

4 Project boundary:

The methodology shall contain an appropriate and adequate approach for the definition of the project's physical boundary and sources and types of gases included.

4.1 The methodology shall provide guidance for the selection or establish criteria and procedures for identifying and assessing GHG sources, sinks and reservoirs controlled, related to, or affected by the project. The methodology shall include guidance for the identification and assessment of GHG sources, sinks and reservoirs as being:

- controlled by the project proponent:
- related to the GHG project; or
- affected by the GHG project. (VCS 2007.1, S6.2).
- if necessary, explain and apply additional criteria for identifying relevant baseline GHG sources, sinks and reservoirs; and compare the project's identified GHG sources, sinks and reservoirs with those identified in the baseline scenario.

Findings from Audit Report 8 October 2010
Table 3 on page 32 presents the carbon pools included or excluded within the boundary of the proposed REDD project activity. Some elements of such table do not comply with the VCS Tool For Methodological issues (Table 1). Table 3, note 2, Table 4, note 2: According to the VCS program update (May 2010) the significance of carbon pools and GHG emissions is assessed *together*. - According to the table, the inclusion non-tree aboveground carbon pool is to be decided by the project developer and should be included if significantly greater in the baseline as regards the project case, whereas the VCS states that this pool must be included in the case of planned or unplanned conversion of forest to nonforest, with final land cover of perennial crop (in cases where the final cover is pasture grasses or annual crops, their inclusion is optional). - Similarly, the table states that the harvested wood products carbon pool should be included if so decided by the project developer and should be included if significantly greater in the baseline as regards the project case, whilst according to the VCS AFOLU update this pool shall always be included in all REDD projects. (**CAR 11/10**) Table 4 (page 37) presents the sources and GHG included or excluded within the boundary of the proposed REDD project activity. The methodology leaves the decision of including N_2O emissions from fertilizers to project developers, whilst the VCS AFOLU program update states that "Emissions of N_2O from project activities within the project area, including from application of all N-containing soil amendments (e.g., inorganic fertilizer, organic fertilizer, manure and plant residues), and N_2O emissions caused by microbial decomposition of any plant material including trees, shrubs, and herbaceous vegetation that fix nitrogen, may be considered insignificant for ARR, IFM and REDD projects and do not have to be accounted for". (**OBS 12/10**) (Note: it is in the Developers interest to also comply with the VCS AFOLU program update dated 24 May 2010)

Conformance	Yes ☐	No ☒	N/A ☐

CAR/OBS	**CAR 11/10** **OBS 12/10**

Findings from Audit Report 08 February 2011			
CAR 11/10 has been addressed by modifying the text to comply with the latest VCS AFOLU program update.			
Conformance	Yes ☒	No ☐	N/A ☐
CAR/OBS	No CARs or OBS raised.		

4.2 The methodology shall be compatible with the VCS Tool for AFOLU methodological issues (II. Step 2 Determine the Project Boundary and 3 Determine the Carbon Pools)

Findings from Audit Report 8 October 2010

The description of the boundaries of the reference region (Section 1.1.1, page 25) states that the boundary of the reference region "shall be defined as follows:

1. If a sub-national or national baseline satisfying the applicability criteria listed in Table 2 exists, it must be used. In this case, the existing baseline will determine the boundary of the reference region.
2. If no such applicable sub-national or national baseline is available, the national and, where applicable, sub-national government shall be consulted to determine whether the country or sub-national region has been divided in spatial units for which deforestation baselines will be developed following VCS or UNFCCC rules. If such divisions exist and are endorsed by the national or sub-national government, they must be used to determine the boundary of the reference region".

As mentioned previously, if and how national and sub-national baselines adopted under the UNFCCC will be linked to VCS REDD methodologies has not been decided by the VCS and consequently this text is conditional on the future approval by VCS and should be presented in such a manner (see **CAR 12/10)**.

The definition of the reference region was generally not well-described, with many options left open to developers. Given the importance in selecting a reference region that is able to serve as a suitable proxy for developing deforestation patterns for an area that has not yet experienced deforestation, the guidance provided was found to be insufficient.

The project area, by definition will be 100% forest, and thus have no historical deforestation (Section 1.1.2). Yet, the reference area must contain deforestation, in order to produce a rate. Therefore it is not understood how, as the quote from page 24 below requires, that the likelihood of deforestation could be "similar" in the two areas. The deforestation that happens during the historical reference period (and subsequent projection) in the reference region is intended to be what is going to happen in the future in the project area, as such, the conditions could not be similar at the start of the project. (**CAR 13/10**)

Footnote 11 states that in some cases the reference region could be just the project area. In such

a case, where the project area is 100% forest, with no deforestation, and at the same time the reference region, it is not clear how a frontier deforestation rate could be derived from it. On page 24, it is also stated, that the reference region "should" be larger than the project area (so this is not mandatory). **(CAR 13/10)**.

On page 24 there is a paragraph explaining that strata to simulate chrono-sequences "should" be used where conditions in the project area are due to change. As the auditors understand frontier deforestation, this will always be the case (as the frontier approaches and passes). As such more guidance is needed to explain this step. **(CAR 13/10)**.

On page 24, the methodology establishes three main criteria relevant to demonstrate that the, "*conditions determining the likelihood of deforestation within the project area <u>are similar,</u> or expected to become similar, to those found within the reference region:*

1. *Agents and drivers of deforestation;*
2. *landscape configuration and ecological conditions; and*
3. *socio-economic and cultural conditions*."

Given the importance of infrastructure establishment, it is not clear why this does not appear as an explicit criterion for the demonstration of similar predisposing conditions between the reference region and the project area. **(CAR 13/10)**.

Section 1.1.2 (page 28) describes the project boundaries, and establishes that "the project area must include areas projected to be deforested in the baseline case and may include some other areas that are not threatened according to the first baseline assessment. Such areas will not generate carbon credits, but they may be included if the project proponent considers that future baseline assessments, which have to be carried out at least every 10 years, are likely to indicate that a future deforestation threat will exist, also the demonstration is not possible at the time of validation. In our opinion, this provision could lead to a case where "intra-project" leakage (deforestation agents originally found in the threatened patches of forest of the project area moving to the non-threatened patches) could appear, which could inflate future baseline revisions. The methodology should provide guidance on how this situation should be avoided and/or accounted for by project developers. (**CAR 14/10**)

Section 1.1.2 (page 25) states that,

"*Following VCS 2007.1 (2008 p.16-17), new discrete units of land (referred to as "new project area") may be integrated into an existing project area if included in the monitoring report for the first verification.*"

However page 17 of the VCS AFOLU guidance contains provisions that must be met in order for this to occur. Of these provisions, 'B'…

"*Assure that if the area is eventually smaller than intended, there are provisions that increased emissions attributable to the project activity in the areas that at verification have not come under control of project shall be considered as leakage. This requires the selection of the appropriate methodology beforehand for the eventuality that this may happen*"

…requires that the methodology is compatible with the provision. The methodology does not

discuss how it would ensure this provision is met. (**CAR 15/10**)

Section 1.1.3 (page 26) defines the leakage belt. The text points out that "If the project area is located within a sub-national area or a country having a UNFCCC or VCS approved monitoring, verification, reporting (MRV) and accounting scheme for emissions from deforestation, leakage must not be assessed and a leakage belt is not required". As already mentioned in this report, there are sections within the methodology where similar references to future VCS or UNFCCC approved schemes are made. It is understood by the auditors that the developers wish to prepare the methodology for future REDD programs and requirement by including provisions for the use of sub-national and national derived parameters. However, the modalities of linking project and (sub-) national baselines, monitoring, reporting, verification, and leakage, etc. have not been defined by the VCS yet. As such, the methodology must provide full guidance for project specific steps that a project must take. Following this, any provisions or placeholders for using (sub-) national data can be presented only if they are preceded by appropriate language stating that they are only to be used if there is approved VCS guidance on the subject. (see **CAR 12/10)**

The methodology (page 23) describes two approaches that can be taken to account for activity displacement leakage and, in the cases where approach two is applied, then a leakage belt is required. The methodology (page 29) provides two methodological options to define the boundary of the leakage belt:

- Opportunity Cost Analysis (Option I); and
- Mobility Analysis (Option II).

Option I is applicable where economic profit is an important driver of deforestation and defines the leakage belt by using average prices and costs in order to determine the profitability of deforesting determined areas within the reference region. The fact that costs and prices vary over time is considered by the methodology (see Part 3, Task 2, 2.2.2).

A note at the end of the description of Option I (page 27) specifies that "If Option I leads to a leakage belt area with boundaries that go beyond the range of potential mobility of the identified main deforestation agent groups, Option I may be combined with Option II". This implies that the mobility analysis may have to be carried out also for Option I, however, none of the steps in Option I require this assessment. This raises the question whether or not Options I and II should be steps of the same procedure instead of options, since both suitability (including profitability) and mobility are key to define the boundaries of the leakage belt. (**CAR 16/10**)

For Option II, the methodology requires the landscape configuration and the ecological conditions within the selected leakage belt to be similar to the conditions existing within the project area, and establishes that at least three of four criteria (forest/vegetation classes, elevation, slope and rainfall) must be satisfied. Nevertheless, it does not mention what should be done by project participants if this condition is not met. In addition, if this option is used alone, no consideration of human factors such as distance to markets is required. As regards the criteria proposed, we question why they are established in relative terms (i.e. resembling the conditions in the project area) instead of absolute terms (i.e. why not setting the maximum values of elevation, slope and precipitation to those where the activity developed by the agents is no longer feasible?). The approach presented implies that agents will only move to places similar to the project area, and not to all areas where their activities may be carried out, which seems more logical - agents will move to the best places available within their mobility range, which are not always those most similar to the project area. (see **CAR 16/10**)

On page 28, section 1.1.4, the methodology establishes the concept of leakage management areas. These are areas outside the project boundary and outside the leakage belt area in which the project proponent intends to implement activities that will reduce the risk of activity displacement leakage. However, it is not clear how project participants will be able to identify the specific deforestation agents that will act in the project area (particularly immigrant deforestation agents) and involve them in such leakage management activities, which also appear to be elements of project design and validation. **(OBS 13/10)**

Conformance	Yes ☐	No ☒	N/A ☐
CAR/OBS	**CAR 12/10, CAR 13/10, CAR 14/10, CAR 15/10, CAR 16/10** **OBS 13/10**		

Findings from Audit Report 08 February 2011

In order to address **CAR 12/10**, full guidance on setting project specific baselines is now provided. The current version of the methodology has introduced the idea of "jurisdictional programs" in order to reflect the upcoming work on this issue under the VCS, instead of making reference to "sub-national activities" as in its previous version. Moreover, there is now text on page 33 stating that "If sub-national or national baselines exist, that meet VCS specific guidance on applicability of existing baselines, such baselines must be used". **CAR 12/10** is therefore closed.

The multiple issues associated with **CAR 13/10** have now been addressed, resulting in the closure of the CAR. The changes made are summarized below:

- The text requiring that the likelihood of deforestation be "similar" in the reference region and the project area on page 24 (now 35) has been deleted.
- In the first version of methodology presented for this second round of assessment, Footnote 15 (previously 11) stated that "*The reference region may encompass from just the project area and its leakage belt up to a broader sub-national category (e.g. a larger watershed, a province or a state) or even the entire country. Where a project activity deals with an entire island, the reference region must include other islands or forested landscapes with similar conditions*". This sentence was found to be ambiguous and not compatible with the spatial definitions of the methodology. After being informed, the developers removed the sentence, "*The reference region may encompass from just the project area and its leakage belt up to a broader sub-national category (e.g. a larger watershed, a province or a state) or even the entire country.*", which was found to be acceptable.
- The methodology now contains the following sentence providing more guidance on how to simulate chrono-sequences: "The boundary of such strata may be static (fixed during a fixed baseline period) or dynamic[4] (changing every year), depending on the modeling approaches used".
- Infrastructure drivers now appear as a specific sub-criterion for the demonstration of similar predisposing conditions between the reference region and the project area. (page 35).

With regard to **CAR 14/10**, the Methodology Developers provided the following additional

[4] Dynamic = with shifting boundaries, according to modeled changes at the level of driver variables such as population, infrastructure and other to be determined by the project proponent.

explanation:

"Any "intra-project" leakage would have to be reported as project emission during the verifications. If deforestation is shifted from one place (Zone A) to another place (Zone B) within the project area (Zone A + Zone B) there will be no credits to claim; at the level of the project polygon baseline deforestation and project deforestation will be the same.

If deforestation is greatly reduced in Zone A and slightly increased in Zone B (= "intra-project" leakage) but the overall result is a deforestation reduction within the project area, the project will get credits for the reduction achieved in total (see table below).

year	DEFORESTATION IN THE PROJECT AREA						Reduction of deforestation
	Baseline			Project scenario			
	Zone A	Zone B	Total (Zone A + Zone B)	Zone A	Zone B	Total (Zone A + Zone B)	
	ha	ha	ha	ha	ha	ha	ha
1	4	0	4	1	1	2	2
2	4	0	4	1	1	2	2
3	4	0	4	1	1	2	2
4	4	0	4	1	1	2	2
5	4	0	4	1	1	2	2
6	4	0	4	1	1	2	2
7	4	0	4	1	1	2	2
8	4	0	4	1	1	2	2
9	4	0	4	1	1	2	2
10	4	0	4	1	1	2	2

We do not see that the baseline of the subsequent fixed baseline period will be inflated if due to the project activity some of the baseline deforestation is displaced inside the project area from Zone A to Zone B: such displaced deforestation is still baseline deforestation and there is no incentive for the project proponent to have more deforestation in Zone B. Therefore, if during the subsequent fixed baseline period the baseline deforestation that was displaced from Zone A to Zone B is effectively reduced, the project proponent shall deserve credits for it.

Based on the above explanation, we decided to keep our proposed text because spatial models cannot be 100% accurate, which is also acknowledged by the auditor (see CAR 45)." (Response to CARs and OBS.doc.)

This defense was found to be acceptable by the auditors.

To address **CAR 15/10** the methodology now states that "*If at the first verification the project area is eventually smaller than intended at the validation date, the area left out must be included in the leakage belt area*." (Section 1.1.2). This closes **CAR 15/10**.

The first issue contained in **CAR 16/10** regarding the use of a mobility analysis in Option I (opportunity cost assessment) has been addressed, the methodology no longer requires an assessment of mobility as part of option I.**.** The second issue under **CAR 16/10** regarding the suitability of leakage belt areas whilst assessing the mobility of deforestation agents has now been fixed by including the text, "*The overall suitability of the land for the activities of deforestation agents shall be considered and the selection of criteria must be consistent with criteria used to assess deforestation constraints in Step 4.1.2*" and deleting the previous criteria. This closes **CAR 16/10**.

Conformance	Yes ☒	No ☐	N/A ☐
CAR/OBS	No CARs or OBS raised.		

5 Emissions:

The methodology shall contain an appropriate and adequate approach for calculating baseline emissions, project emissions and emission reductions.

5.1 The methodology shall state the criteria, procedures and/or methodologies (calculation steps) for quantifying GHG emissions and/or removals for selected GHG sources, sinks and/or reservoirs for the baseline scenario (ex-ante and ex-post).

Findings from Audit Report 8 October 2010

The baseline emissions associated with deforestation are first calculated by determining the final LU/LC class that replaces the forest (step 5) and then calculating the emissions associated with this change (step 6).

Step 5: Definition of the land-use and land-cover change component of the baseline

Step 5 (pages 64-65) provides two methods to identify the forest classes that will be deforested and the non-forest classes:

- Method 1: For each future year the area and location (polygons) that would be deforested in the baseline case is determined for each forest class. In case of the non-forest classes that replace the forest after a deforestation event only the area, but not the location, is identified.
- Method 2: The annual areas and locations are determined for both, the pre-deforestation forest classes and the post-deforestation non-forest classes.

However, the methodology does not provide guidance on under which conditions each one of such methods shall be applied, and it would seem that Method 1 would be preferable by project participants, as it demands less effort but at the same time is less accurate. (**OBS 14/10**) Three options for calculating baseline activity data are presented and were found to be acceptable however there is no requirement for any accuracy testing of the model generated under 'Option 3' (**CAR 07/10**)

Step 6: Estimation of baseline carbon stock changes and non-CO_2 emissions

In section 6.1, the requirements for when and where the use field measurements is mandatory (versus optional or recommended best practice) was found to be unclear. The use of accurate and conservative carbon stock data is important in setting baselines and thus there must not be ambiguity around what constitutes adequate data in the use of the methodology. This section present a suite of possible options, some of which are more rigorous and probably more conservative than others (**CAR 17/10**).

The methodology indicates the use of forest inventory data as a means of estimation for baseline carbon stocks. However, there is not guidance on steps to validate the inventory (step 6.1.1). Inventory data can vary widely in quality. (**OBS 15/10**)

There was a public comment suggesting that the deadwood transects and soil samples should be separated from the live tree plots to improve efficiency and precision. In addition the comment suggests that it is necessary to specify the way the carbon data should be summed and the way in which the standard deviation should be measured. (**Public Comment: KH9**) (see **OBS 16/10**)

Appendix 3 states that if biome scale allometric equations are used then "a few trees of different species and sizes" should be destructively harvested. This was not found to be sufficient guidance on the quantity of trees for destructive sampling. If the sampled trees are found not to be within "about ± 10 %" then it is recommended local equations are developed. However, since this is only a recommendation, it is still not clear what the alternatives are for dealing with this uncertainty if the equation was found to be conservative in its error. More precise language is required here. (**CAR 18/10**)

Conformance	Yes ☐	No ☒	N/A ☐

CAR/OBS	**CAR 07/10, CAR 17/10, CAR 18/10** **OBS 14/10, OBS 15/10, OBS 16/10**

Findings from Audit Report 08 February 2011

Step 5: Definition of the land-use and land-cover change component of the baseline

In response to **CAR 07/10,** the current version of the methodology includes provisions related to the accuracy of the models used for the future spatial distribution of non-forest classes under option 2 "Modeling". In the case where the modeling technique "*Projection of LU/LC-change categories", is to be used* the methodology developers have included text stating that the, *"Methods discussed in section 4.2.3 shall be used to select the most accurate prediction map*". Likewise, the provision, "*The model must demonstrably comply with statistical good practice, and evidence that such requirement has been met shall be provided to VCS verifiers at the time of validation*" has been included for the "suitability modeling" technique. Moreover, the table to record deforestation in leakage management areas has been deleted. With these changes, **CAR 07/10** is closed.

Step 6: Estimation of baseline carbon stock changes and non-CO_2 emissions

In response to **CAR 17/10** the Methodology Developer stated,"We believe that the methodology is sufficiently clear as it states:
"*Assess and, where appropriate, use existing data. It is likely that some existing data could be used to quantify the carbon stocks of one or more classes. These data could be derived from a forest inventory or perhaps from scientific studies. Analyze these data and use them if the following criteria are fulfilled (2008):*
• *The data are less than 10 years old;*
• *The data are derived from multiple measurement plots;*
• *All species above a minimum diameter are included in the inventories;*
• *The minimum diameter for trees included is 30 cm or less at breast height (DBH);*
• *Data are sampled from good coverage of the classes over which they will be extrapolated."*

If the project proponent decides to use literature data, the methodology provides the following guidance:
"*Literature estimates:*
• *The use of carbon stock estimates in similar ecosystems derived from local studies, literature and IPCC defaults is permitted , provided the accuracy and conservativeness of the estimates are demonstrated. For instance, when defaults are used, the lowest value of the range given in the literature source (or the value reduced by 30%) should be used for the forest classes, and the highest value (or the value augmented by 30%) for non-forest classes.*"

This text makes it clear that literature estimates can be used, but that there will be a 30% penalty in using them."

The Audit team accept this defense and thus **CAR 17/10** is closed.

CAR 18/10 has been addressed by including additional guidance on how to determine the size of the samples to be considered and requiring a full allometric model to be developed if the trees sampled fail to have biomasses within the allowed tolerances of error.

Conformance	Yes ☒	No ☐	N/A ☐
CAR/OBS	No CARs or OBS raised.		

5.2 The methodology shall state the criteria, procedures and/or methodologies (calculation steps) for quantifying GHG emissions and/or removals for selected GHG sources, sinks and/or reservoirs for the project scenario (ex-ante and ex-post).

Findings from Audit Report 8 October 2010			
Step 7: Ex ante estimation of actual carbon stock changes and non-CO_2 emissions in the project area Step 7 was found to be in conformance with the standard.			
Conformance	Yes ☒	No ☐	N/A ☐
CAR/OBS	No CARs or OBS raised.		

Findings from Audit Report 08 February 2011			
Same as previous findings.			
Conformance	Yes ☒	No ☐	N/A ☐
CAR/OBS	No CARs or OBS raised.		

5.3 The methodology shall provide steps to calculate the net GHG benefit of the project. The methodology shall state the criteria, procedures and/or methodologies (calculation steps) for quantifying GHG emission reductions and removal enhancements during project implementation. GHG emission reductions or removal enhancements shall be quantified as the difference between the GHG emissions and/or removals from GHG sources, sinks and reservoirs relevant for the project and those relevant for the baseline scenario.

Findings from Audit Report 8 October 2010
Step 9: Ex ante total net anthropogenic GHG emission reductions Equation 25 in Section 9.2 provides a detailed equation to calculate the ex ante estimate of GHG reductions due to the project using terms referred to in previous equations. However, it was unclear whether absolute values had to be used to make the equations work and some of the parameters in the equation appear nowhere else in the methodology (e.g. $EBSL_t$). (**CAR 19/10**) The methodology provides the calculation steps to estimate ex-ante the number of VCUs that will be issued to the project (equations 26-27). However the language used in the equations and supporting text is not in conformance with the VCS requirements with respect to the issuance of carbon credits and VCUs. For example, the parameter $VCUB_t$ is stated as being, "Number of voluntary carbon units to be withheld in the VCS Buffer…", yet the VCS does not withhold VCUs in the buffer, rather it deposits "non-tradable AFOLU carbon credits". VCUs, by definition, are always tradable when issued. (**CAR 20/10**) The methodology states that "Only significant sources and pools need to be accounted in the calculation of ex ante and ex post net anthropogenic GHG emission reductions", however, the ex ante estimates are needed to determine the significance of sources and pools, as per the requirements of the CDM AR significance tool, according to which "The sum of decreases in carbon pools and increases in emissions that may be neglected shall be less than 5% of the total

decreases in carbon pools and increases in emissions, or less than 5% of net anthropogenic removals by sinks, whichever is lower." (**OBS 17/10**)			
Conformance	Yes ☐	No ☒	N/A ☐
CAR/OBS	**CAR 19/10, CAR 20/10** **OBS 17/10**		

Findings from Audit Report 08 February 2011			
Step 9: Ex ante total net anthropogenic GHG emission reductions **CAR 19/10** has been addressed by adding a note below Equation 23 specifying that "The absolute values of ΔCBSLPAt shall be used in equation 23" and that "If $\Delta CPSPA_t$ represents a net increase in carbon stocks, a negative sign before the absolute value of $\Delta CPSPA_t$ shall be used. If $\Delta CPSPA_t$ represents a net decrease, the positive sign shall be used". The flow of data has also been revised. With this, this CAR is closed. In order to address **CAR 20/10**, equations 24 and 25 (previously equations 26-27) and the surrounding text has been changed to be in line with VCS language. Table 34 was also updated to be consistent with the equations that populate it. These changes close **CAR 20/10**.			
Conformance	Yes ☒	No ☐	N/A ☐
CAR/OBS	No CARs or OBS raised.		

5.4 Based on selected or established criteria and procedures, the methodology shall enable the quantification of GHG emissions and/or removals separately for:

- each relevant GHG for each GHG source, sink and/or reservoir relevant for the project; and
- each GHG source, sink and/or reservoir relevant for the baseline scenario.

Findings from Audit Report 8 October 2010			
Please see section 4.1 and **CAR 11/10** for open issues regarding the carbon pools.			
Conformance	Yes ☐	No ☒	N/A ☐
CAR/OBS	**CAR 11/10**		

Findings from Audit Report 08 February 2011			
CAR 11/10 has been addressed.			
Conformance	Yes ☒	No ☐	N/A ☐
CAR/OBS	No CARs or OBS raised.		

5.5 When highly uncertain data and information are relied upon, the methodology shall ensure the selection of assumptions and values available to the project developer do not lead to an overestimation of GHG emission reductions or removal enhancements. (VCS 2007.1, 6.2.5)

Findings from Audit Report 8 October 2010			
The methodology adequately constrains the use of highly uncertain data.			
Conformance	Yes ☒	No ☐	N/A ☐
CAR/OBS	No CARs or OBS raised.		

Findings from Audit Report 08 February 2011			
No CARs raised.			
Conformance	Yes ☒	No ☐	N/A ☐
CAR/OBS	No CARs or OBS raised.		

5.6 The methodology shall estimate GHG emissions and/or removals by GHG sources, sinks and reservoirs relevant for the project and relevant for the baseline scenario, but not selected for regular monitoring.

Findings from Audit Report 8 October 2010			
All the sources and sinks are subject to regular monitoring.			
Conformance	Yes ☒	No ☐	N/A ☐
CAR/OBS	No CARs or OBS raised.		

Findings from Audit Report 08 February 2011			
Same as previous findings.			
Conformance	Yes ☒	No ☐	N/A ☐
CAR/OBS	No CARs or OBS raised.		

5.7 The methodology shall establish and apply criteria, procedures and/or methodologies to assess the risk of a reversal of a GHG emission reduction or removal enhancement (i.e. permanence of GHG emission reduction or removal enhancement) (VCS 2007.1, 6.2.5).

Findings from Audit Report 8 October 2010			
The methodology does not address this point directly. However, after discussion with the VCS it was acknowledged that the VCS risk assessment, which would form part of a VCS project would adequately account for this. This would need to be referenced in the methodology.			
Conformance	Yes ☒	No ☐	N/A ☐
CAR/OBS	No CARs or OBS raised.		

Findings from Audit Report 08 February 2011

No CARs raised.			
Conformance	Yes ☒	No ☐	N/A ☐
CAR/OBS	No CARs or OBS raised.		

5.8 If applicable, the methodology shall provide guidance for the selection or development of GHG emissions or removal factors that:

- are derived from a recognized origin;
- are appropriate for the GHG source or sink concerned;
- are current at the time of quantification;
- take account of the quantification uncertainty and are calculated in a manner intended to yield accurate and reproducible results; and
- are consistent with the intended use of the VCS PD or monitoring report as applicable (VCS 2007.1, 6.2.5).

Findings from Audit Report 8 October 2010			
The methodology complies with these conditions, through the following provisions: • While collecting the data that will be used to analyze land-use and land-cover change during the historical reference period within the reference region, leakage belt and project area, project participants should collect medium resolution spatial data19 (30m x 30m resolution or less, such as Landsat or Spot sensor data) covering the past 10-15 years. • To be conservative, emission factors (EF) are calculated as the difference between the average carbon density of the "from" LU/LC class (minus its 95% confidence interval), minus the average carbon density of the "to" LU/LC class (plus its 95% confidence interval). The mean value can be used provided that the 95% Confidence Interval is less than 20% of the mean. Emission factors must be calculated taking into account the selected carbon pools of each category. Where the selected carbon pools are different between categories, project proponents shall briefly explain these different choices and demonstrate that the selection of carbon pools is conservative.			
Conformance	Yes ☒	No ☐	N/A ☐
CAR/OBS	No CARs or OBS raised.		

Findings from Audit Report 08 February 2011			
Same as previous findings.			
Conformance	Yes ☒	No ☐	N/A ☐
CAR/OBS	No CARs or OBS raised.		

5.9 The methodology shall use tonnes as the unit of measure and shall convert the quantity of each type of GHG to tonnes of CO_{2e} using appropriate global warming potentials.

Findings from Audit Report 8 October 2010			
The methodology uses tonnes CO_{2e} and appropriate global warming potentials for converting between GHG's.			
Conformance	Yes ☒	No ☐	N/A ☐
CAR/OBS	No CARs or OBS raised.		

5.10 The methodology shall be compatible with the VCS Tool for AFOLU methodological issues (II. Step 6, Estimate and Monitor net GHG Benefits)

Findings from Audit Report 8 October 2010			
The VCS AFOLU Guidance document states that: • *Any CO_2 emissions caused by the increased consumption of fossil fuels for implementing the project (e.g., for forest protection, monitoring and surveillance) must be accounted for (subject to the de minimis rule of 5%).* • *The IPCC 2006 GL provides guidance for estimating forest regrowth (carbon accumulation) if degradation is reduced, and for estimating reductions in forest carbon stocks caused by removals of biomass exceeding regrowth. Monitoring and estimation methods currently must be based on the IPCC GL. In the future, however, specific methodologies for REDD project activities may become available and approved under the UNFCCC or VCS, in which case their use would be preferred.* • *To be eligible under the VCS, AFOLU projects must have robust and credible monitoring protocols as defined in the approved methodologies. Monitoring and ex-post quantification of the project scenario (including off-site climate impacts) must follow the applicable guidance available in approved A/R CDM methodologies and/or IPCC documents.* Findings: The methodology broadly complies with these provisions, however, specific details that have led to non-conformities are reported elsewhere in this report.			
Conformance	Yes ☒	No ☐	N/A ☐
CAR/OBS	No CARs or OBS raised.		

Findings from Audit Report 08 February 2011			
Same as previous findings.			
Conformance	Yes ☒	No ☐	N/A ☐
CAR/OBS	No CARs or OBS raised.		

6 Leakage:

The methodology shall contain an approach for calculating leakage that is appropriate and adequate.

6.1 The methodology shall be compatible with the VCS Tool for AFOLU methodological issues (II. Step 5, Assess and Manage Leakage)

Findings from Audit Report 8 October 2010
Step 8: Ex ante estimation of leakage estimation of decrease in carbon stock and increase in GHG emissions due to leakage In Section 8.1 (Ex ante estimation of the decrease in carbon stocks and increase in GHG emissions due to leakage prevention measures) the establishment of specially designated leakage management areas (outside the project area) where deforestation agents may participate in activities aimed at e.g., replacing their baseline income, so that deforestation will be reduced and the risk of displacement minimized. Building on this concept, in Section 8.1.1 (Carbon stock changes due to activities implemented in leakage management areas) the methodology states that, "*Leakage prevention activities generating a decrease in carbon stocks should be avoided, but if such activities are necessary, they should be planned at locations that will be deforested in the baseline case during the fixed baseline period (within 10 years of the project start date), in which case the carbon stock decrease can be ignored as it would happen in any case within a short period of time*". It is not made clear where these leakage management areas would be in relation to the project area, the leakage belt and the reference region. In our view, this provision is neither environmentally sound nor conservative. Project developers are responsible for emissions from leakage, and there are no provisions in the VCS AFOLU allowing for any exceptions in this regard, other than the significance rule. Moreover, there is no way of ensuring (at least, the methodology does not propose any) that decreases in carbon stocks due to the leakage prevention activities (which are actually planned leakage) will not add to the future deforestation or degradation occurring elsewhere in the reference region, which – if the carbon stock decrease due to leakage management is not accounted - could inflate the baseline emissions in subsequent baseline assessments. Emissions due to leakage management activities must either be counted as leakage if they occur outside the project boundary or project emissions if they occur inside the project area (**CAR 21/10**). It should be noted that the VCS AFOLU guidance on page 16 states, "*The area of implementation for the VCS AFOLU project may be smaller than the entire project area to allow for effective leakage management."* This implies that leakage management activities shall take place within the project area, and therefore be covered under project emissions. The methods used to calculate emissions from nitrogen fertilization, grazing animals are calculated in sections 8.1.2 and 8.1.3 and were found to be acceptable, being based in IPCC good practice. However, the numbering of these sections is not correct, there are two section 8.1.2's (see page 93 and 95). The approach to estimating the ex-ante activity shifting leakage was found to be acceptable, although please note that issues were found with the ex-post monitoring of leakage (see section 7 below). The methodology does not contain any deductions for market leakage. The auditors acknowledge that for REDD projects the VCS guidance states that only illegal logging need be considered, and only if it is being counted in the baseline. The developer's defense of the market leakage omission

is that logging is not counted in the baseline, however this was not found to be adequate. The emissions credits calculated (see scenario C on p3) do include credits for emissions that would have resulted from logging. In simpler cases such as scenario A on p3, it is not understood why it is assumed none of the deforestation produces timber. (**CAR 22/10**)

The monitoring of leakage (including **CAR 27/10**) is assessed under criterion 7 of this report.

In Section 8.2 the methodology introduces two approaches to quantify and account for activity displacement leakage. Option (i) proposes a 40% discount on the estimated GHG emission reductions within the *project area*[5]; based on Fearnside (2009) and the following assumptions: 100% of the reduced *deforestation* is displaced in the short term; in the long term (100 years) an area of forest equal to the project area is conserved than in the *baseline* case, as the basic effect of the *project activity* is to reduce the area available for *deforestation*; a discount rate of 1% to account for the effect of time, and an adjustment for atmospheric decay of carbon in the atmosphere.

There are a number of potential issues with this approach. Firstly, the VCS issues credits ex-post, that subject to a buffer reserve system are considered to represent permanent reductions in emissions or removals. However, the leading assumption of the approach in the methodology is that in the short term the project has no impact (until forest land becomes scarce). During this time, a project using the methodology would be claiming ex-post verified permanent reduction credits, whilst assuming that no reductions have actually taken place; this does not appear compatible with the VCS approach to crediting. Secondly, the approach was found not to be in line with VCS AFOLU guidance, which explicitly requires "Developers of AUFDD and AUMDD projects shall (…) **monitor** and account for leakage using approved methodologies". Finally, the choice of discount rate of 1% is arbitrary, as there is not current a consensus in the literature about a 'correct' rate that should be used. The author of the paper (Fearnside) advocates a 1% discount rate, but others quoted in his paper believe it should be higher. Table 5 of Fearnside (2009) shows that if the discount rate was taken to be 5% the activity shifting leakage would require an 83% deduction, and at 10%, a 98% deduction. The outcome is thus very sensitive to the discount rate, the selection of which has not been defended by the developers nor approved by the VCS. (**CAR 23/10**)

Conformance	Yes ☐	No ☒	N/A ☐
CAR/OBS	**CAR 21/10, CAR 22/10, CAR 23/10, CAR 27/10**		

Findings from Audit Report 08 February 2011

The issues relating to the exclusion of emissions from the leakage management area in the first ten years has been addressed by deleting the clause which allowed this. The methodology has been updated such that it is now clear where leakage management zones are located with respect to the reference region, leakage belt and project area. (**CAR 21/10** is closed)

The revised methodology still does not contain any deductions for market leakage. The auditors

[5] The discount factor is based on Fearnside (2007) and the following assumptions: 100% of the reduced *deforestation* is displaced in the short term; in the long term (100 years) more forest is conserved than in the *baseline* case, as the basic effect of the *project activity* is to reduce the area available for *deforestation*; a discount rate of 1% to account for the effect of time.

acknowledge that for REDD projects the VCS guidance states that only illegal logging need be considered, and only if it is being counted in the baseline. The developer's defense of the market leakage omission is that logging is not counted in the baseline. This is shown in the graphs in the scope section of the methodology. Whilst baseline activities could still include logging (one of the applicability conditions on page 20 states that "*Baseline activities may include planned or unplanned logging for timber, fuel-wood collection, charcoal production, agricultural and grazing activities as long as the category is unplanned frontier deforestation according to the most recent VCS AFOLU guidelines*" no credits are claimed for their avoidance. This closes **CAR 22/10.**

CAR 23/10 has been addressed by deleting Option i) and is therefore now closed.

Other issues related to the treatment of leakage in the methodology have been indicated in Section 4.2 of this report.

Conformance	Yes ☒	No ☐	N/A ☐
CAR/OBS	No CARs or OBS raised.		

7 Monitoring:

The methodology shall contain a monitoring approach is appropriate and adequate.

7.1 The methodology shall select or establish criteria and procedures for selecting relevant GHG sources, sinks and reservoirs for either regular monitoring or estimation (VCS 2007.1, S6.5.1).

Findings from Audit Report 8 October 2010

Part 3 – Methodology for verification and re-validation of the baseline

The methodology divides the section into two tasks, Task 1: Monitoring and Task 2: Revisiting the baseline projections for future fixed baseline period. It is accepted by the auditors that the methodology need not provide details on tasks such as data archiving, for which appropriate best practice can be demonstrated at project validations.

Task 1: Monitoring

Part 3, section 1.1.2 (Monitoring of land-use and land-cover change within the project area), points out that "If the project area is located within a region that is subject to MRV under a VCS or UNFCCC approved program, the data generated by the exiting monitoring program must be used". As mentioned before, provisions related to if and how VCS REDD projects will be linked to UNFCCC programs or to other projects under the VCS need to be issued by the VCS and not by individual methodologies. (see **CAR 12/10**). If the option to use pre-approved monitoring data is not exercised, developers are instructed to use techniques such as those from Part 1, step 2.4, this is acceptable, however step 2.4 does not include an accuracy assessment which would be required (as in step 2.5). (**CAR 24/10**)

Table 35 appears to imply that any degradation losses up to the point of deforestation can be ignored. If serious degradation were to occur this would lead to a project claiming credits for

degradation and avoiding emissions from deforestation that were subsequently emitted through deforestation. (See **CAR 25/10**)

The inclusion of the lists of tables to complete in section 1.1.3 was potentially confusing, since some of the data needed to populate these tables will come from analysis done under section 1.1.2.

It is stated in section 1.1.3 that forest fires need only be monitored if included in the baselines scenario. This was not found to be acceptable, since they could lead to a loss of carbon stocks from areas from which credits for stock maintenance have been generated. (**CAR 26/10**)

Part 3, section 1.1.4 (Monitoring of natural disturbances) proposes that, when significant, project proponents may factor out the impact of natural disturbances on carbon stocks and GHG emissions from the estimation of ex post net anthropogenic GHG emission reductions. The methodology then presents two options for project developers to do so:

- Where natural disturbances reduce the area of forest land, measure the boundary of the polygons of lost forest and exclude the area within such polygons from the project area in both, the baseline and project scenarios. The boundary of such polygons shall be determined using the same data sources, methods and procedures used to monitor deforestation in the project area.

- 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 forest under the baseline case (if the polygon is already deforested in the baseline, assume no carbon stock change in the baseline).

Furthermore, the methodology establishes that were gradual changes in carbon stocks are likely to be significant (e.g. due to the effects of climate change), monitoring of carbon stocks in permanent sample plots located at places not expected to change due to human interventions may be considered. Factoring-out would then imply changing the ex ante estimated carbon stocks and emission factors.

All these provisions on how to factor out the impacts of natural disturbances on GHG emissions and decreases in carbon stocks in the project area during the crediting or the baseline periods are not supported by VCS guidance, may not result in conservative estimates of emission reductions and may be seen as contradicting the VCS AFOLU approach to addressing non-permanence, since the latter considers the risk of the project to natural disturbances when determining the size of its non-permanence buffer – thus implicitly recognizing that carbon losses resulting from such events do indeed reduce the carbon benefits of projects (i.e. are considered in the project case but not in the baseline). The VCS has indicated in personal communications to Rainforest Alliance, that losses of carbon stocks due to *any* cause (such as logging, disease, pest, force majeure etc) must all be treated the same, and must all result in reductions being made to the carbon sequestration/avoided emission which is equal to the reversal. The same communication stated that the project area cannot be changed to exclude affected areas. (**CAR 26/10**)

In Section 1.2.2 (Monitoring of carbon stock decrease and increases in GHG emissions due to activity displacement leakage) it is mentioned that monitoring of Category II (area of forest land

undergoing carbon stock decrease) and III (area of forest land undergoing carbon stock increase) outside the project area is not required because no credits are claimed for avoided degradation under this methodology. The VCS AFOLU documents do not provide guidance for this specific case, although a similar approach is permitted for market leakage occurring as a consequence of REDD project activities stopping illegal logging (page 27 of the VCS AFOLU Guidance): "In addition, for all REDD projects, any carbon credits generated from stopping illegal logging activities (to the extent they supply regional/global timber markets) shall be subject to the market leakage discounts covering IFM activities (see section above). The market leakage effects associated with stopping illegal logging need not be considered if the project proponent chooses not to claim carbon credits from stopping such activities (i.e., illegal logging is not considered in the baseline or project scenario)". In our opinion, this approach should be consulted with the VCS, since its validation as part of this methodology would set a precedent. (see **CAR 25/10**)

The methodology requires that all deforestation occurring in the leakage belt is accounted for as leakage (Section 1.2.2). This is because the leakage belt was previously defined as forested areas modeled to remain forest at the end of the crediting period according to the baseline projections (Part 1, 1.1.3). This approach was found to suffer from two main difficulties. Firstly, it assumes that the spatial modeling of deforestation is accurate, whereas in reality deforestation will not occur exactly where predicted. The result of this is that a situation where a project that successfully mitigated leakage, but had poor spatial mapping of deforestation in the baseline could suffer significant leakage deductions. Secondly, the methodology has an option to estimate emissions and removals for each year of the fixed baseline period only (section 4.1.3.3), which means that the location of deforestation would not be estimated up to the end of the crediting period. This would mean that the leakage belt, which is defined as forest projected to remain as forest at the end of the crediting period could not be defined. (**CAR 27/10**)

Section 1.2.2 states that "Monitoring of carbon stock changes and GHG emissions will not be necessary if the time discount approach has been used in the ex ante assessment of activity displacement leakage". As mentioned before (Section 6.1 of this report, **CAR 23/10**), this approach was found not to comply with the VCS standards, which specifically require monitoring leakage.

Overall, the guidance around what to monitor and how was found to be minimal be adequate, and whilst the use of the ex-ante equations and tables provides transparency, not providing ex-post tables, means some degree of interpretation is required by developers. However, with the use of Appendix's 3, 4 and 5 and the guidance on remote sensing in Part 2, sufficient guidance was considered to have been provided.

Task 2: Revisiting the baseline projections for future fixed baseline period

The VCS requirement to re-assess the baseline at least every 10 years is not met by this section. Task 2.2.1 states that the baseline must be re-assessed, "at the end of each crediting period" and the crediting period will by definition be longer than 10 years. In the text underneath task 2 (p113) the language for re-assessing the baseline is not mandatory (use of "should") (**See CAR 10/10**). In addition, it is not explicitly stated that when re-assessing the baseline, credits cannot be earned from areas that have already generated credits through their protection in the first period. This could happen, if Part 2 was followed exactly again. (**CAR 28/10**)

Conformance	Yes ☐	No ☒	N/A ☐
CAR/OBS	**CAR 10/10, CAR 12/10, CAR 23/10, CAR 24/10, CAR 25/10, CAR 26/10, CAR**		

	27/10, CAR 28/10

Findings from Audit Report 08 February 2011			
Task 1: Monitoring **CAR 24/10** has been addressed by including the following text on page 136: "Methods used to monitor LU/LC change categories and to assess accuracy must be similar to those explained in part I, step 2.4 and part I, step 2.5, respectively." **CAR 25/10** has been addressed by adding a requirement to calculate the carbon stock loss at the time of deforestation taking into account any degradation that was projected to occur up to that date (see new text Step 5). Guidance on how to do this is provided in Step 2.2. In addition the graphs in the scope section have been revised to reflect the fact that only avoided deforestation and not degradation will be credited. Table 35 has remained the same. However, this is now acceptable due to the changes made to address **CAR 25/10** earlier in the methodology. In order to address **CAR 26/10** changes have been made to sections 1.1.3 and 1.1.4. The methodology now requires all loses (whatever the location within the project area, and whatever the cause) to be quantified and accounted for. **CAR 27/10** has been addressed in this version of the methodology. The leakage belt is no longer assumed to be constituted of forests remaining at the end of the crediting period, instead, a baseline is estimated for such areas and leakage emissions are assumed to be those monitored above such baseline levels. The option of not carrying out spatial modeling has been deleted, as well as the option to estimate emissions and removals for each year of the fixed baseline period only (section 4.1.3.3). The accuracy of spatial modeling within the leakage belt is no longer a concern because it is the total deforestation that occurs within the leakage belt that is monitored, and its exact location does not affect the calculations (Part 3, Section 1.2.2). A new table has been provided (Table 36) for recording *ex post* leakage data. **Task 2: Revisiting the baseline projections for future fixed baseline period** **CAR28/10** has been addressed by inserting the following note "*A map showing Cumulative Areas Credited within the project area shall be updated and presented to VCS verifiers at each verification event. The cumulative area cannot generate additional VCUs in future periods*" (page 146). This CAR was further addressed by including text in section 2.2.2 of Part 3 reading "*All areas credited for avoided deforestation in past fixed baseline periods must be excluded from the revisited baseline projections as these areas cannot be credited again. To perform this exclusion use the map of "cumulative areas credited*" that was updated in all previous verification events".		
Conformance	Yes ☒	No ☐	N/A ☐
CAR/OBS	No CARs or OBS raised.		

7.2 The methodology shall provide guidance for the establishment and application of quality management procedures to manage data and information, including the assessment of uncertainty, relevant to the project and baseline scenario. (VSC 2007.1, 6.5.4).

Findings from Audit Report 8 October 2010			
The methodology contains sufficient guidance on quality management. It is acknowledged that where conservative values have been selected, uncertainty analysis is not necessary. What is required are clear instructions on how to handle uncertainty conservatively when it does arise in the methodology and it is not overcome by conservative value selection. The methodology was found to require some uncertainty analysis (see Table 14 and 16 where propagation of error is required and Box 2 in Appendix 2 which is not referenced in the methodology), but inadequate guidance on how to combine this with other parts of the methodology. For example, tables 14 and 16 have columns for +- 90% confidence interval, but it is not clear what happens to this data in the next calculation steps (when put into table 17). Is the confidence interval subtracted from the "final" class and added to the "initial"? Ignored? (**CAR 29/10)**			
Conformance	Yes ☐	No ☒	N/A ☐
CAR/OBS	**CAR 29/10**		

Findings from Audit Report 08 February 2011			
In order to address **CAR 29/10**, the methodology states in section 6.1.1 that "*Carbon stock estimates are subject to uncertainty assessment as indicated in appendix 2, Box 2. If the uncertainty of the total average carbon stock (Ctotcl) of a class cl is less than 10% of the average value, the average carbon stock value can be used. If the uncertainty is higher than 10%, the lower boundary of the 90% confidence interval must be considered in the calculations if the class is an initial forest class in the project area or a final non-forest class in the leakage belt, and the higher boundary of the 90% confidence interval if the class is an initial forest class in the leakage belt or a final non-forest class in the project area.*" This modification was found acceptable by the audit team, and hence, this CAR is now closed.			
Conformance	Yes ☒	No ☐	N/A ☐
CAR/OBS	No CARs or OBS raised.		

8 Data and parameters:

The methodology shall ensure data and parameters used in emissions calculations are appropriate and adequate. This includes the correct and consistent use of notation in equations.

Findings from Audit Report 8 October 2010			
A data/parameter table has been provided in Appendix 5. Data and parameters are used consistently.			
Conformance	Yes ☒	No ☐	N/A ☐
CAR/OBS	No CARs or OBS raised.		

Findings from Audit Report 08 February 2011

Same as previous findings.			
Conformance	Yes ☒	No ☐	N/A ☐
CAR/OBS	No CARs or OBS raised.		

9 Adherence to the project-level principles of the VCS Program:

The methodology shall adhere to the project-level principles of the VCS Program (VCS 2007.1, 3.1.1), summarised below and the full principals at the top of this checklist).

9.1 The methodology shall be compatible with the VCS Tool for AFOLU methodological issues (Section I).

Findings from Audit Report 8 October 2010			
The project type that this methodology describes is compatible with the VCS guidelines. The project type would be avoiding unplanned frontier deforestation and degradation (although avoided degradation losses are not quantified).			
Conformance	Yes ☒	No ☐	N/A ☐
CAR/OBS	No CARs or OBS raised.		

Findings from Audit Report 08 February 2011			
Same as previous findings.			
Conformance	Yes ☒	No ☐	N/A ☐
CAR/OBS	No CARs or OBS raised.		

9.2 The methodology shall be compatible with the VCS project level principles, as explained in more detail in section 3.2 of this report. These principles are relevancy, completeness, consistency, conservativeness, accuracy, transparency and conservativeness.

Findings from Audit Report 8 October 2010
The methodology is well edited, with only a few minor issues. *Relevancy:* *The methodology does not contain irrelevant material.* *Consistency:* The methodology does not have a consistent chapter structure. For example, Parts two and three have numbered 'steps', whilst part one does not. It would improve the ease of reference, if a consistent numbered structure was used throughout. <u>Multiple minor issues, typographical errors, or inconsistencies found:</u>

- Many tables report “annual” and “cumulative” totals, where in fact they report an amount “in year t” and “up to year t”
- p8 contains a suspected typo, “the leakage only” (word, “belt” missing).
- On page 53, within Equation 2, DFRR is not a discount factor but rather a correction term.
- In the text below Equation 3 on page 54 the text reads “For the following Taveragei years use ABSLRR,i,t =* 0.5” whilst it should read “ABSLRR,i,t * 0.5”.
- On page 54, the parameter $Toptimal_i$ is introduced above equation 3 without a previous definition.
- On page 55, approach “b”, time function analysis, allows for linear or logistic regressions to be used, whilst on page 50 the text indicates that any projection type can be used.
- In step 4.1.2.3 on page 52, “optimal”, “sub-optimal” and “marginal” conditions are defined, however subsequent sections and calculations use “optimal”, “sub-optimal” and “average”.
- p71 of the methodology contains the sentence, “Locate the samples sites.” The sentence is not grammatically correct, and its meaning is ambiguous.
- The units beneath equation 14 on page 74 contain typos.
- p78 contains a suspected typo, “be considerably be”.
- p78 refers to a parameter “$P_{burned,p}$”, elsewhere the parameter is written “burnt”. (e.g. table 18).
- p.78-79, Eq. 16 and parameter description, the units are inconsistent (the equation refers to per ha values) and units in the parameter description are missing or are not correct (eg for GWPs)
- Table 20d has two column headers which are the same, this could be confusing (Total carbon stock decrease due to planned logging activities).
- Equation 21 has an extra letter “L” in it.
- p91 contains a suspected typo, “ocgenerate”
- There are two section 8.1.2’s (see page 93 and 95).
- p101 contains a suspected typo, “resultresults”.
- p104, the structure of Eq. 26 does not take into account which parameters are already known, and which one has to be calculated (VCUT) (and therefore should stand on the left side of the equation). Also, typo: VCBU instead of VCUB.
- p151, Units in Eq. A3-31 do not match and the units of C used in Eq. A3-32 is not stated

(**CAR 30/10**)

In Appendix 1 contains some terms not included in the methodology such as “Actual Emission Level”. The definition related to categories was found to be confusing as it introduces a, b, c, etc when roman numerals were used in the main text to number categories.

It would be useful if the data and parameters table in Appendix four included references to tables where parameters could be found. This would make navigation significantly easier.

Conformance	Yes ☐	No ☒	N/A ☐
CAR/OBS	**CAR 30/10**		

Findings from Audit Report 08 February 2011			
The typos and inconsistencies have been addressed. The methodology no longer has a volume of errors that risks impeding understanding. This closes **CAR 30/10**.			
Conformance	Yes ☒	No ☐	N/A ☐
CAR/OBS	No CARs or OBS raised.		

10 Special case of previous rejection from other GHG program

10.1 Methodologies rejected by other GHG Programs, due to procedural or eligibility requirements where the GHG Program applied has been approved by the VCS Board; can be considered for VCUs but project proponents in this case shall:

- document the methodology; and
- clearly state in its VCS PD all GHG Programs for which the methodology has applied for approval and why the methodology was rejected, such information shall not be deemed commercially sensitive information; and
- provide the VCS Program verifier with the actual rejection document(s) including explanation(VCS 2007.1, S6.1).

Findings from Audit Report 8 October 2010			
To the knowledge of the assessment team, the methodology has not previously been rejected by any other GHG program			
Conformance	Yes ☒	No ☐	N/A ☐
CAR/OBS	No CARs raised.		

Findings from Audit Report 08 February 2011			
Same as previous findings.			
Conformance	Yes ☒	No ☐	N/A ☐
CAR/OBS	No CARs or OBS raised.		

11 Public Review

11.1 The Methodology shall be posted for public comment in accordance with VCS guidelines. Any comments received shall be reported here.

Findings from Audit Report 8 October 2010
The methodology was placed for public review on the VCS website from 14 July 2009 – 13 August 2009 (http://www.v-c-s.org/methodology_mferofffd.html) Two public comments were received. Name: Kyle Holland Organization: Scientific Certification Systems Country: USA

http://www.v-c-s.org/docs/Frontier%20KH.pdf Mr. Holland submitted 10 comments referred to as **KH1-10** in this report. Name: Gabriel Thoumi Organization: MGM International Country: USA http://www.v-c-s.org/Frontier%20GT.pdf (link broken but see: http://www.v-c-s.org/docs/Mosaic%20GT.pdf for equivalent comments) Mr. Thoumi submitted two comments referred to as **GT1** and **GT2** in this report. Please see Table 1 below, for a summary of the public comments.			
Conformance	Yes ☐	No ☒	N/A ☐
CAR/OBS	**CAR 07/10, CAR 29/10, CAR 31/10** **OBS 16/10** See Table 1 below.		

Findings from Audit Report 08 February 2011			
The Methodology Developer has provided a written response to all the Public Comments received. Please see Table 1 below for details. All comments were addressed.			
Conformance	Yes ☒	No ☐	N/A ☐
CAR/OBS	No CARs or OBS raised.		

Table 1: Public Comments

Comment	Meth Reference	Rainforest Alliance Reporting	FAS Response and Auditor conclusion
KH1	Section 4.1.3.1, Approach "b": Linear extrapolation.	No CAR raised.	*"The linear extrapolation is bound by the availability of optimal, average, and sub optimally classed land. In addition an analysis of constraints must be conducted (Section 4.1.1). The deforestation trend must be supported by the analysis of drivers of deforestation (step 3) and is projected for those drivers. It is acknowledged that each project will require careful validation to ensure the projection is conservative, but it is also understood there is a limit to how prescriptive a methodology can be.* *Logistic regression has been added."*
KH	Section 4.1.3.1, Approach "c": Modeling.	No CAR raised.	*As above*
KH3	Section 4.1.3.1, Approach "a": Modeling.	No CAR raised.	*As above*
KH4	Section 4.1.3.1.	See findings in Criterion 2.1. See **CAR 07/10**	*"Adequate statistical tests are proposed in the methodology. If the project proponent uses any modeling approach, the models and their rationale must be explained using logical arguments and verifiable sources of information. In addition, they must be consistent with the analysis of agents and driver (Step 3). Any model used in the baseline projections must demonstrably comply with statistical good practice, and evidence that such requirement has been met shall be provided to VCS verifiers at the time of validation."*
KH5	Section 4.1.3.1.	See findings in Criterion 2.1. See **CAR 07/10**	*"Idem above. In addition, the requirement of p values has been removed, as it was found not to be appropriate for testing non-linear regressions. Idem above. In addition, the requirement of p values has been removed, as it was found not to be appropriate for testing non-linear regressions."*
KH6	Section 4.1.3.1.	No CAR raised.	*As above*
KH7	Section 4.1.3.1.	See **CAR 07/10**	*"The methodology does not prescribe any particular modeling approach. Therefore, project proponents can include Akaike Information Criteria (AIC) and Bayesian Information Criteria (BIC) for variable selection, provided the approach they use demonstrably complies with statistical good practice."*
KH8	Appendix 3: Methods to Estimate Carbon Stocks.	No CAR raised.	*Previous revisions inserted in new text in Appendix 3, where it is stated that the sample size calculation corresponds to the method of samples drown without replacement.*
KH9	Appendix 3: Methods to Estimate Carbon Stocks.	See findings in Criterion 5.1. See **OBS 16/10**	*Previous revisions inserted in the text of Appendix 3 the suggestion of separating deadwood sampling out from other carbon pools.*

KH10	General	See findings in Criterion 7.2. See **CAR 29/10**	*We argue that conservative choices negate the requirement for uncertainty analysis. In addition, the methodology now includes the following text in section 6.1.1: "Carbon stock estimates are subject to uncertainty assessment as indicated in Appendix 2, Box 2. If the uncertainty of the total average carbon stock (Ctotcl) of a class cl is less than 10% of the average value, the average carbon stock value can be used. If the uncertainty is higher than 10%, the lower boundary of the 90% confidence interval must be considered in the calculations if the class is an initial forest class in the project area or a final non-forest class in the leakage belt, and the higher boundary of the 90% confidence interval if the class is an initial forest class in the leakage belt or a final non-forest class in the project area." In this way, uncertainties are addressed.*
GT1	p10	See findings in Criterion 4.1. See **CAR 31/10**	*In previous revisions we added the following text to the description of "project area" , which in our view responds to the public comment: "The boundary of the project area shall be defined unambiguously as follows:* *• Name (or names, as appropriate) of the project area.* *• Physical boundary of each discrete area of land included in the project area (using appropriate GIS software formats).* *• Description of current land-tenure and ownership, including any legal arrangement related to land ownership and the AUMD project activity.* *• List of the project participants and brief description of their roles in the proposed AUMD project activity."*
GT2	p25	See findings in Criterion 6.1.	*Idem above. The methodology now requires providing information on land ownership or tenure.*

--End--