Voluntary Carbon Standard Methodology Assessment Report for:

Climate Focus North American Inc.

Verification Company:

Rainforest Alliance

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Approved by:	Jared Nunery
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)* *Relevant VCS Program Updates*
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1 INTRODUCTION

1.1 Objective

The purpose of this report is to document conformance of the Avoided Deforestation Partners (ADP) REDD Methodology Modules with the requirements of the Voluntary Carbon Standard (VCS). This assessment was requested by Climate Focus North America Inc., who were responsible for managing the ADP methodology approval process, hereafter referred to as the "Methodology Developer" or "Climate Focus". The report represents the second assessment of the VCS double approval process for a methodology framework, hereafter referred to as the "Methodology" consisting of individual methodology elements, hereafter referred to as "Modules". Rainforest Alliance was appointed by the VCSA to conduct the second validator assessment of the methodology. This independent, third party assessment is a crucial piece in the rigorous approval process that lends additional credibility to VCS carbon projects. The double approval process required two qualified validation bodies to each make independent assessments of the same REDD methodology modules.

The 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 and modules under review according to the applicable standard(s) and protocols of the Voluntary Carbon Standard. Section 2 below provides the assessment conclusions and validation statement. Appendix B presents criterion by criterion summary reporting on the conformance of the methodology to the VCS validation criteria. Appendix C presents the detailed assessment findings on the conformance of each of the modules to the VCS validation criteria.

Rainforest Alliance carbon evaluation reports, including methodology assessments, will be available to the public only upon finalization and after agreement of both the proponents and the Rainforest Alliance. Particular material in the report identified by the client as confidential by the proponent will be excluded from any publicly available reports.

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 approved verifier with the Plan Vivo (PV) standards, and an accredited verifier with the Voluntary Carbon Standard (VCS) and the Climate Action Reserve (CAR).

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 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 in line with 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)*

- *Relevant VCS Program Updates*

1.3 Methodology Description

This is a REDD methodology framework that provides the basic structure for the user to construct from selected modules a REDD baseline and monitoring methodology. The generic functionality of the methodology follows an over-arching REDD framework module which frames pre-defined modules and tools that perform a specific function. The REDD methodology framework constitutes, together with the modules and tools it calls upon, a complete REDD baseline and monitoring methodology.

The modules and tools called upon in this methodology are applicable to project activities that reduce emissions from planned (APD) and unplanned (AUDD) deforestation, and for activities to reduce emissions from forest degradation.

The REDD Methodology framework uses these modules and tools:

Carbon Pool Modules:

CP-AB *"Estimation of carbon stocks in the above- and below-ground biomass in live tree and non-tree pools"*

CP-D *"Estimation of carbon stocks in the dead-wood pool"*

CP-L *"Estimation of carbon stocks in the litter pool"*

CP-S *"Estimation of stocks in the soil organic carbon pool"*

CP-W *"Estimation of carbon stocks in the long-term wood products pool"*

Baseline Modules:

BL-PL *"Estimation of baseline carbon stock changes and greenhouse gas emissions from planned deforestation"*

BL-UP *"Estimation of baseline carbon stock changes and greenhouse gas emissions from unplanned deforestation"*

BL-DFW *"Estimation of baseline emission from forest degradation caused by extraction of wood for fuel"*

Leakage Modules:

LK-ASP *"Estimation of emissions from activity shifting for avoided planned deforestation"*

LK-ASU *"Estimation of emissions from activity shifting for avoided unplanned deforestation"*

LK-ME *"Estimation of emissions from market-effects"*

LK-DFW *"Estimation of emissions from displacement of fuel wood extraction"*

Emissions Modules (applicable to baseline, project scenario and leakage):

E–BB *"Estimation of greenhouse gas emissions from biomass burning"*

E-FFC *"Estimation of emissions from fossil fuel combustion"*

E-NA *"Estimation of direct N_2O emissions from nitrogen application" – latest CDM-EB approved version*

Monitoring Module:

M-MON *"Methods for monitoring of greenhouse gas emissions and removals" (previously M-EXP)*

Miscellaneous Modules:

X -STR *"Methods for stratification of the project area"*

X-UNC *"Estimation of uncertainty for REDD project activities"*

Tools:

T-SIG *"Tool for testing significance of GHG emissions in A/R CDM project activities" – latest CDM-EB approved version*

T-ADD *"VT0001 Tool for the Demonstration and Assessment of Additionality in VCS Agriculture, Forestry and Other Land Use (AFOLU) Project Activities" – latest VCS approved version*

T-BAR *"Tool for AFOLU non-permanence risk analysis and buffer determination" – latest VCS-approved version*

REDD Methodology Framework is a compilation of modules and tools that together define the project activity and necessary methodological steps. By choosing the appropriate modules, a project-specific methodology can be constructed. REDD projects under the Methodology Framework are divided between three broad activity types: unplanned deforestation, planned deforestation and forest degradation through collection of wood for fuel and production of charcoal. No modules are included for activities to reduce emissions from forest degradation caused by illegal harvesting of trees for timber. A single project may include one, two or all three of these activity types. Specific applicability conditions exist for each module and must be met for the module to be used. The reference to this Framework and the modules used to construct the project-specific methodology shall be given in the VCS-PD. The justification of the choice of modules and why they are applicable to the proposed project activity shall be given in the VCS-PD.

2 ASSESSMENT CONCLUSIONS

Rainforest Alliance completed the second validator assessment of the methodology element "Avoided Deforestation Partners REDD Methodology Modules". According to step 4.5.4 of the VCS Program Normative Document: Double Approval Process v1.1, both the first and second validators must issue an assessment statement based on the same version of the methodology element. SQS undertook the first assessment of the methodology. In response to this second assessment by the Rainforest Alliance, methodology elements were revised and updated, and then subsequently SQS reviewed the methodology Version 1.0. Both validators approved changes to the methodology, including changes made during the second assessment, and including those respective of the public consultation and comments, such that both validators agreed upon the final REDD methodology modules, version 1.0.

Validation Statement

This validation statement is addressed to the VCS Board.

It is the opinion of the Rainforest Alliance that based upon the evidence provided by the methodology developer through preparation of Version 1.0, November 24, 2010, of the REDD Methodology Framework that the methodology element documentation complies with the defined objectives, scope, and criteria of the assessment and based upon guidance given under the VCS Program, including Section 5 (project level requirements) and Section 6 (methodologies) of the VCS 2007.1 document. The review of the modules, supporting literature references, data, and information provided to the audit team by the methodology developer in writing and through personal communication, as well as the satisfactory closure of corrective action requests, has provided the Rainforest Alliance with sufficient evidence in order to make this determination. It is our opinion that version 1.0, November 24, 2010 of the methodology element documentation does meet the criteria outlined in the scope of the validation assessment with a reasonable level of assurance. This level of assurance means that the methodology element documentation is materially correct and is a fair representation of the data, information, and methodological procedures necessary to prepare a carbon project in accordance with the VCS 2007.1 standard.

2.1 Audit Team Recommendation

Based on an assessment of the developer'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 developer; the Rainforest Alliance assessment team finds that the methodology developer 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.

All Corrective Action Requests raised through the process of the validation assessment and the criteria and rationale or findings that identified non-conformances which led to such CARs, as well as the evidence to close these can be found in each of the individual module reports provided in Appendix C.

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.

All Observations (OBS) raised through the process of the validation assessment and the criteria and rationale or findings that identified these areas for improvement, can be found in each of the individual module reports provided in Appendix C.

2.3 Actions Taken by Organization Prior to Report Finalization

The process of methodology assessment entailed three formal rounds of assessment by the Rainforest Alliance resulting in the version of the methodology that conformed in its entirety to the VCS criteria and requirements. The actions taken by the methodology developer after each round of assessment are recorded within the individual module report tables, see Appendix C. In the final round of assessment, there were several (2-3 per module) iterations of module revisions and subsequent reviews, as there were minor elements being addressed to achieve a final version which presented with no non-conformities to the assessment criteria. The auditor remarks that throughout this assessment process the methodology developer made numerous and substantial revisions and improvements to the methodology elements to respond to Corrective Action Requests, which in our opinion strengthened the clarity and technical quality of these REDD modules.

In summary, a total of 71 Corrective Action Requests were raised in the assessment and closed. A total of 54 non-mandatory 'Observations' were raised and the majority were addressed.

Name	CARs	OBS
"REDD Methodology Framework" - REDD-MF	9	18
"Estimation of carbon stocks and changes in the above- and below-ground biomass pools" – CP-AB		
"Estimation of carbon stocks in the dead wood pool" – CP-D		
"Estimation of carbon stocks in the litter carbon pool" – CP-L		
Estimation of carbon stocks in the soil organic carbon pool" – CP-S		
"Estimation of carbon stocks in the long-term wood products pool" – CP-W	3	3
"Estimation of baseline carbon stock changes and greenhouse gas emissions from planned deforestation" – BL-PL	6	2
"Estimation of baseline carbon stock changes and greenhouse gas emissions from unplanned deforestation" – BL-UP	15	4
"Estimation of baseline emission from forest degradation caused by extraction of wood for fuel" – BL-DFW	2	3
"Estimation of emissions from activity shifting for avoided planned deforestation" – LK-ASP	6	2
"Estimation of emissions from activity shifting for avoided unplanned deforestation" – LK-ASU	9	2
"Estimation of emissions from market effects" – LK-ME	2	5
"Estimation of emissions from displacement of fuel wood extraction" – LK-DFW	2	1
"Estimation of greenhouse gas emissions from biomass burning" – E-BB	1	2
"Estimation of emissions from fossil fuel combustion" – E-FFC	1	1
"Methods for monitoring of greenhouse gas emissions and removals" – M-MON	9	8
"Methods for stratification of the project area" – X-STR	0	0
"Estimation of uncertainty for REDD project activities" – X-UNC	6	3
Total	**71**	**54**

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: **26 November 2010** **01 November 2010** **19 August 2010**	Adam has led the technical climate change related side of nine CCBA validations that are either completed or currently underway. He has also led three methodology assessments, one VCS validation and been involved in one CCX verification. Adam is an approved Climate Action Reserve Lead Verifier and a VCS approved AFOLU Expert. Adam has trained over 60 people in Spain, Bali 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 was lead author of recent Rainforest Alliance publication entitled, "Guidance on coffee carbon project development using the (CDM) simplified agroforestry methodology" as well as two scientific articles currently in press. 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. He led a team conducting a landscape scale assessment of carbon stocks in the Peruvian Andes' cloud forests and montane grasslands. 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 in assessments of: **26 November 2010** **01 November 2010** **19 August 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 carbon and forest certification training courses in Bolivia, Brazil, China, Fiji, Indonesia, Japan, Malaysia, UK, US, and other countries.

	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). Jeff is an approved Climate Action Reserve Lead Verifier and a VCS approved AFOLU Expert.
Frank Werner, Ph.D. REDD Methodology Expert Involved in assessments of: **26 November 2010** **01 November 2010** **19 August 2010**	Frank has been involved in AFOLU project and methodology development and assessment since 1997 and is currently leading an A/R CDM project located in Colombia towards validation. 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 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. As the owner of a small consulting company, Frank has also been involved in several European projects related to the integrated evaluation of different forest management and wood use scenarios with regard to their impact on climate change. These research activities were awarded the UMDASCH research price 2007 for innovative research on the sustainable use of wood. Frank's PhD thesis on methodological aspects of LCA won the first EMPA research award in 2003. In addition to his PhD, Frank holds a Master's degree in environmental and natural sciences from the Swiss Federal Institute of Technologies (ETH) in Zurich.
Michael Obersteiner, Ph.D. REDD Methodology Expert Involved in assessments of: **01 November 2010** **19 August 2010**	Mr. Obersteiner works within the International Institute for Applied Systems Analysis, Forestry Program in Laxenburg, Austria. He has been Liaison Officer between GEO-BENE project (EC) and the GEO Secretariat, Member of the Science and Technology Committee, Staff Expert responsible for the supervision of the Monitoring and Evaluation Task and the Forest Carbon Tracking Task. He has worked as Research Scholar, Group Leader on land-use change modeling, Project Coordinator Principle Investigator and Scientific Coordinator of the EC-funded projects GEO-BENE and CC-TAME. He has worked as the Staff Economist leading the Natural Resources and Energy Economics Group. Michael has a Ph.D in Natural Resource Economics from the University of Applied Life Sciences and Natural Resources, Vienna, Austria

3.2 Methodology Assessment Process

Rainforest Alliance prepared a proposal to conduct this assessment and submitted this on June 17, 2009 to Climate Focus, on behalf of Avoided Deforestation Partners and the organizations Climate Focus, Winrock International, TerraCarbon, Silvestrum, Carbon Decisions International, and others. In December 2009, the Rainforest Alliance and the Voluntary Carbon Standards Association entered into an agreement for RA to conduct the second validator assessment according to the proposal sent to Climate Focus.

The methodology assessment can be characterized by three distinct phases.

Phase I: preliminary assessment while first validator (TUV-SUD) was assessing the modules:

- from January 2010 through April 2010 Rainforest Alliance maintained communications with the methodology developer and the other validator, had access to the latest versions of the methodology modules and validator reports, and participated as an observer in a working session evaluating the modules held at Winrock International and including TUV-SUD, TerraCarbon, and Climate Focus on 9 and 10 March 2010. In late April 2010 Climate Focus decided to terminate the contract with TÜV SÜD and hired the firm Swiss Association for Quality and Management Systems (SQS) to complete the first validation.

Phase II: first RA assessment of the methodology

- from June 2010 to August 2010 Rainforest Alliance carried out the process of the validation assessment concurrent, although independent, to SQS of the methodology version from May 2010. This was the same set provided to SQS. The draft assessment report tables were provided on 13 August 2010 and the final draft assessment report tables were provided on 19 August 2010. On August 17, 18, and 19, the Rainforest Alliance auditors met with the methodology developers to discuss each of the modules and all of the CARs and issues requiring clarification, at the offices of Winrock International.

Phase III: second and final assessment of the methodology

- from October 2010 to 26 November 2010 the Rainforest Alliance conducted the second assessment of the methodology, which was the same version of the methodology approved by SQS. This phase is the period in which Rainforest Alliance evaluated the methodology that SQS approved, and finding some apparent non-conformities issued CARs, for which subsequent versions of individual modules were prepared by the methodology developer and assessed by Rainforest Alliance until all modules were approved. After this, the versions were submitted to SQS, who similarly approved these modules without issuing new corrective actions. Thus, both Rainforest Alliance and SQS, reviewed and approved the final version 1.0, November 24, 2010 of the methodology.

The methodology assessment was conducted from Rainforest Alliance offices and those of the contracted consultants. The methodology assessment involved desk-based document evaluation, along with phone calls, correspondence, and in-person meetings with the methodology developers.

3.3 Document Review

The three Rainforest Alliance assessments are dated 19 August 2010, 01 November 2010 and 26 November 2010 and were based on different versions of the modules, as these were revised and updated in response to Corrective Action Requests. In Appendix C – the findings from each of the module versions assessed during each evaluation are documented. In addition to the modules, the Rainforest Alliance also reviewed documents that were cited within the modules. The final assessment dated 26 November 2010 was based on the following versions on the modules:

Name	Final Version Assessed	Latest File Name
"REDD Methodology Framework" - REDD-MF	Version 1.0, November 24, 2010	1 REDD-MF REDD methodology framework.docx
"Estimation of carbon stocks and changes in the above- and below-ground biomass pools" – CP-AB	Version 1.0, November 24, 2010	2. CP-AB Live biomass.docx
"Estimation of carbon stocks in the dead wood pool" – CP-D	Version 1.0, November 24, 2010	3. CP-D Dead wood.docx
"Estimation of carbon stocks in the litter carbon pool" – CP-L	Version 1.0, November 24, 2010	4. CP-L Litter.docx
Estimation of carbon stocks in the soil organic carbon pool" – CP-S	Version 1.0, November 24, 2010	5. CP-S Soil.docx
"Estimation of carbon stocks in the long-term wood products pool" – CP-W	Version 1.0, November 24, 2010	6. CP-W Wood products.docx
"Estimation of baseline carbon stock changes and greenhouse gas emissions from planned deforestation" – BL-PL	Version 1.0, November 24, 2010	7. BL-PL Planned baseline.docx
"Estimation of baseline carbon stock changes and greenhouse gas emissions from unplanned deforestation" – BL-UP	Version 1.0, November 24, 2010	8. BL-UP Unplanned baseline.docx
"Estimation of baseline emission from forest degradation caused by extraction of wood for fuel" – BL-DFW	Version 1.0, November 24, 2010	9. BL-DFW Fuelwood baseline.docx
"Estimation of emissions from activity shifting for avoided planned deforestation" – LK-ASP	Version 1.0, November 24, 2010	10. LK-ASP Planned leakage.docx
"Estimation of emissions from activity shifting for avoided unplanned deforestation" – LK-ASU	Version 1.0, November 24, 2010	11. LK-ASU Unplanned leakage.docx
"Estimation of emissions from market effects" – LK-ME	Version 1.0, November 24, 2010	12. LK-ME Leakage market effects.docx

“Estimation of emissions from displacement of fuel wood extraction” – LK-DFW	Version 1.0, November 24, 2010	13. LK-DFW Fuelwood leakage.docx
“Estimation of greenhouse gas emissions from biomass burning” – E-BB	Version 1.0, November 24, 2010	14. E-BB Biomass burning.docx
“Estimation of emissions from fossil fuel combustion” – E-FFC	Version 1.0, November 24, 2010	15. E-FFC fossil fuels.docx
“Methods for monitoring of greenhouse gas emissions and removals” – M-MON	Version 1.0, November 24, 2010	16. M-MON Monitoring_2010 VERSION
“Methods for stratification of the project area” – X-STR	Version 1.0, November 24, 2010	17. X-STR Stratification.docx
“Estimation of uncertainty for REDD project activities” – X-UNC	Version 1.0, November 24, 2010	18. X-UNC Uncertainty analysis.docx

Appendix A: PROPONENT CONTACT AND DETAILS

1 Contacts

Methodology name:	Avoided Deforestation Partners REDD Methodology Modules
Proponent:	Climate Focus North America, Inc.
Type of organization:	Corporation
Contact person, Title:	Mr. Robert O'Sullivan
Address:	1025 Connecticut Ave, NW Suite 1102 Washington, DC 20036
Tel/Fax/Email:	T: +1.202.540.2273; F: +1.202.540.2279; E: r.osullivan@climatefocus.com
Billing contact:	As above
Methodology developer:	Climate Focus
Type of organization:	as above
Contact person, Title:	as above
Address:	as above
Tel/Fax/Email:	as above

Appendix B: ASSESSMENT OF CONFORMITY WITH THE STANDARDS

Appendix B provides a brief summary of how conformance to the VCS standard was achieved by the 18 modules. For the comprehensive assessment of all findings related to each module and the VCS standard, please see Appendix C. In appendix C the findings, as well as any documented non-conformances, particularly those related to the issuance of any Corrective Action Requests (CARs) and Observations (OBS) and the changes made to address them are reported.

1 Eligibility criteria

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

1.1 The methodology shall be for a project type which falls within one or more of the eligible AFOLU project categories as Defined in the VCS Tool for AFOLU methodological issues (See: I. Scope and Applicability)

Findings from Assessment on 26 November 2010			
REDD-MF defines the scope of the project activities covered by the modules as avoided planned and unplanned deforestation and degradation. Modules BL-PL and LK-ASP are for planned deforestation. Modules BL-UP and LK-ASU are for unplanned deforestation. Modules BL-DFW and LK-DFW are for unplanned degradation related to fuelwood collection.			
Conformance	Yes ☒	No ☐	N/A ☐

1.2 The methodology shall be compatible with VCS Tool for AFOLU methodological issues in the statement of eligibility conditions. Specifically;

i. "Documented evidence shall be provided in the VCS PD that no ARR or ALM project areas were cleared of native ecosystems within the ten years prior to the proposed VCS project start." (II. Step 1, paragraphs 6)

ii. "In the case of REDD projects, the boundary of the REDD activity shall be clearly delineated and defined and include only land qualifying as "forest" for a minimum of 10 years prior to the project start date." (II. Step 1, paragraphs 7)

Findings from Assessment on 26 November 2010			
Provision ii above is stated in REDD-MF. The methodology was found to be compatible with the VCS Tool for AFOLU Methodological Issues.			
Conformance	Yes ☒	No ☐	N/A ☐

1.3 The methodology shall contain appropriate applicability conditions (e.g. project type, national and regional circumstances / policies, data and resource availability, environmental conditions, past land-use and land use changes, purpose of the activity and practices) that adequately constrain the use of the methodology such that any assumptions made or data inputs required later in the methodology are appropriate.

Findings from Assessment on 26 November 2010

REDD-MF contains applicability conditions that apply to the use of the methodology as a whole, and also separates out those conditions which apply to the use of a specific module. These were found to be appropriate.			
Conformance	Yes ☒	No ☐	N/A ☐

2 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.

2.1 The methodology shall provide a methodological procedure for identifying and assessing GHG sources, sinks and reservoirs (SSRs) 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:

i. controlled by the Project Proponent:

ii. related to the GHG project; or

iii. affected by the GHG project. (VCS 2007.1, S6.2).

iv. 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. (VCS 2007.1, Section 6.2)

Findings from Assessment on 26 November 2010			
The procedure for identifying and assessing GHG sources, sinks and reservoirs (SSRs) controlled, related to, or affected by the project is found in Step 1 of REDD-MF. Guidance for the identification and assessment of GHG sources, sinks and reservoirs is also found in Step 1 of REDD-MF.			
Conformance	Yes ☒	No ☐	N/A ☐

2.2 The methodology shall be compatible with the VCS Tool for AFOLU methodological issues, providing steps to define the project boundary in terms of:

i. The geographic boundary within which the project will be implemented;

ii. The project crediting period;

iii. The sources and sinks, and associated types of GHGs (i.e., CO_2, N_2O, CH_4), the project will affect; and

iv. The carbon pools that the project will consider, in accordance to the particular project type and Table 1, in step 3 of the VCS Tool for AFOLU Methodological Issues and ensuring they are appropriate in the context of the applicability conditions and the determination of project GHG emissions and baseline net GHG emissions.

(II. Step 2 Determine the Project Boundary and 3 Determine the Carbon Pools)

Findings from Assessment on 26 November 2010
i. Steps to define the geographic boundary are found in Step 1 of REDD-MF. In addition, more detailed guidance on defining spatial elements such as reference regions and leakage belts are found in the baseline modules BL-PL, BL-UP and BL-DFW. These steps were found to be appropriate.

ii. Steps to define the temporal project boundaries including the crediting period are found in Step 1 of REDD-MF. The boundaries were defined in accordance with the VCS standard. iii. Step 1 of REDD-MF outlines the sources, sinks and associated types of GHGs. These were found to be appropriate. iv. The carbon pools that define the project boundary were defined in line with the VCS program update dated 24 May 2010.			
Conformance	Yes ☒	No ☐	N/A ☐

2.3 The methodology shall, provide steps to account for N_2O emissions, unless insignificant[1], if any nitrogen fertilizer and/or manure are applied, or N-fixing species planted, during the crediting period. Note that; Reductions of N_2O and/or CH_4 emissions are eligible for crediting if in the baseline scenario the project land would have been subject to cattle grazing and/or nitrogen fertilization, and/ or if fire would have been used to clear the land or constitutes a cause of forest degradation. (II. Step 3 Determine the Carbon Pools, paragraphs 10 & 11)

Findings from Assessment on 26 November 2010			
The module E-NA and X-Sig are used to determine when nitrogen emissions are significant and how to quantify them.			
Conformance	Yes ☒	No ☐	N/A ☐

3 Baseline approach:

3.1 The baseline scenario shall set out the geographic scope as applicable to the methodology. (VCS 2007.1, Section 6.3)

Findings from Assessment on 26 November 2010			
The modules are applicable globally.			
Conformance	Yes ☒	No ☐	N/A ☐

3.2 The methodology shall provide a procedure for the selection of most conservative baseline scenario. This shall reflect what most likely would have occurred in the absence of the project. (VCS 2007.1, Section 6.3)

In doing so, the methodology shall provide guidance for the selection or establishment of criteria and procedures for identifying and assessing potential baseline scenarios considering the following:

i. the project description, including identified GHG sources, sinks and reservoirs;

ii. existing and alternative project types, activities and technologies providing equivalent type and level of activity of products or services to the project;

[1] Certain GHG sources may be considered “insignificant” and do not have to be accounted for if together such omitted decreases in carbon pools and increases in GHG emissions amount to less than 5% of the total CO_2-eq benefits generated by the project.

iii. data availability, reliability and limitations;

iv. other relevant information concerning present or future conditions, such as

v. legislative, technical, economic, socio-cultural, environmental, geographic, site specific and temporal assumptions or projections.

Findings from Assessment on 26 November 2010			
The three baseline modules BL-PL, BL-UP and BL-DFW contain steps to select the most conservative baseline scenario dependant on the level of information available on which to base estimations. In step 2 of REDD-MF the latest version of the VCS approved tool, "VT0001 Tool for the Demonstration and Assessment of Additionality in VCS Agriculture, Forestry and Other Land Use (AFOLU) Project Activities" (referred to as T-ADD) is referenced. This tool provides the steps to determine identify the possible baseline scenarios, as well as assess the project selected baseline for additionality.			
Conformance	Yes ☒	No ☐	N/A ☐

3.3 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. (VCS 2007.1, Section 6.3)

Findings from Assessment on 26 November 2010			
In BL-PL the baseline scenario is determined by identifying the agent or agent class that presented an immediate site specific threat to the forest. The rate is determined by either management plans or proxy areas. BL-UP, defines a reference region that had conditions (social, economic, physical) at the start of the historic reference period to those which exist in the project area today. Deforestation rates measured there through the historic reference period are then applied to the project area (and leakage belt) during the project period. BL-DFW uses interviews or participatory rural appraisal to determine the fuelwood usage within the project area. The current rate is then taken as the baseline provided it can be demonstrated that this rate is not falling. The procedures in each module were found to lead to conservative baseline scenarios.			
Conformance	Yes ☒	No ☐	N/A ☐

3.4 The methodology shall be compatible with the project type specific rules on baseline development specified in the VCS Tool for AFOLU methodological issues (See: II. Step 4, Establish a Project Baseline, paragraphs 13 - 16)

Findings from Assessment on 26 November 2010
Paragraphs 15 and 16 from the VCS Tool for AFOLU Methodological Issues are relevant to REDD

projects.

15. Avoiding planned deforestation (APD): Please see this report, section 3.3 for a description of the baseline development procedure for BL-PL. This procedure complies with the requirements for APD baselines by requiring the demonstration of threat and legal permissibility of clearance as well as through the use of proxy areas (common practice) where plans do not exist. The module CP-W contains a method for accounting for wood products.

15. Avoiding unplanned frontier deforestation and degradation (AUFDD): The modeling which BL-UP requires for frontier deforestation patterns ensures that the threat is demonstrated for the project area.

15. Avoiding unplanned mosaic deforestation and degradation (AUMDD): Please see this report, section 3.3 for a description of the baseline development procedure for BL-UP. This procedure complies with the requirements for AUMDD baselines through the use of a reference region.

16. Baseline reassessment: REDD-MF requires baseline re-assessment every 10 years or earlier in cases of forest scarcity.

16. The baseline modules were found to, "outline the measurements, calculations and assumptions used to estimate the annual amount and likely general location of the expected deforestation/degradation under baseline conditions". (VCS Tool for Methodological Issues, paragraph 16).

Conformance	Yes ☒	No ☐	N/A ☐

3.5 The methodology shall estimate the baseline net GHG emissions and removals for each year of the proposed crediting period. (II. Step 4, Establish a Project Baseline, paragraph 17)

Findings from Assessment on 26 November 2010			
The methodology uses annual accounting in all modules.			
Conformance	Yes ☒	No ☐	N/A ☐

4 Additionality:

4.1 The methodology shall contain an appropriate and adequate methodological procedure for determining whether the project is additional, and demand sufficient information to be presented in the PDD such that the additionality can be validated by a third party. (VCS 2007.1, Section 6.4)

Findings from Assessment on 26 November 2010
In step 2 of REDD-MF the latest version of the VCS approved tool, " VT0001 Tool for the Demonstration and Assessment of Additionality in VCS Agriculture, Forestry and Other Land Use (AFOLU) Project Activities" (referred to as T-ADD) is referenced. This tool provides the steps to determine identify the possible baseline scenarios, as well as assess the project selected baseline for additionality.

Conformance	Yes ☒	No ☐	N/A ☐

5 Emissions:

This section is divided into ex-ante and ex-post emissions calculations. The ex-post emissions will be calculated as a result of the monitoring which is assessed in section 7 below. There is also a separate section which assesses the specific requirements as stated in the VCS documentation.

Ex – ante emissions calculation

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). (VCS 2007.1 6.5.3)

The assessment should consider:

i. The choice of algorithms/formulae and/or models used and correctness of their application (e.g. mathematical deficiencies, inconsistencies in calculus of dimensions).

ii. The appropriateness (adequacy, consistency, accuracy and reliability) of the parameters provided by the methodology.

iii. The appropriateness of procedures on how project participants should select any parameters in cases where these are not provided in the methodology (e.g. from official statistics, expert judgment, proprietary data, IPCC Good Practice Guidance for LULUCF, commercial data and scientific literature.

iv. Any data gaps.

Findings from Assessment on 26 November 2010			
The three baseline modules BL-PL, BL-UP and BL-DFW contain procedures for calculating the GHG emissions/sequestration during the baseline scenario. The modules calculation steps have been assessed and found to be mathematically correct. The parameters calculated were appropriate in that they calculate all likely significant emissions and sequestration. Each methodology has parameter tables at the end. These tables guide projects on making conservative data choices. No data gaps were found.			
Conformance	Yes ☒	No ☐	N/A ☐

5.2 The methodology shall contain procedures that result in a *conservative* estimation of the sum of the baseline emissions within the project boundary that would have occurred in the absence of the proposed VCS project activity (ex-ante), taking into account the uncertainties associated with the data and parameters used. In addition, the procedure shall be designed such that it can be *carried out in an unambiguous way, replicated, and subjected to a validation and/or verification study*.

Findings from Assessment on 26 November 2010			
The baseline modules would not lead to inherently non-conservative data selection. Rather, they guide the user towards conservative selections. The steps of the modules flow in a logical manner and guidance is frequently provided to aid users in interpreting the module correctly. It should be noted that the modular approach is as yet untested and as such projects proponent's ability to follow the flow of data between modules cannot be guaranteed. Steps are clearly labeled, equations are always numbered and parameters clearly labeled. This will allow validators to assess that each step has been carried out as prescribed by the methodology.			
Conformance	Yes ☒	No ☐	N/A ☐

5.3 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). (VCS 2007.1 6.5.3)

The Assessment should consider:

i. The choice of algorithms/formulae and/or models used and correctness of their application (e.g. mathematical deficiencies, inconsistencies in calculus of dimensions).

ii. The appropriateness (adequacy, consistency, accuracy and reliability) of the parameters provided by the methodology.

iii. The appropriateness of procedures on how project participants should select any parameters in cases where these are not provided in the methodology (e.g. from official statistics, expert judgment, proprietary data, IPCC Good Practice Guidance for LULUCF, commercial data and scientific literature.

iv. Any data gaps:

Findings from Assessment on 26 November 2010			
In step 4 of REDD-MF Equation 1 is used to estimate *ex-ante* the project benefits (see note at the bottom of this step). dCp is the project scenario values. There is a note telling the user to go to M-MON to obtain values to populate the project scenario *ex-ante*. The introduction section of M-MON explains that the module can be used to generate *ex-ante* emissions and that the parameter tables should be referenced for information about how to select a value *ex.-ante*. The parameter tables provide guidance on selecting value *ex-ante*. The same applies for leakage values, whereby the parameters tables of the leakage modules contain guidance on making *ex-ante* estimates.			
Conformance	Yes ☒	No ☐	N/A ☐

5.4 The methodology shall contain procedures that result in a *conservative* estimation of the sum of the project emissions within the project boundary (ex-ante), taking into account the uncertainties associated with the data and parameters used. In addition, the procedure shall be designed such that it can be carried out in an *unambiguous way, replicated, and subjected to a validation and/or verification study*.

Findings from Assessment on 26 November 2010			
The methodology requires the user to justify *ex-ante* data selection. The process of compiling *ex-ante* estimates for the project scenario is complex because it involves the use of many parts from many modules. It is structured and possible to follow; however, it is complex and difficult and could be made clearer.			
Conformance	Yes ☒	No ☐	N/A ☐

5.5 The methodology shall provide steps to calculate the net GHG benefit of the project ex ante. 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. (VCS 2007.1 6.5.3)

Note, an ex-ante calculation of the net carbon benefits of the project is only required to determine whether decreases in carbon pools or increases in GHG emissions are insignificant and need not be measured and monitored. (II. Step 0, paragraph 1)

Findings from Assessment on 26 November 2010			
Step 4 of REDD-MF combined with the steps described above allow the estimate of net benefits *ex-ante*.			
Conformance	Yes ☒	No ☐	N/A ☐

5.6 All significant GHG sources and leakage shall be measured, estimated and monitored in both the baseline and project case. Certain GHG sources may be considered "insignificant" and do not have to be accounted for if together such omitted decreases in carbon pools and increases in GHG emissions amount to less than 5% of the total $CO_{2\text{-}eq}$ benefits generated by the project. Pools can be omitted if their exclusion leads to conservative estimates of the number of carbon credits generated. (II. Step 0, paragraph 2 and 3)

Findings from Assessment on 26 November 2010			
The module T-SIG handles significance. T-SIG is, ""Tool for testing significance of GHG emissions in A/R CDM project activities" – latest CDM-EB approved version". This is an appropriate tool for significance testing. Although designed for AR projects the steps apply equally well to REDD.			
Conformance	Yes ☒	No ☐	N/A ☐

Ex-Post Emissions Calculation

5.7 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-post). (VCS 2007.1 6.5.3)

The assessment should consider:

i. The choice of algorithms/formulae and/or models used and correctness of their application (e.g. mathematical deficiencies, inconsistencies in calculus of dimensions).

ii. The appropriateness (adequacy, consistency, accuracy and reliability) of the parameters provided by the methodology.

iii. The appropriateness of procedures on how project participants should select any parameters in cases where these are not provided in the methodology (e.g. from official statistics, expert judgment, proprietary data, IPCC Good Practice Guidance for LULUCF, commercial data and scientific literature.

iv. Any data gaps.

Findings from Assessment on 26 November 2010			
The baseline scenario only calculates *ex-ante*, although it is re-assessed every 10 years.			
Conformance	Yes ☒	No ☐	N/A ☐

5.8 The methodology shall contain procedures that result in a conservative estimation of the sum of the baseline emissions within the project boundary that would have occurred in the absence of the proposed VCS project activity (ex-post), taking into account the uncertainties associated with the data and parameters used. In addition, the procedure shall be designed such that it can be carried out in an unambiguous way, replicated, and subjected to a validation and/or verification study.

Findings from Assessment on 26 November 2010			
N/A – see 5.7			
Conformance	Yes ☐	No ☐	N/A ☒

5.9 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-post). (VCS 2007.1 6.5.3)

The Assessment should consider:

i. The choice of algorithms/formulae and/or models used and correctness of their application (e.g. mathematical deficiencies, inconsistencies in calculus of dimensions).

ii. The appropriateness (adequacy, consistency, accuracy and reliability) of the parameters provided by the methodology.

iii. The appropriateness of procedures on how project participants should select any parameters in cases where these are not provided in the methodology (e.g. from official statistics, expert judgment, proprietary data, IPCC Good Practice Guidance for LULUCF, commercial data and scientific literature.

iv. Any data gaps:

Findings from Assessment on 26 November 2010			
The Module M-MON contains the steps for calculation the actual emissions in the project scenario regardless of the baseline used.			
Conformance	Yes ☒	No ☐	N/A ☐

5.10 The methodology shall contain procedures that result in a *conservative* estimation of the sum of the project emissions within the project boundary (ex-post), taking into account the uncertainties associated with the data and parameters used. In addition, the procedure shall be designed such that it can be carried out in an unambiguous way, replicated, and subjected to a validation and/or verification study.

Findings from Assessment on 26 November 2010			
The module M-MON leads to a conservative estimation of the emissions. To provide an example; regardless of the cause of deforestation and degradation and regardless as to whether it would have likely happened in the baseline, a project must quantify all losses to stocks within the project area and make a deduction. M-MON references other modules such as the CP- (carbon pool) series and E- (emissions) series modules. These modules have conservativeness built in through the guidance provided on data selection. However, ultimately the conservative use of the methodology relies on project developers selecting conservative data relevant to their circumstances; this will be validated and verified by a third party auditor.			
Conformance	Yes ☒	No ☐	N/A ☐

5.11 The methodology shall provide steps to calculate the net GHG benefit of the project ex-post. 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. (VCS 2007.1 6.5.3)

Findings from Assessment on 26 November 2010			
The same calculation steps are used to calculate the net GHG benefit of the project *ex-post* are used *ex-ante*, with the exception that data derived directly from project monitoring is used for the project scenario.			
Conformance	Yes ☒	No ☐	N/A ☐

5.12 The methodology shall provide the steps for calculating the number if VCUs to be issued at any given verification event, considering net GHG reductions, leakage, risk buffer credit deduction and any other deductions or alternations that may be needed.

Findings from Assessment on 26 November 2010			
Equation 8 in REDD-MF calculates the number of credits to be issued at any verification event. The equation (and the equations that feed it) correctly calculate the number of credits that need to go into the buffer account, the deduction that must be made due to uncertainty and also the deductions for leakage and risk analysis.			
Conformance	Yes ☒	No ☐	N/A ☐

VCS Specific Requirements for Emissions (ex-ante and ex-post)

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

i. each relevant GHG for each GHG source, sink and/or reservoir relevant for the project; and

ii. each GHG source, sink and/or reservoir relevant for the baseline scenario. (VCS 2007.1 6.5.2)

Findings from Assessment on 26 November 2010			
The Carbon Pool (CP) and Emissions (E) modules calculate the emissions/sequestration for each necessary source or sink clearly and separately.			
Conformance	Yes ☒	No ☐	N/A ☐

5.14 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, 6.5.2)

Findings from Assessment on 26 November 2010
The parameters tables contain guidance on selecting conservative data in the face of uncertainty.

Conformance	Yes ☒	No ☐	N/A ☐

5.15 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. (VCS 2007.1, 6.5.2)

Findings from Assessment on 26 November 2010			
The parameters tables in every module identify those parameters that do not require regular monitoring.			
Conformance	Yes ☒	No ☐	N/A ☐

5.16 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, 6.5.2).

Findings from Assessment on 26 November 2010			
Following conversations with the VCS it was agreed that the VCS's own Tool for Non Permanence Risk Assessment and Buffer Determination fulfilled this criteria. The REDD-MF references this tool to derive the buffer percentage for each project type.			
Conformance	Yes ☒	No ☐	N/A ☐

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

i. are derived from a recognized origin;

ii. are appropriate for the GHG source or sink concerned;

iii. are current at the time of quantification;

iv. take account of the quantification uncertainty and are calculated in a manner intended to yield accurate and reproducible results; and

v. are consistent with the intended use of the VCS PD or monitoring report as applicable (VCS 2007.1, 6.2.5).

Findings from Assessment on 26 November 2010			
All emissions factors used are from peer reviewed literature or IPCC documentation and are specific for carbon stock evaluation. For example see Annex 2 in E-BB.			
Conformance	Yes ☒	No ☐	N/A ☐

5.18 The methodology shall use metric 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 Assessment on 26 November 2010
The appropriate units are used throughout. Global warming potentials are correctly account for. The module E-NA is a CDM approved module and it converts N based emissions into t $CO2_{2e}$. The

module E-BB also converts from non-CO_2 gases into CO_2e ("*g* (default values from IPCC SAR: CO_2 = 1; CH_4 = 21; N_2O = 310)*g* (default values from IPCC SAR: CO_2 = 1; CH_4 = 21; N_2O = 310)")			
Conformance	Yes ☒	No ☐	N/A ☐

Quality Control and Uncertainty (ex-ante and ex-post)

5.19 The methodology shall be compatible with the project type specific rules in the VCS Tool for AFOLU methodological issues for the estimation and monitoring of GHG benefits (See II. Step 6, Estimate and Monitor net GHG Benefits, paragraphs 28, 29, 30 & 31)

Specifically, the methodology shall follow IPCC 2006 Guidelines in terms of quality assurance/control and uncertainty analysis. (II. Step 6, Estimate and Monitor net GHG Benefits, paragraph 31)

Findings from Assessment on 26 November 2010			
Only paragraph 31 applies to REDD projects: "The IPCC 2006 Guidelines shall be used for estimating: 1) CO_2 and non-CO_2 emissions; The modules use IPPC factors frequently, but also develop their own methods. 2) Forest regrowth (carbon accumulation) if degradation is reduced; The module BL-DFW does not account for forest regrowth. This is because the module is only applicable for cases where the fuel-wood collection is demonstrably unsustainable and reducing carbon stocks. 3) and reductions in forest carbon stocks caused by removals of biomass exceeding regrowth. The module M-MON accounts for all losses to biomass in the project scenario. 4) These Guidelines shall also be followed in terms of quality assurance/control and uncertainty analysis. Quality control will be a project level activity. The approach to uncertainty follows the IPCC approach by applying a 'root sum of squared' approach to propagating uncertainty through equations.			
Conformance	Yes ☒	No ☐	N/A ☐

5.20 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 Assessment on 26 November 2010			
REDD-MF refers projects to the module X-UNC for uncertainty analysis. REDD-MF requires that projects document QA/QC procedures for each component of monitoring in Step 3.			
Conformance	Yes ☒	No ☐	N/A ☐

6 Leakage:

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

6.1 Leakage is defined by The VCS Tool for AFOLU Methodological Issues as, "*any increase in greenhouse gas emissions that occurs outside a project's boundary (but within the same country), but is measurable and attributable to the project Activities*". Its effects on all carbon pools shall be assessed and significant effects taken into account when calculating net emission reductions. Accounting for positive leakage is not allowed. (II. Step 5, Assess and Manage Leakage, paragraph 18)

The methodology shall assess and account for leakage in accordance with the project type specific rules in VCS Tool for AFOLU methodological issues (II. Step 5, Assess and Manage Leakage, paragraphs 20, 21, 22)

The methodology shall identify all possible leakage sources and provide mathematically correct procedures to quantify their effect on the net GHG benefits of the project.

Findings from Assessment on 26 November 2010
The modules LK-ASU, LK-AP and LK-DFW account for leakage when unplanned, planned and degradation baseline scenarios are employed. The module LK-ME is used when timber supply of fuel-wood that supplies a market is restricted by the project. *21. Leakage shall be assessed and managed for the three eligible REDD activity types as follows:* *a. In the case of avoiding planned deforestation (APD) leakage shall be controlled and measured directly by monitoring the activities of the project landowner who was originally planning on deforesting the project area (i.e., the baseline deforestation agents). Any leakage identified shall be quantified and subtracted from the net carbon benefits claimed by the project.* The module LK-ASP includes calculation steps to calculate leakage due to the shifting of the identified agent's deforestation activities (Part 1). This includes accounting for the emissions from peat. Part 2 of the module contains steps for calculating leakage when only the class of deforestation agent is known. To do this it uses an approach similar to market leakage, but based on the productivity of land. This was found to be a suitable way to account for leakage amongst a deforestation class. *b. In the case of avoiding unplanned frontier or mosaic deforestation and degradation (AUFDD or AUMDD) developers need to design and implement activities to minimize leakage, and monitor and account for leakage using approved methodologies.* LK-ASU accounts for leakage by assessing leakage that is caused by displaced immigrant agents and local residents separately. It is assumed that all immigrant caused deforestation is leaked, although a reduction is applied where is can be demonstrated that a proportion of the land they could be displaced to is contained within the leakage belt. Leakage is also quantified in the leakage belt by comparing deforestation with the modeled baseline deforestation in the same area.

22. If leakage prevention measures for any eligible REDD activity include tree planting, agricultural intensification, fertilization, fodder production and/or other measures to enhance cropland and grazing land areas, then any significant increase in GHG emissions associated with these activities shall be estimated and subtracted from the project's net emissions reductions.

REDD-MF prohibits the use of the following leakage mitigation techniques; "*Agricultural lands that are flooded to increase production (e.g. paddy rice); Intensifying livestock production through use of "feed-lots"2 and/or manure lagoons"*. Increased fertilizer emissions in the project scenario would be captured by E-NA.

Conformance	Yes ☒	No ☐	N/A ☐

6.2 The methodology shall account for market leakage if timber production is significantly affected, even if the illegal production is prevented or reduced. (II. Step 5, Assess and Manage Leakage, paragraphs 23, 24, 25, 26 and 27)

Note that the VCS provides a default table of market leakage deductions that can be referenced by a methodology.

Findings from Assessment on 26 November 2010
Paragraphs 23 and 25 apply to this REDD methodology. Market leakage is handled in the module LK-ME. *23. Leakage caused by market effects is not considered except for the case where timber production is significantly affected.* The Methodology Developers have decided to also include market leakage deductions for fuel wood which is conservative. *25. For REDD projects, any carbon credits generated from stopping illegal logging activities (to the extent they supply regional/global timber markets) shall also be subject to these market leakage discounts (following the Table 2 guidance for activities that "Substantially reduce harvest level permanently").* The module does not distinguish between legal and illegal logging, so all reduced timber supply is subject to market leakage deductions.

Conformance	Yes ☒	No ☐	N/A ☐

[2] Feedlots are defined as areas in which naturally grazing animals are confined to an area which produces no feed and are fed on stored feeds

7 Monitoring:

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 Assessment on 26 November 2010			
The data and parameters tables in M-MON show what needs monitoring.			
Conformance	Yes ☒	No ☐	N/A ☐

7.2 The methodology shall contain a procedure to monitor and document the implementation of the project on land areas within the project boundary.

Findings from Assessment on 26 November 2010			
In Step 3 of REDD-MF and M-MON it is made clear that the whole project area must be monitored for degradation and deforestation. This will assess the extent to which the project has been successfully implemented.			
Conformance	Yes ☒	No ☐	N/A ☐

7.3 The methodology shall contain appropriate and correct sampling design procedures for the ex-post calculation of actual GHG emissions and determination of the ex-post baseline GHG emissions by sinks (if required). The sampling design may, include determination of number of plots, and plot distribution, etc.

Findings from Assessment on 26 November 2010			
The carbon pool modules contain best practice guidance on sampling design and execution. The module M-MON (and BL-UP) reference best practices in the gathering of remotely sensed data.			
Conformance	Yes ☒	No ☐	N/A ☐

7.4 The monitoring plan in the methodology shall be compatible and consistent with the proposed baseline methodology and be described in an adequate and transparent manner.

Findings from Assessment on 26 November 2010			
The modules M-MON and REDD-MF prescribe the same monitoring approach for all baseline scenarios. This is acceptable, as it is a comprehensive approach to monitoring and is suitable for all project types.			
Conformance	Yes ☒	No ☐	N/A ☐

Note: The monitoring methodology and results will determine the ex-post emissions estimation for the baseline, project emissions and leakage which are assessed in the sections above.

8 Data and parameters:

8.1 The methodology shall have appropriate procedures for how project participants should select any parameters in cases where these are not provided in the methodology (e.g.

from official statistics, expert judgment, proprietary data, IPCC Good Practice Guidance for LULUCF, commercial data and scientific literature.)

Findings from Assessment on 26 November 2010			
The data and parameters tables in all modules provide adequate guidance on parameter selection.			
Conformance	Yes ☒	No ☐	N/A ☐

8.2 The methodology shall present equations in a clear, consistent, mathematically correct format which allows data to be traced through them.

Findings from Assessment on 26 November 2010			
The methodology's equations are presented in a clear, consistent, mathematically correct format which allows data to be traced through them.			
Conformance	Yes ☒	No ☐	N/A ☐

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, 5.1), summarised below and the full principals at the top of this report.

9.1 The methodology shall be compatible with the VCS project level principles, as explained in more detail in section 1.3 of this report. These principles are relevancy, completeness, consistency, accuracy, transparency and conservativeness.

Findings from Assessment on 26 November 2010			
The methodology was found to comply with the VCS principals. The methodology is relevant in that it does not include information outside the scope of the tasks that each module performs. It is complete in that, as a set of modules they allow a project to be formulated for unplanned deforestation, planned deforestation or unplanned degradation. The modules were checked for internal consistency as well as consistency between modules. The modules were found to correctly reference each other. The modules strive for accuracy in the thresholds set for data requirements. For example, trends in past deforestation rates can only be used when a minimum goodness of fit is found between the data point and the trend. The modules are transparent in that they require full documentation of assumptions and the steps executed. Finally, the modules were found to be conservative to the extent that they would not allow systematic over-estimation of the GHG benefits from a project. For example, carbon stock enhancements cannot be credited where the baseline BL-DFW is used. Ultimately, each project must use any methodology in a conservative way through conservative data selection.			
Conformance	Yes ☒	No ☐	N/A ☐

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 Methodology Developers in this case shall:

i. document the methodology; and

ii. 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

iii. provide the VCS Program verifier with the actual rejection document(s) including explanation of why the methodology was rejected (VCS 2007.1, S6.1).

Findings from Assessment on 26 November 2010			
This methodology, to the knowledge of the auditors, has not been rejected from any other GHG program. It could not have been rejected from CDM because the CDM's scope does not cover REDD. The methodology was submitted to the American Carbon Registry for consideration, but was withdrawn from consideration by the methodology developer, as they preferred to complete the VCS approval process before any other GHG program consideration.			
Conformance	Yes ☒	No ☐	N/A ☐

11 Public Review

11.1 The Methodology shall be posted for public comment in accordance with VCS guidelines. The methodology developer shall demonstrate how it has taken due account of all and any such comments.

Findings from Assessment on 26 November 2010			
The public stakeholder comments were solicited as part of the initial TUV-SUD part of the validation. This was before the June 2009 published VCS requirements for the double approval process. TUV-SUD conducted a 30 day stakeholder period on-line, in which there were two comments submitted. This process was posted at the following website: http://www.netinform.de/KE/Wegweiser/Guide2.aspx?ID=6142&Ebene1_ID=49&Ebene2_ID=1978&mode=4 These received comments were sent to VCS and Avoided Deforestation Partners and reported upon initially by TUV-SUD and then by SQS, which deemed them to have been addressed. Rainforest Alliance reviewed the comments and provided responses in Table 1 below.			
Conformance	Yes ☒	No ☐	N/A ☐

Table 1: Public Comments

Comment	Meth Reference	Rainforest Alliance Response
1. The second half of the first required condition makes the module obsolete. In almost no cases is permission given to deforest land for firewood and charcoal. Usufruct rights to forest products exist, but the right to deforest does not, not even the right to degrade.	BL-DFW	There is no longer a required condition surrounding the permissibility of fuelwood collection in the module BL-DFW.
2. Estimation of household consumption by interviews is notoriously unreliable and some of the firewood/charcoal will be exported for sale elsewhere, correct information on which is unlikely to be shared.	BL-DFW	The module states that other forms of data collection and verification of fuelwood use are acceptable, depending upon circumstances.
3. Past rates of degradation are extremely difficult to estimate in fact. Hence projects designed to reduce this kind of degradation through adoption of sustainable management should be rewarded on the basis of stock increases from time t1 at start of project to time t2 at end of period (forest enhancement) rather than in reduction in the rate of degradation. The new text for REDD explicitly includes forest enhancement meaning that this is a legitimate, and much more sensible way of approaching this kind of degradation.	M-MON	Equation 1 of M-MON shows that credits for carbon stock enhancement cannot be claimed for areas where the baseline BL-DFW is used. This is conservative.
Brief description of the matters that the comment refers to: Map accuracy assessment, in particular the claim that "The minimum map accuracy should be 90% for both, the “forest” class and for the “deforestation” category" Comment: A minimum map accuracy of 90% is well above industry standard, which is generally set at 80%. A minimum map accuracy of 90% would be very difficult to achieve for most projects, and would require excessive investment in high resolution remote sensing imagery, and/or ground truthing programs. It is suggested that the required minimum map accuracy be set at 80%.	BL-UR "Estimation of the baseline rate of unplanned deforestation" (Now included in BL-UP)	Regarding section 1.2.4, there is a concern that 80% accuracy in distinguishing forest from non-forest would not allow statistically significant results of deforestation to be produced if deforestation rates are low. In addition the 80% is not mandatory as it is a “should” condition, so in fact no minimum exists.

Appendix C: DETAILED ASSESSMENT FINDINGS FOR EACH MODULE

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Module:	**26 November 2010 findings based on:** REDD MF REDD Methodology Framework, Version 1.0, November 24, 2010	**Date Complete:**	26 November 2010 (Final)
Filename:	REDD MF REDD methodology framework 9-08-10	**Auditors:**	Adam Gibbon, Jeff Hayward and Frank Werner

Module:	**01 November 2010 findings based on:** REDD MF REDD Methodology Framework, version 1.0 (August 2010)	**Date Complete:**	01 November 2010 (Draft Final)
Filename:	REDD MF REDD methodology framework 9-08-10	**Auditors:**	Adam Gibbon, Frank Werner and Michael Obersteiner

Module:	**19 August 2010 findings based on:** REDD MF REDD Methodology Framework, version 1.0 (April 2010)	**Date Complete:**	19 August 2010 (Draft)
Filename:	REDD MF REDD methodology framework	**Auditors:**	Adam Gibbon, Frank Werner and Michael Obersteiner

Audit Ref	Doc Ref	Findings	CAR/OBS	Actions taken by Module Developer to address CARs
1	19 113-4	**19 August 2010** The framework is based on the current version of the VCS Tool for Methodological Issues. It is incorrect to say it is based on the 'latest' version, as this may not be true once a new version is released. In most cases the module refers to other modules without reference to a version (for examples see lines 292 and 294). In cases where the module is actually a CDM tool e.g. E-NA, the modules and tools section on p2 tells the reader that the latest CDM version applies. However, on p14, line 433 reference is made to the "latest version of the VCS approved module….(X-STR)" (for one more example see line 505). It is not clear why in some cases it is necessary to refer to the latest versions, but in all the other cases it was not. In most cases CDM tools have the pre-fix "T" in the framework's	**19 August 2010** **REDD-MF CAR 01/10** The Module Developer shall correctly and consistently refer to the versions of VCS/CDM modules, tools and documentation.	**Reply to findings of 19 Aug 2010** Hopefully all these issues are clearer in the most recent version. Tools and modules are defined in the methodology and it is this definition rather than the CDM's definition that is used. We have removed latest version for modules but not for CDM tools.

		numbering structure. However E-NA, also a CDM tool is described as a module on p2 and does not have a "T" prefix. There is no guidance provided on which version of T-SIG is to be used (it was explained to the auditors that T-SIG will be replaced by the CDM Significance tool). Footnote 15 (p4) references modules that no longer exist. **01 November 2010:** Whilst some of the consistency issues have been addressed closing **REDD-MF CAR 01/10**, a new issue has been introduced by referencing an as yet unreleased VCS document and the module names are still not used correctly. The Framework no longer refers to the "latest version of the VCS Tool for Methodological Issues". Now it states that it follows the structure and procedural steps of the "AFOLU requirements". The AFOLU requirements are currently in draft form and part of the VCS 2011 standard. Whilst references to the VCS 2011 are acceptable in a general sense, the modules should not imply that they are in compliance with the, since the final versions have not been released and it is not under the scope of this assessment to assess against them. The Framework now requires the use of the latest version of tools. The Framework uses its own definition of tools and modules which is done consistently. T-Sig now references the latest version of the CDM significance On page 2, the naming of the modules in this document still does not correspond to the titles of some of the modules referred to (e.g LK-ME, LK_DFW, E-BB, X-STR)). These are considered to be typos and thus are now covered by **REDD-MF OBS 05/10.** **26 November 2010**	**01 November 2010:** **REDD-MF OBS 14/10** The Module Developer should not imply conformance with the VCS 2011 as the final versions do not exist yet. **REDD-MF OBS 05/10** The Module Developer should present the module free from grammatical errors, typos and structural inconsistencies. **26 November 2010**	**Reply to findings of 01 November 2010** The sentence on conformance with the AFOLU Requirements has been removed as it did not serve a methodological purpose. Module titles are all now correct in the list on page 2

		The sentence referring to conformance to as of yet un approved VCS guidance was removed. The modules are now correctly referred to by name.	No CARs or OBS raised.	
2	26	**19 August 2010** The VCS do not provide a definition of degradation, thus one is required. Any VCS definitions which subsequently emerge in later versions should take precedent. **01 November 2010:** The module references the VCS definition of degradation. At present, there is no approved VCS definition. There is a draft VCS definition, which can be used. However, it should not be referenced, as it is subject to change. **26 November 2010** The forest degradation from the IPCC Good Practice Guidance 2003 was adopted. This is an accepted definition. This closes **REDD-MF CAR 02/10.**	**19 August 2010** **REDD-MF CAR 02/10** The Module Developer shall define all terms used that are not defined by the VCS. **01 November 2010:** **REDD-MF CAR 02/10** The Module Developer shall define all terms used that are not defined by the VCS. **26 November 2010** No CARS or OBS Raised.	**Reply to findings of 19 Aug 2010** The 2011 update does. We are writing the methodology to be applicable in 2011 rather than in the final months of 2010. **Reply to findings of 01 November 2010** The reference to the VCS definition has been removed. The degradation definition has been directly adopted and inserted as text with no reference to the VCS. Note that for all definitions the text requires VCS definitions to take precedence.
3	90	**19 August 2010** The Module on line 300 states that the baseline boundaries cannot overlap. The module would benefit from a clearer statement that to highlight that two project types cannot occur on the same piece of land. **01 November 2010:** A sentence has been added for clarification.	**19 August 2010** **REDD-MF OBS 01/10** The Module Developer should provide a clearer statement regarding the restriction that 2 project types cannot be carried out on the same piece of land. **01 November 2010:** No CARs or OBS raised.	**Reply to findings of 19 Aug 2010** The following sentence has been added: Thus two project types can not occur on the same piece of land.
4	113	**19 August 2010** The module, from line 113 onwards states,	**19 August 2010** **REDD-MF CAR 03/10** The Module Developer shall clearly	**Reply to findings of 19 Aug 2010** The section you reference has been amended to read:

		"*This REDD Methodology Framework is applicable to all project activities that fall within the AFOLU project category "REDD" as defined in the latest version of the VCS AFOLU Guidance document."* However, this is not the case, since there are many project types and related activities that are not covered by these modules. To provide one example, a forest may be being degraded due to illegal timber extraction – but this is not a project type that is covered by the modules. The VCS Tool for Methodological Issues and Guidance document are very clear on the project activity types (see p14 of the guidance) that are allowed and these are important as different rules apply to the different types. The Modules are not clear in categorising the project activities in line with these divisions. In particular, how the degradation component fits in with the VCS activity classes is never mentioned and in some places the degradation element is not mentioned when distinctions are being drawn between activity types (see II. Step 3, line 420). Note that the VCS Program Update dated 24 May 2010 contains updates to the definitions of frontier and mosaic deforestation and degradation patterns, but does not explicitly mention transition. The module does not mention if it is applicable to one or both of these and how, if at all that affects the approach taken to deriving baselines, quantifying emissions reductions etc. Rainforest Alliance is aware that the new 2011 standard may include a transition definition. **01 November 2010:** The module has amended text, such that the scope of the modules is no longer misleading. This closes **REDD-MF CAR 03/10.**	define the scope of the modules with respect to the VCS activity types. **01 November 2010:** No CARs or OBS raised.	*This REDD Methodology Framework is a compilation of modules and tools that together define the project activity and necessary methodological steps. By choosing the appropriate modules, a project-specific methodology can be constructed. The justification of the choice of modules and why they are applicable to the proposed project activity shall be given in the VCS-PD* *.* The methodology conforms with the 2011 update. This is the only approach for a methodology being written at this time. Otherwise aspects will be immediately out of date. Wherever distinctions are methodologically important with regard to VCS requirements they are made but artificially inserted differences and underlining VCS categories provides little to no added value.
5	131 269	**19 August 2010** The applicability conditions for all project types (p4) state that	**19 August 2010** **REDD-MF OBS 02/10** The	**Reply to findings of 19 Aug 2010** The nuance of "at the time of verification"

		the Proponents must show that the land is under their control (see also line 269). The VCS rules on this are slightly more nuanced, and full control is only needed at verification. See p16 of VCS Guidance for AFOLU. **01 November 2010:** The nuance of "at the time of verification" has been added.	Module Developer should reference the VCS rules on having the project area under the control of the Proponent. **01 November 2010:** No CARs or OBS raised.	has been added in both places.
6	Many	**19 August 2010** In general the modules writing style was found to be inconsistent, which makes reading difficult at times. For example: a. P5, Line 157: Only this bullet starts, "Only applicable if…", but all bullets are applicability conditions, so this seems unnecessary. b. P6: The bullets under 'degradation' all have a different sentence structure. c. P6, Line 203 and 204: the wording in bullet 1 does not flow from the text above. In isolation, each of these inconsistencies is not serious, however they accumulate to make the module more difficult than necessary to read. **01 November 2010:** The writing style of the module has been improved.	**19 August 2010** **REDD-MF OBS 03/10** The Module Developer should present the modules using a consistent writing style. **01 November 2010:** No CARs or OBS raised.	**Reply to findings of 19 Aug 2010** As was discussed in the meeting many of the applicability conditions are just repeating later methodological steps and as such provide little added value as applicability conditions. The number of applicability conditions has therefore been greatly reduced. This has hopefully reduced or even removed inconsistencies.
7	96, T1	**19 August 2010** Table 1 and Table 2 both provide guidance on carbon pool selection. Having this twice in the methodology is slightly different formats is confusing. In addition, the guidance provided does not align completely with the wording used in the VCS Program Update dated 24 May 2010. The reference to Table 1 in line 372 is a suspected typo. Should it refer to Table 2? If not this is somewhat confusing.	**19 August 2010** **REDD-MF OBS 04/10** The Module Developer should provide clear and consistent guidance on carbon pool selection that uses language that is the same as the latest VCS documentation.	**Reply to findings of 19 Aug 2010** We disagree. There is no contradiction. Table 1 provides broad guidance on tools and modules. Tables 2 and 3 provide more specific guidance on situations when pools and sources can and cannot be excluded. Also Table 2 and 3 are requirements for the PD.

		01 November 2010: Explanation accepted. The typo has been corrected.	**01 November 2010:** No CARs or OBS raised.	
8		**19 August 2010** In general the grammar and structure of the document was found to be inconsistent. For example: a. P5: Sometimes bullet points are sentences with full stops, other times they are not. b. P6, line 283: Parenthesis missing c. P6, line 181: Suspected typo "deforestation" d. Section II has numbered steps and lettered sub-steps. Section III has numbered tasks (although 2 are mentioned and only one is described). The general lack of consistency around heading numbering and structure makes the module hard to follow. The lack of numbering in titles will make it difficult for Proponents to refer to specific parts of the methodology in their PDDs. In isolation, each of these inconsistencies is not serious, however they accumulate to make the module more difficult than necessary to read. **01 November 2010:** The presentation has been greatly improved. Punctuation in lists is still found to be inconsistent, see **REDD-MF OBS 05/10**.	**19 August 2010** **REDD-MF OBS 05/10** The Module Developer should present the module free from grammatical errors, typos and structural inconsistencies. **01 November 2010:** No CARs or OBS raised.	**Reply to findings of 19 Aug 2010** We have worked to increase consistency in these areas
9	152	**19 August 2010** The first bullet point under 'unplanned deforestation' would benefit from clarification of exactly what spatial area it is required for. **01 November 2010:**	**19 August 2010** **REDD-MF OBS 06/10** The Module Developer should be clear about the spatial extent of which past data is require for unplanned deforestation. **01 November 2010:**	**Reply to findings of 19 Aug 2010** No longer applicable as the applicability conditions have been thinned down to those truly relevant and not repetitive

		No longer applicable as bullet point has been deleted	No CARs or OBS raised.	
10	164	**19 August 2010** The guidance around baseline renewal was found to be ambiguous. This is because references to the renewal period and triggers for earlier renewal are dispersed around the module (and within other modules). The revision of the baseline for unplanned deforestation every 5 years found on line 167 (p5): a) Is not consistent with p. 17 (line 544), p. 18 (lines 569f.) and p. 19f. (lines 630) on the triggers leading to a revision of the baseline; b) Is not consistent with the methodological guidance on p. 10 (lines 338ff) on the revision of the baseline for degradation These need to be cross referenced with the provisions for renewal provided in other modules for consistency. **01 November 2010:** More consistent guidance on the baseline renewal is now provided. This closes **REDD-MF CAR 04/10.**	**19 August 2010** **REDD-MF CAR 04/10** The Module Developer shall be clear and consistent in the conditions around baseline renewal, within the framework module and between modules. **01 November 2010:** No CARs or OBS raised.	**Reply to findings of 19 Aug 2010** We have worked to increase the consistency and this issue should now be consistent within the framework and between modules.
11	179	**19 August 2010** The applicability conditions for planned deforestation state that carbon stocks must be increasing or constant in the absence of the project, but also that any degradation occurring must be prevented. This was found to be somewhat unclear. **01 November 2010:** No longer applicable as this condition has been removed. However please see BL-PL, where a CAR has been raised concerning the removal of this applicability condition.	**19 August 2010** **REDD-MF OBS 07/10** The Module Developer should clarify the extent of degradation allowed prior to the project starting and during the project. **01 November 2010:** No CARs or OBS raised.	**Reply to findings of 19 Aug 2010** No longer applicable
12	201	**19 August 2010**	**19 August 2010**	**Reply to findings of 19 Aug 2010**

		It is not clear how the 'initial requirements' listed on p6 were defined. For example, the first requirement is that the significance of pools and emissions is determined using the tool T-Sig. In order to do this a number of other modules need to be used and steps completed, so it is not clear, why this is listed as the first initial requirement. The tool proponent is also instructed to use the tool T-Sig at other points in this module (Lines 91, 109, 204, 367, 387), so it is not clear why it needs re-emphasising here. Similarly, point four is about the need for uncertainty analysis, which is one of the last steps a proponent would undertake and is referred to many times elsewhere. To provide another example, the fifth initial requirement is a recommendation to use GIS and GPS systems. Firstly it is not clear why a recommendation is a requirement, and secondly it is not clear what aspect of the project their use if being recommended for. For VCS projects it is mandatory to provide project area data in KML format, so the use of GIS for this aspect cannot be a recommendation, but must be a mandatory instruction. **01 November 2010:** The issues surrounding initial requirements are no longer applicable as this section has been removed. This closes **REDD-MF CAR 05/10**.	**REDD-MF CAR 05/10** The Module Developer shall provide relevant and clear 'initial requirements' if these are necessary. **01 November 2010:** No CARs or OBS raised.	We agree with you that the Initial Requirements make little sense. They repeat poorly and contradict requirements found elsewhere. The framework should be bringing together the modules not attempting to replicate portions of them. My first concept had been just the highest level equations and not much else. It went in a different direction but here is a clear example of where deleting greatly improves the whole.
13	223f	**19 August 2010** The section on ex-ante assessments begins by instructing proponents to use the latest version of the VCS AFOLU Tool for methodological issues and goes on to provide "additional methodology". The numbered steps have a format similar but different from the Steps found in the VCS AFOLU Methodological Tool. This could potentially be confusing. **01 November 2010:** No longer applicable as the respective has been removed	**19 August 2010** **REDD-MF OBS 08/10** The Module Developer should provide clarity on how the module and the VCS AFOLU Tool for methodological issues must be used together. **01 November 2010:** No CARs or OBS raised	**Reply to findings of 19 Aug 2010** We have removed references to the tool. As we understand it the tool ceases to exist in January. In this case we think we are in a better situation if we just define steps here in the methodology.
14	282	**19 August 2010**	**19 August 2010**	**Reply to findings of 19 Aug 2010**

		The module states that the provision of digital spatial data is preferable (line 282). However, the VCS require the provision of spatial data in KML format. **01 November 2010:** A respective clarification has been inserted.	**REDD-MF OBS 09/10** The Module Developer should replace the optional language around digital spatial data provision with language that reflects the VCS requirements for project registration, namely KML shape file data. **01 November 2010:** No CARs or OBS raised	Now reads: *Geographic coordinates of each polygon vertex along with the documentation of their accuracy (from a geo-referenced digital map - the VCS requires the submission of spatial data in KML file).*
15	376	**19 August 2010** The language used to introduce the section on 'sources of greenhouse gases' is potentially confusing. It states, "*The project shall account for any significant increases in emissions of carbon dioxide (CO2), nitrous oxide (N2O) and methane (CH4) that are reasonably attributable to the project activity."* However, the section is about sources in the baseline scenario *and* those related to project activities. The same applies to the section on carbon pools. **01 November 2010:** While the new wording is appropriate for the emission sources to be covered, it seems not appropriate for carbon pools as any decreases, not just those relative to the baseline must be accounted for.	**19 August 2010** **REDD-MF OBS 10/10** The Module Developer should clarify in what scenarios the sources and pools are being considered for. **01 November 2010:** **REDD-MF OBS 10/10** The Module Developer should clarify in what scenarios the sources and pools are being considered for.	**Reply to findings of 19 Aug 2010** Added "relative to the baseline" in both places. I think this covers the point. **Reply to findings of 01 November 2010** Text now reads: The project shall account for any significant decrease in carbon stock in the project scenario and any significant increases in carbon stock in the baseline scenario, and may account decreases in the baseline scenario and increases in the project scenario.

		26 November 2010 The new text accounts for increases/decreases within the project scenario and/or baseline scenario as appropriate.	**26 November 2010** No CARs or OBS raised.	
16	400-402	**19 August 2010** The assessment of market leakage due to fuelwood and/or charcoal production goes beyond the requirements of VCS AFOLU guidance. This however is a conservative and sensible inclusion.	**19 August 2010** Note – no action required.	**Reply to findings of 19 Aug 2010** We realize this but choose to be overly conservative
17		**19 August 2010** The parameters and parameter descriptions were found to be inconsistent which causes difficulty in interpreting the equations. For example: e. Eqn 1: the three parameters on the RHS of the equation are cumulative sums up to time *t*. However on the LHS of the equation $C_{REDD,\,t}$ is given as a total at time *t. In equation 4, the parameters* $C_{REDD,t2}$ and $C_{REDD,t1}$ are described as being "Cumulative total net GHG emissions reductions up to time $_{tx}$". This was found to be somewhat unclear. (the flow of time units through the equations and modules requires further assessment) f. Eqn 2: The parameter $\Delta C_{BSL,\deg rad-FW/C}$ is written as $\Delta C_{BSL,degrade-FW/C}$ the parameter table at the end of the module. g. Eqn 2: Two parameter descriptions take the format, "Baseline net greenhouse gas emissions through…" whilst one is "Net CO2 equivalent emissions in the baseline from.." If there is a fundamental reason why these are described differently, the methodology would benefit from an explanation, but if they are equivalent, they must be written in a common and accurate format. (see also the parameter descriptions for eqn 3 where they are all appear similar, but are described differently). h. Eqn 2: The description of the parameter $\Delta C_{BSL,degrad-FW/C}$ does not describe that it only refers to degradation from a particular cause. i. Eqn 4: The LHS parameter is missing a comma.	**19 August 2010** **REDD-MF CAR 06/10** The Module Developer shall use parameters and parameter descriptions accurately and consistently throughout the modules.	**Reply to findings of 19 Aug 2010** E. I think this is synonymous but I can see how it is confusing. So for CREDD now reads at time t this distinguishing of time is necessary to allow time 1 and time 2 in the later calculation of VCUs – for the other parameters these have already been summed so they are the total at time t following the precedent of CDM and others F. This is now consistent with the BSL module and throughout this document G. Now consistent in REDD-MF and the originating modules. All net CO2 emissions H. It now does I. Now consistent J. No longer applicable K. I think you mean equation 4 in the version you received. Now have units.

		j. Eqn 4: BRR is described as a "portion of carbon credits". This language was not clear. Eqn 5: The parameter descriptions beneath equation 4 do not include units. **01 November 2010:** Parameter descriptions and units have been aligned and parameters in equations made consistent with the ones of the parameter descriptions. However, the newly introduced equations 4 to 6 and their parameter descriptions are still not fully consistent (see below). In the parameters tables in section IV, ΔC_p is said only to appear in equation 1, yet variants of it appear in equations 4-6. **REDD-MF CAR 06/10** has been closed and a new OBS opened, to reflect that the inconsistencies are now exceptions that do not hinder understanding, rather than the rule. **26 November 2010** The parameters tables have been amended to correctly reference the equations in which parameters occur.	**01 November 2010:** **REDD-MF OBS 15/10** The Module Developer shall use parameters and parameter descriptions accurately and consistently throughout the modules. **26 November 2010** No CARs or OBS raised.	**Reply to findings of 01 November 2010** Corrections made
18	Eqn 4	**19 August 2010** The equations in this module do not account for deductions made for uncertainty. This is resultant of the fact that the module X-UNC, in part 4 requires that the parameters $C_{REDD,t}$ is "modified" through the deduction of a leakage percentage (Eqn 7, X-UNC). Modifying a parameter is not consistent with any of the other equations in the methodology and is mathematically incorrect (Eqn 7 has no LHS). **01 November 2010:** Steps have been taken to address this issue. There is a new parameter, "Adjusted_$C_{REDD,t}$" which is derived in X-UNC. A	**19 August 2010** **REDD-MF CAR 07/10** The Module Developer shall include equations that allow for a deduction for uncertainty to be made in a manner consistent with the rest of the methodology and that is mathematically correct. **01 November 2010:** **REDD-MF CAR 07/10** The Module Developer shall include	**Reply to findings of 19 Aug 2010** I do not believe this CAR is applicable any more given the output of X-UNC as resulting from the SQS audit. However, to increase clarity sections have been rearranged and the use of Adjusted_CREDD has been made clear. Note this is exactly the approach that has been adopted by the CDM. **Reply to findings of 01 November 2010** Correction has been made referring to *Adjusted_C_{REDD}* in equations. And

		repetition of one of the equations from the modules is also in footnote 22 of REDD-MF. However, this adjusted value is not used in equation 8. There is a note in the section preceding section 8 stating that, "This adjusted *Adjusted_* $C_{REDD,\,t}$ shall be the basis for $C_{REDD,t2}$ and $C_{REDD,t1}$ in equation 8". It is not clear why the adjusted value is not used, rather than it just being 'the basis' for another parameter. After discussions with the developer it was agreed that this needs to be changed to be mathematically consistent. It should be noted that the uncertainty calculation level has been changed. The modules now allow uncertainty to be +- 15% at the 90% confidence interval, which while inconsistent with previously approved methodologies, is consistent with draft VCS 2011 AFOLU Requirements. **26 November 2010** Equation 8 now uses the parameter *Adjusted_*C_{REDD}. This closes **REDD-MF CAR 07/10.**	equations that allow for a deduction for uncertainty to be made in a manner consistent with the rest of the methodology and that is mathematically correct. **26 November 2010**	additional minor changes made for consistency here and in X-UNC
19	Eqn 4	**19 August 2010** The VCS Guidance for AFOLU indicates that the credits to be held in the buffer are "*determined as a percentage of total carbon stock benefits*" (p24 of AFOLU guidance). This means the calculation step is not as simple as just multiply the percentage by the credits (see example on p24 of AFOLU guidance). Therefore guidance must be provided on how a proponent would calculate the number of credits to go into the buffer. In addition, the buffer percentage derived from the risk assessment may vary for each of the project types (planned, unplanned, and degradation). The equations presented must be able to apply the unique percentages to each project type. **01 November 2010:** A new section has been introduced to determine the buffer in accordance with VCS guidelines. This closes **REDD-MF CAR 08/10.**	**19 August 2010** **REDD-MF CAR 08/10** The Module Developer shall provide the equation steps to calculate BRR. **01 November 2010:** No CARs or OBS raised.	**Reply to findings of 19 Aug 2010** The calculation of buffer withholding has been entirely reworked to meet the criteria you detail here.

20	Eqn 4 528- 529 531- 532	**19 August 2010** The text beneath equation 4 is not accurate with respect to VCS language. VCUs are said to be subject to a deduction for risk analysis, but in fact it is 'carbon credits' to which a deduction is made, once the deduction is made, VCUs are issued. **01 November 2010:** Text and equation has been modified to respect VCS language.	**19 August 2010** **REDD-MF OBS 11/10** The Module Developer should use language consistent with VCS when discussing VCUs and credits. **01 November 2010:** No CARs or OBS raised.	**Reply to findings of 19 Aug 2010** We believe the text is now appropriate
21	560ff	**19 August 2010** The sub-sections and tasks at the beginning of section III. 'Ex-Post Estimation' were found to be confusing. The first numbered bullet is, "Monitoring according to the monitoring plan" and the second is, "10-yr revision of the baseline as needed". The first numbered task is "monitoring according to the monitoring plan", yet within this task the first thing that is required of a developer is regarding "information required to periodically reassess the project baseline". It would seem that this was more related to the second numbered bullet. There is only 1 task in this section, so numbering it seems unnecessary. It is not made clear here that re-assessment of the baseline is not needed for planned deforestation projects. **01 November 2010:** The monitoring has now been introduced as Step 3 "Development of a monitoring plan" before the estimation of the quantification of the baseline and the (ex-ante) quantification of– which seems not really logical in the sequence; the text on ex-post monitoring has been clarified. This closes **REDD-MF CAR 09/10**. However, the following observation has been made: • In order to enhance clarity, a reference to the respective module is lacking, where guidance can be found for the	**19 August 2010** **REDD-MF CAR 09/10** The Module Developer shall provide clear guidance about how the ex-post estimation section is to be executed. **01 November 2010:** **REDD-MF OBS 16/10** The Module Developer should consider providing a reference to the respective module could be introduced where guidance can be found to monitor changes in forest cover (Task 1.a) first bullet point).	**Reply to findings of 19 Aug 2010** This section has been clarified in structure and relative to the originating modules. **Reply to findings of 01 November 2010** Added reference

		monitoring of changes in forest cover. **26 November 2010** Reference was made, which addresses **REDD-MF OBS 16/10**	**26 November 2010** No CARs or OBS Raised	
22	605ff	**19 August 2010** References to "driver variables" and "modelling approach" are not consistent with what BL-UP does. This may be an issue of clarity, however, line 574 does specifically state, "If a modelling approach has been used to project the rate of unplanned deforestation…." Yet BL-UP does not appear to have an option to model the rate, using historical projections instead. **01 November 2010:** The respective bullet points have been deleted. This closes **REDD-MF CAR 10/10.**	**19 August 2010** **REDD-MF CAR 10/10** The Module Developer shall ensure consistency with other modules. **01 November 2010:** No CARs or OBS raised	**Reply to findings of 19 Aug 2010** Edited for consistency
23	Gen	**19 August 2010** In the framework module REDD-MF, the leakage modules are referred to in the section on ex-ante assessments (see p13, p15 Eqn 1 & 3). Line 494 of REDD-MF asks proponents to use the modules (and others) to determine ex-ante estimates. However no guidance is provided on how to do this. It was explained to RA that the parameter tables were used to explain what to do in the ex-ante case. However when a sample was checked (LK-ASU), the guidance was missing. In addition, the lack of a note explaining that the parameter tables should be used to find guidance on ex-ante parameter values would mean many users may miss this crucial information.	**19 August 2010** **REDD-MF CAR 11/10** The Module Developer shall provide clear guidance on assigning values to parameters to make ex-ante assessments.	**Reply to findings of 19 Aug 2010** In the framework the following text was added: Prior to STEP 0 in Section II *For parameters that will be monitored subsequent to project initiation guidance is given in the parameter tables of the relevant modules for the values that shall be used in ex-ante calculations.* In Step 4 in Section II *For ex-ante estimation for specific parameters project proponents shall refer to the parameter tables in the appropriate modules.* The modules themselves have been edited to ensure ex-ante guidance is present in the parameter tables.

		01 November 2010: Respective guidance has been introduced, and found to be sufficient to close **REDD-MF CAR 11/10**. However, the framework module REDD-MF still does not provide full and consistent guidance for the quantification of the project scenario ex ante (i,e, parameter dCP in eq, 1). No reference is made to any tool, nor is any tool available. Note that the module M-EXP refers to the "ex-post monitoring". However, for the quantification of an ex ante scenario, in addition to the guidance on the selection of parameter values, guidance is needed on the scenario development for all the project activities covered under this methodological Framework. In step 4, the module does not explicitly address which modules to use for the quantification of leakage. **26 November 2010** Modules are referenced in Step 4. This addresses **REDD-MF OBS 18/10.** NOTE: there are two Step 4s. One should be Step 5.	**01 November 2010:** **REDD-MF OBS 17/10** The Module Developer should provide complete and consistent guidance on the ex ante quantification of the project scenario, including guidance on scenario development for all project activities covered in this framework, taking also into account mosaic or frontier deforestation if this distinction is considered relevant for the development of the project scenario. (replaces **REDD-MF CAR 11/10**) **REDD-MF OBS 18/10** The Module Developer should consider referencing the modules used for the quantification of leakage under Step 4. **26 November 2010** No CARs or OBS raised.	**Reply to findings of 01 November 2010** Delta C P is derived from M-EXP as is shown in the parameter table. M-EXP would then be used for developing the ex-ante estimate. It is termed ex-post monitoring but clearly can also be used for ex-ante estimation. A line has been added to the scope of M-EXP making this clear. Guidance on ex-ante use already existed in the parameter tables of M-EXP In Step 4 it does not say which modules to use but if you trace the parameters back to the parameter tables then you are told which modules to use. I have added which module each parameter comes from, immediately after the respective parameter in Step 4 just to enhance the clarity.
24	Gen	**19 August 2010** The modules approach to applicability conditions was found to	**19 August 2010** **REDD-MF OBS 12/10** The	**Reply to findings of 19 Aug 2010** We have worked to develop a consistent

		be inconsistent. Sometimes, applicability conditions were repeated in different modules, sometimes they were not. This causes confusion as to whether they apply. If the modules are only ever intended to be used as a suite, then repetition between modules is often unnecessary. **01 November 2010:** The approach to the use of applicability conditions has been streamlined.	Module Developer should develop a consistent approach to applicability conditions. **01 November 2010:** No CARs or OBS raised.	approach.
25	Table 3	**01 November 2010:** There is a discrepancy between Table 3 and the text (lines439 f.) with regard to the inclusion of fertiliser emissions from leakage prevention/avoidance. **26 November 2010** The changes made remove the discrepancy.	**01 November 2010:** **REDD-MF OBS 13/10** The Module Developer should ensure consistency of the text with Table 3. **26 November 2010** No CARs or OBS raised.	**Response to findings of 01 November 2010** Text now reads: Leakage prevention activities may lead to the increase in combustion of fossil fuels, however, any increase in emissions is considered insignificant. Where leakage prevention leads to a significant increase in the use of fertilizers module E-NA shall be used. T-SIG can be used to determine significance.
26		**01 November 2010:** Applicability conditions have been revised and regrouped. However, in the case of planned deforestation (and eventually of unplanned deforestation as well), no applicability condition ensures –neither in the framework nor in module BL-PL- that carbon stocks are not decreasing before deforestation. This would be necessary to ensure a conservative estimate as dCBSL,i does not depend on time (i.e. the year of deforestation)	**01 November 2010:** **See BL-PL CAR 05/10** The Methodology Developer shall ensure conservative emissions calculations in cases where the carbon stocks are decreasing prior to planned deforestation.	**Response to findings of 01 November 2010** See the correction to BL-PL regarding use of fuelwood modules. This applicability condition has been added to the framework and to BL-UP

		26 November 2010 The applicability condition that requires the quantification of leakage caused by displaced degradation through firewood collection has been added to BL-PL and BL-UP. This was thought to be the most relevant cause of decreasing stocks that could affect a project. Illegal logging would likely be impossible to monitor if leaked and if it continues, projects are required to account for it any way.	**26 November 2010** No CARs or OBS added.	

Module:	**26 November 2010 findings based on:** CP-AB Version 1.0, November 24, 2010 CP-D Version 1.0, November 24, 2010 CP-L Version 1.0, November 24, 2010 CP-S Version 1.0, November 24, 2010 CP-W Version 1.0, November 24, 2010	**Date Complete:**	26 November 2010 (Final)
Filename:	2. CP-AB Live biomass 3. CP-D Dead wood 4. CP-L Litter 5. CP-S Soil 6. CP-W Wood products	**Auditors:**	Adam Gibbon, Frank Werner and Jeff Hayward

Module:	**01 November 2010 findings based on:** CP-AB V1.0 August 2010 CP-D V1.0 August 2010 CP-L V1.0 August 2010 CP-S V1.0 August 2010 CP-W V1.0 August 2010	**Date Complete:**	01 November 2010 (Draft Final)
Filename:	2. CP-AB Live biomass 3. CP-D Dead wood 9-7 4. CP-L Litter 5. CP-S Soil 6. CP-W Wood products	**Auditors:**	Adam Gibbon, Frank Werner and Jeff Hayward

Module:	**19 August 2010 findings based on:** CP-AB V1.0 April 2010 CP-D V1.0 April 2010 CP-L V1.0 April 2010 CP-S V1.0 April 2010 CP-W V1.0 April 2010	**Date Complete:**	19 August 2010 (Draft)
Filename:	2. CP-AB Live biomass 3. CP-D Dead wood 4. CP-L Litter 5. CP-S Soil 6. CP-W Wood products	**Auditors:**	Adam Gibbon, Michael Obersteiner and Frank Werner

CP-AB

Audit Ref	Doc Ref	Findings	CAR/OBS	Actions taken by Module Developer to address CARs
1	3	**19 August 2010** The title of the module was not found to accurately reflect the content as it does not mention that it is limited to tree and non-tree pools and it mentioned "changes". **01 November 2010** The title now accurately reflects the content	**19 August 2010** **CP OBS 01/10** The Module Developer should revise the module title so it more accurately reflects the content. **01 November 2010** No CARs or OBS raised.	**Reply to findings of 19 August 2010** Title now reads: "Estimation of carbon stocks in the above- and below-ground biomass in live tree and non-tree pools"
2		**19 August 2010** The equations and parameters contained some inconsistencies: a. Below equation 1, the description of the penultimate parameter I does not mention that it is, "of species group j", when the subscript beneath the letter N implies it is. b. Below equation 2 and 5, the second parameter has too many commas. "$C_{AB\_tree,,,sp,i,t}$". The same problem exists for the first parameter of equation 12. c. Below equation 14, the subscript of the second parameter does not match the equivalent parameter in the equation. d. A sample of the equation references of the parameters in part III of the module were checked and found to be incorrect. CF was found to be in equation 12, but equation 12 was not listed in the parameter table on page 13. Equation 18 was listed for CF, but does not exist. The highest numbered equation in the module is 16, yet a number of the parameters are stated as occurring in equations with numbers greater than 16. e. On page 21, there is a parameter called $A_{sample\ frame}$. The box says it can be found in equation 22, which does not exist. A similar parameter, A_{sfpi} was found in equation 12. This represents and inconsistency.	**19 August 2010** **CP CAR 01/10** The Module Developer shall present all equations and parameters in a consistent and accurate manner.	**Reply to findings of 19 August 2010** Changes made as requested. Parameter table checked.

Audit Ref	Doc Ref	Findings	CAR/OBS	Actions taken by Module Developer to address CARs
		01 November 2010 The module is now presented consistently. This has involved making the corrections mentioned above as well as deleting two equations that were repetitive and unnecessary. This closes **CP CAR 01/10.**	**01 November 2010** No CARs or OBS raised.	
3	237	**19 August 2010** In part three it is stated that, "The mean carbon stocks in the non-tree aboveground biomass pool per unit area are estimated based on previously published or default data or field measurements". However, the steps that follow appear only to show the method for using field measurements. Steps for using published data are not provided. **01 November 2010** The footnote added provides clarification that default data can be used if it meets certain criteria. This closes **CP CAR 02/10**.	**19 August 2010** **CP CAR 02/10** The Module Developer shall clarify if and how project proponents can use published data as an alternative to field measurements to determine the non-tree above ground carbon stocks. **01 November 2010** No CARs or OBS raised.	**Reply to findings of 19 August 2010** Footnote added that reads: 1 Where using published or default data these data must be derived from peer-reviewed literature and must be appropriate to the species in the project area or to the geographic region, elevation and precipitation regime in the project area
4	274	**19 August 2010** Below equation 12, the parameter CF_i is said to be "dimensionless". This is not strictly true as it has units of t C t d.m.$^{-1}$. Other parameters that are ratios such as R are presented with units which are inconsistent. **01 November 2010** The units of parameters are now presented consistently. This closes **CP CAR 01/10**.	**19 August 2010** **See CP CAR 01/10** **01 November 2010** No CARs or OBS raised.	**Reply to findings of 19 August 2010** Changed

CP-D

Audit Ref	Doc Ref	Findings	CAR/OBS	Actions taken by Module Developer to address CARs
1	N/A	**19 August 2010** No negative findings. The module performed calculations using standard approaches. The parameters and equations were accurate.	**19 August 2010** None	**Reply to findings of 19 August 2010** ☺

CP-L

Audit Ref	Doc Ref	Findings	CAR/OBS	Actions taken by Module Developer to address CARs
1	38	**19 August 2010** A comma was found to be missing in the parameter $B_{Lisp,l,t}$ in equation 1. **01 November 2010** This has been corrected. This closes **CP CAR 01/10**.	**19 August 2010** **CP CAR 01/10** **01 November 2010** No CARs or OBS raised	**Reply to findings of 19 August 2010** Added
2	59	**19 August 2010** On page 3, in the data and parameters table for "Asp" the letters SP were not subscripted appropriately. This issue also occurs beneath equation 1. **01 November 2010** Subscripts are now used consistently. This closes **CP CAR 01/10**.	**19 August 2010** **CP CAR 01/10** **01 November 2010** No CARs or OBS raised	**Reply to findings of 19 August 2010** Corrected

CP-S

Audit Ref	Doc Ref	Findings	CAR/OBS	Actions taken by Module Developer to address CARs
1	64	**19 August 2010** In equation 2 the parameter $C_{SOCsp,l,t}$ appears to contain a typo. **01 November 2010** Typo has been corrected. This closes **CP CAR 01/10**.	**19 August 2010** **CP CAR 01/10** **01 November 2010** No CARs or OBS raised.	**Reply to findings of 19 August 2010** Corrected

CP-W V1.0

Audit Ref	Doc Ref	Findings	CAR/OBS	Actions taken by Module Developer to address CARs
1	54	**19 August 2010** It is not clear why the summing in equation 1 goes up to "Sps". Below equation 1, the parameter CFj is not correctly subscripted. In equation 2, the notations below and above the sigma sign do not correspond to common mathematical practice (see also equation 4). Below equation 2, the parameters do not all contain the subscripts that are found in the equation. Subscripts are also missing in the data and parameters tables. **01 November 2010**	**19 August 2010** **CP CAR 01/10** **01 November 2010**	**Reply to findings of 19 August 2010** Changes made. For the notations above and below the sigma sign in equations 2 and 4 we believe this case is different to common mathematical practice as most often there is an essentially unlimited number of species or sample plots so the notation is ty=1. Here ty is equal to five specific categories. For the sake of consistency I have made each read ty=s,w,oir,p,o, I have taken ty off from the top of the sigma and I have defined s,w,oir,p,o in the parameter list **Reply to findings of 01 November 2010**

Audit Ref	Doc Ref	Findings	CAR/OBS	Actions taken by Module Developer to address CARs
		The approach to summing is now consistent. Some subscripts are still missing in the data and parameters tables, e.g. for D or CF, WW SLF or OF. Below equation 2, the parameters do not all contain the subscripts that are found in the equation **CP CAR 01/10** has been closed due to the improvements made. New OBS, **CP OBS 02/10** has been opened to reflect the fact a few inconsistencies exist, but these are now the exception rather than the rule and they do not prohibit understanding. **26 November 2010** The order of Step 1 and Step 2 was changed, which is acceptable and clearer procedurally. Subscripts were added to equation 2 for the parameters and in the data and parameter tables.	**CP OBS 02/10** The Module Developer should provide equations, parameter descriptions and Data and Parameter Descriptions in Section III that are consistent. **26 November 2010** No CARs or OBS raised	Subscripts added, further consistency check conducted
2	71	**19 August 2010** Part 1, Option 2 contains an intermediate step (Step 2) which also applies to option 1. **01 November 2010** Step two has been inserted; however, from a logical approach, users have to define types of wood products from each species first (now step 2) before being able to apply Eq 1 in Step 1. This closes **CP CAR 03/10.** **26 November 2010**	**19 August 2010** **CP CAR 03/10** The Module Developer shall adapt the step-wise structure of Option 1 to the step-wise structure proposed for Option 2 or to merge the two options, as they only differ in Step 1. **01 November 2010** **CP OBS 03/10** The Module Developer should consider improving the logical flow between steps in CP-W. **26 November 2010**	**Reply to findings of 19 August 2010** Step 2 inserted in Option 1 **01 November 2010** I removed Part 1 as there seems to be no Part 2. For Option 1 defining the types of products is now Step 1.

Audit Ref	Doc Ref	Findings	CAR/OBS	Actions taken by Module Developer to address CARs
		The order of Step 1 and Step 2 was changed, which is acceptable and clearer procedurally. This addresses **CP OBS 03/10**	No CARs or OBS raised	

Module:	**26 November 2010 findings based on:** BL-PL Estimation of baseline carbon stock changes and GHG emission from planned deforestation, Version 1.0, November 24, 2010	**Date Complete:**	26 November 2010 (Final)
Filename:	7. BL-PL Planned baseline	**Auditors:**	Adam Gibbon, Frank Werner and Jeff Hayward

Module:	**01 November 2010 findings based on:** BL-PL Estimation of baseline carbon stock changes and GHG emission from planned deforestation August 2010	**Date Complete:**	01 November 2010 (Draft Final)
Filename:	7. BL-PL Planned baseline 9-7	**Auditors:**	Adam Gibbon and Frank Werner

Module:	**19 August 2010 findings based on:** BL-PL Estimation of baseline carbon stock changes and GHG emission from planned deforestation April 2010	**Date Complete:**	19 August 2010 (Draft)
Filename:	7. BL-PL Planned baseline	**Auditors:**	Adam Gibbon and Frank Werner

Audit Ref	Doc Ref	Findings	CAR/OBS	Actions taken by Module Developer to address CARs
1	23	**19 August 2010** Footnotes 2 and 3 were not found in other modules. It is not clear why they were not necessary elsewhere or why they were only necessary here. The first required condition is about the use of LK-ASP. BL-UP, for example, does not have an analogous requirement to use LK-ASU. **01 November 2010** Footnotes and applicability conditions have been removed, which is in line with the general approach adopted for this methodology. This closes **BL-PL CAR 01/10**.	**19 August 2010** **BL-PL CAR 01/10** The Module Developer shall be consistent with the treatment of applicability conditions between modules. **01 November 2010** No CARs or OBS raised.	**Response to findings of 19 August 2010** Footnotes 2 and 3 derived from an early auditor concern. We believe this is obvious and will remove from here and any other module in which it is found. Have removed the required condition for use of LK-ASP. This is defined in the framework and no need for endless repetition.
2	29	**19 August 2010**	**19 August 2010**	**Response to findings of 19 August 2010**

Audit Ref	Doc Ref	Findings	CAR/OBS	Actions taken by Module Developer to address CARs
		It is not clear what is meant when it is stated in the applicability conditions that, the "Entire property shall be included…" Does this include forest areas that were not going to be harvested? How would this impact later calculations? To provide an example, if an area of forest that was never intended to be harvested is included in the project area, how will this impact carbon calculations that project rates into the entire project area. **<u>01 November 2010</u>** The changes are found to allow for an appropriate inclusion of areas within the project area. This closes **BL-PL CAR 02/10**.	**BL-PL CAR 02/10** The Module Developer shall provide clarity on what areas must be included in the project area, ensuring that subsequent calculations involving the project area use these areas correctly. **<u>01 November 2010</u>** No CARs or OBS raised.	A previous auditor fear was that users could attempt to game the system by selectively including or excluding areas of the ownership in order to fog legal permissibility. For example where 20% can be deforested but 80% must be left forested, a user could exclude areas already deforested opening up new areas of permissibility. However, we agree that inclusion as an applicability condition is too broad and creates problems in later calculations. Therefore this has now been tackled in two places. Under legal permissibility the footnote has been extended to say: "*When considering legal permissibility the area of allowed deforestation shall be considered relative to total property areas including areas already deforested."* In addition the following text has been added for clarity in consistency with the other two baseline modules: *"The VCS requires all REDD projects to submit boundary data in a KML file.* "
3	Gen	**<u>19 August 2010</u>** The module contains typos: a. What appears to be an old comment has been left in on line 49 (*removed in June Version)*. b. Line 163 (section 1.2.7) states that four conditions	**<u>19 August 2010</u>** **BL-PL OBS 01/10** The Module Developer should present the module free from grammatical errors, typos and structural inconsistencies.	**<u>Response to findings of 19 August 2010</u>** Corrected

Audit Ref	Doc Ref	Findings	CAR/OBS	Actions taken by Module Developer to address CARs
		musts be met, but only 3 are listed. **01 November 2010** The typos listed above have been corrected.	 **01 November 2010** No CARs or OBS raised.	
4	89	**19 August 2010** The module requires that X-STR is used on data at a regional level. X-STR however is not appropriate for conducting stratification at a national/regional level due to its plot data focus. **01 November 2010** The reference to X-STR has been deleted; the new guidance is found to be appropriate. This closes **BL-PL CAR 03/10**.	**19 August 2010** **BL-PL CAR 03/10**: The Module Developer shall provide guidance on how to stratify at a regional level. **01 November 2010** No CARs or OBS raised.	**Response to findings of 19 August 2010** The module no longer refers to X-STR but instead directly provides guidance on criteria for stratification
5	182	**19 August 2010** Equation 2 appears to calculate the average deforestation rate across proxy areas. It is not clear yet whether the mathematically formula presented is correct. There is also an inconsistency with the parameter description in line 192. (n* vs. pn*) **01 November 2010** Parameter descriptions have been corrected. This closes **BL-PL CAR 04/10**.	**19 August 2010** **BL-PL CAR 04/10**: The Module Developer shall make equation 2 mathematically correct. **01 November 2010** No CARs or OBS raised.	**Response to findings of 19 August 2010** Corrected

Audit Ref	Doc Ref	Findings	CAR/OBS	Actions taken by Module Developer to address CARs
6	182	**19 August 2010** If equation 2 is used, uncertainty data would be created, yet the uncertainty module does not appear to account for uncertainty of the deforestation rate for planned deforestation. **01 November 2010** Respective guidance has been introduced in module X-UNC, which is found to be appropriate. This closes **BL-PL CAR 05/10**.	**19 August 2010** **BL-PL CAR 05/10** The Module Developer shall account for uncertainty generated when proxy sites are used to generate rate data. **01 November 2010** No CARs or OBS raised.	**Response to findings of 19 August 2010** It does now
7	210ff	**19 August 2010** It is not clear why section 1.4 'risk of abandonment' is not an applicability condition, since it is a requirement. **01 November 2010** The auditors agree that not including this as an applicability condition is in line with the other modules. No changes needed.	**19 August 2010** **BL-PL OBS 02/10** The Module Developer should make determining the 'risk of abandonment' an applicability condition. **01 November 2010** No CARs or OBS raised.	**Response to findings of 19 August 2010** It is part of the methodology. You follow the text to estimate and then get a result. We have tried to move to the situation where the applicability conditions are something you look at before start application of the methodology which will let users see if they can use it or not
8	Eqn 3	**19 August 2010** The parameters related to carbon pools were not found to align with the carbon pool modules. a. Eqn 3 has the parameter $C_{BSL,WP,I}$. This is not calculated in the module CP-W. If the BSL subscript has been introduced to another parameter, this should be done consistently and explained. For example, compare eqns 4 and 5 from BL-PL to 10 and 11 from BL-UP. They appear to do the same thing, but have very different notation patterns.	**19 August 2010** **BL-PL CAR 06/10**: The Module Developer shall present equations and parameters consistently and in a mathematically correct manner.	**Response to findings of 19 August 2010** A. BSL has been removed. We believe the differentiation is unimportant. It is the context of application that is important B. Corrected now has above and belowground non-tree C. RHS is now per strata too D. Corrected

Audit Ref	Doc Ref	Findings	CAR/OBS	Actions taken by Module Developer to address CARs
		b. The outputs from module CP-AB, carbon pool data divided in above ground and below ground, tree and non-tree components is not reflected in the notation for the parameter $C_{non-tree,i}$ of equation 5. c. Eqn 6: on the RHS the parameters are not per strata, but on the LHS the parameter is. d. Eqn 6: parameters on the RHS are presented s rates, when they are not they are amounts of GHG in a given year. **01 November 2010** These issues have been corrected. However, in equation 5 there is a parameter, "$C_{SOC-PD,I}$", this differs from, "$C_{SOC,PD-BSL,I}$" that is a product of CP-S. The changes made close **BL-PL CAR 06/10,** however, **BL-PL OBS 01/10** remains not fully addressed. There are two section '1.2's. **26 November 2010** The subscript has been updated. The section title numbers were corrected. This addresses **BL-PL OBS 01/10.**	**01 November 2010** **BL-PL OBS 01/10** **26 November 2010** No CARs and OBS raised.	**Response to findings of 01 November 2010** Both issues have now been corrected.
9	38	**01 November 2010** The applicability condition that required the baseline carbon stocks to be steady or increasing has been removed. Since leaked degradation will not be monitored, and the module does not adjust for reduced carbon stocks	**01 November 2010** **BL-PL CAR 05/10** The Methodology Developer shall ensure conservative emissions calculations in cases where the carbon stocks are decreasing	**Response to findings of 01 November 2010** The following applicability condition and footnote have been added: Where, pre-project, unsustainable fuelwood collection is occurring within the project

Audit Ref	Doc Ref	Findings	CAR/OBS	Actions taken by Module Developer to address CARs
		prior to degradation, it could lead to over-crediting the benefits of preventing.	prior to planned deforestation.	boundaries modules BL-DFW and LK-DFW shall be used to determine potential leakage[1]. [1] Where a project claims no fuelwood collection was occurring this shall be evidenced through a PRA process. Where fuelwood collection is claimed to be sustainable, the following criteria must in the absence of the project be met: a. The land area remains a forest; and b. Sustainable management practices are undertaken on these land areas to ensure, in particular, that the level of carbon stocks on these land areas does not systematically decrease over time (carbon stocks may temporarily decrease due to harvest); and c. Any national or regional forestry and nature conservation regulations are complied with. This definition follows the CDM: EB 23, Annex

[1] Where a project claims no fuelwood collection was occurring this shall be evidenced through a PRA process. Where fuelwood collection is claimed to be sustainable, the following criteria must be met:

a. The land area remains a forest; and
b. Sustainable management practices are undertaken on these land areas to ensure, in particular, that the level of carbon stocks on these land areas does not systematically decrease over time (carbon stocks may temporarily decrease due to harvest); and
c. Any national or regional forestry and nature conservation regulations are complied with.

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Audit Ref	Doc Ref	Findings	CAR/OBS	Actions taken by Module Developer to address CARs
		<u>26 November 2010</u> The applicability condition that requires the quantification of leakage caused by displaced degradation through firewood collection has been added to BL-PL (and BL-UP). This was thought to be the most relevant cause of decreasing stocks that could affect a project. Illegal logging would likely be impossible to monitor if leaked and if it continues, projects are required to account for it any way. This closes **BL-PL CAR 05/10.**	**<u>26 November 2010</u>** No CARs or OBS raised.	18

Module:	**26 November 2010 findings based on:** BL-UP Estimation of baseline carbon stock changes and greenhouse gas emissions from unplanned deforestation – Version 1.0, November 24, 2010	**Date Complete:**	26 November 2010 (Final)
Filename:	8. BL-UP Unplanned baseline	**Auditors:**	Adam Gibbon, Jeff Hayward and Frank Werner

Module:	**01 November 2010 findings based on:** BL-UP V1.0 – August 2010 9-10-10	**Date Complete:**	01 November 2010 (Draft Final)
Filename:	8. BL-UP Unplanned baseline	**Auditors:**	Adam Gibbon and Michael Obersteiner

Module:	**19 August 2010 findings based on:** BL-UP V1.0 – Feb 2010	**Date Complete:**	19 August 2010 (Draft)
Filename:	8. BL-UP Unplanned baseline	**Auditors:**	Adam Gibbon and Michael Obersteiner

Audit Ref	Doc Ref	Findings	CAR/OBS	Actions taken by Module Developer to address CARs
1	22	**19 August 2010** The VCS Program Update dated 24 May 2010 has clear definitions of 2 types of unplanned deforestation and degradation that are allowed. These are mosaic and frontier. The module does not use the two definitions; rather it merges them into one project type AUDD. The module does not set criteria for defining the two types are defined in the program update. For example, frontier deforestation is linked to new infrastructure being built during the crediting period. The program update is clear that evidence must be presented regarding the plans for this to happen. However, the module does not link to this requirement.	**19 August 2010** **BL-UP CAR 01/10**: The Module Developer shall define how the unplanned deforestation types fit defined VCS project types and follow the applicable VCS rules for each type.	**Reply to findings from 19 August 2010 Assessment** The module is in conformance with the 2011 update. It would be unwise to conform with existing guidance that will imminently change almost immediately invalidating the methodology. Essentially the methodology is for the single category AUDD. The methods are applicable across landscape configurations. Where they differ this is explicitly noted (I think only for location analysis in BL-UP). And again this is in conformation with the 2011 update.

		The module defines a third type of unplanned deforestation, "transition", which is not a recognised project type. However, this may be the same as the 'in-between' case described in the VCS 24 May program update. **01 November 2010** The Module in step 3 uses mosaic, transition and frontier configurations, as per the VCS 2011 AFOLU requirements definitions to determine is a spatial analysis is required (always for frontier, conditional for transition, and optional for all). It is correct that the only substantive difference in the VCS 2007.1 standard between mosaic and frontier deforestation is that for the latter rates of deforestation from the surrounding area may not be appropriate. The methodology handles this by requiring spatial analysis in the case of frontier configurations, such that the rate derived elsewhere is mapped realistically into the project area. As such **BL-UP CAR 01/10** is closed**.**	**01 November 2010** No CARs or OBS raised.	
2	146	**19 August 2010** In section 1.1.1.1 the consideration of social and economic factors that could cause the likelihood of deforestation to differ was found to be weak. For example the presence of guerrillas or drug gangs (a social factor) was not considered in the reference region definition. The section 1.1.1.1a where the 'main agent of deforestation' is considered has good intentions, but would not fully capture potential differences. For example the first bullet that covers the proportion of agriculturists vs. ranchers would miss differences between industrial agriculturists and small scale agriculture. The deforestation patterns attributed to these two groups may differ in the future as	**19 August 2010** **BL-UP CAR 02/10**: The Module Developer shall allow for the consideration of other factors that may be important in the definition of the reference region.	**Reply to findings from 19 August 2010 Assessment** Industrial agriculturalists are excluded (see applicability condition) and from the reference case areas deforested by such land owners are also excluded (see point f – exclusion of planned deforestation) We have added social factors to both reference (RRD-reference region for deforestation rate) and to leakage belt: a) **Social factors** having an impact on land-use change patterns within the reference region and the project area must be the same or have the same effect. Examples can include presence of gangs or guerillas, or the ethnic composition of local populations. I don't think we want to give auditors the scope to look at other areas. It is rough for a project if they have followed the methodology exactly and

		they will respond to different incentives. The text in section 1.1.1.1, if interpreted literally, does not give scope for auditors to check other factors that may be important (such as those mentioned above); "The reference region shall be representative of the general patterns of unplanned deforestation that are influencing the project area and its leakage belt as defined below. The reference region does not need to be contiguous with or encompass the project area. " **01 November 2010** Text was added stating that "factors having an impact on land-use change patterns within the reference region and the project area must be the same or have the same effect. Examples can include presence of gangs or guerillas, or the ethnic composition of local populations." This adequately addresses the concerns raised in the earlier assessment. However, the following finding from the previous assessment does not appear to have been addressed, "*The section 1.1.1.1a where the 'main agent of deforestation' is considered has good intentions, but would not fully capture potential differences. For example the first bullet that covers the proportion of agriculturists vs. ranchers would miss differences between industrial agriculturists and small scale agriculture. The deforestation patterns attributed to these two groups may differ in the future as they will respond to different incentives*." However, one of the applicability conditions excludes large scale industrial agriculture. The auditors accept that if this module is exhaustive, no further analysis should be	**01 November 2010** No CARs or OBS raised.	spent significant resources identifying an area and conducting an analysis and the auditor identifies something they had not thought of that invalidates what has been done to date. We prefer to be complete as far as is reasonable here.

		necessary. However, if a not-yet-considered factor stood out to an auditor as one that rendered the RR inappropriate for calculating a rate for the baseline, then a CAR would be raised. This would happen regardless of the methodology's wording since there are overarching VCS principals such as conservativeness that an auditor must audit against. As such, no further issue will be taken with this point. **BL-UP CAR 02/10** is closed.		
3	158	**19 August 2010** In section 1.1.1.3 it is not clear how the leakage belt must be defined when: a. The project area is a number of discrete parcels b. When the pattern of deforestation is mosaic (mosaic patches cannot exceed a certain size, yet the leakage belt must be contiguous) **01 November 2010** The section on leakage belt definition has been revised and it is now clear how the leakage belt would handle the two cases mentioned above. However the description of how to handle cases where insufficient forest area exists to meet the criteria provided (lines 240-246), was found to be ambiguous. The first sentence appears	**19 August 2010** **BL-UP CAR 03/10** The Module Developer shall provide clearer guidance on how leakage belts are to be located, especially when they may conflict with where a project may wish to site a reference region. **01 November 2010** **BL-UP CAR 03/10** The Module Developer shall provide clearer guidance on how leakage belts are to be located, especially when they may	**Reply to findings from 19 August 2010 Assessment** This has been improved. The requirements are now as follows: *At a minimum the Leakage Belt area must be equal to 90% of the area of the project and must be the closest forest areas to the project area that meet the criteria given here. All parts of the leakage belt must at a minimum be accessible and reachable by project baseline deforestation agents with consideration of agent mobility. The belt must not be spatially biased in terms of distance of edge of belt from edge of project area without justification based on agent mobility or criteria for landscape and transportation listed below.* **Reply to findings from 01 November 2010 Assessment** New guidance including a new table has been added clarifying the minimum area requirements

		superfluous. **26 November 2010** The section on defining the leakage belt has been reorganised and is now more logical. The text describing the relaxing of certain criteria if sufficient eligible area exists has been removed and replaced by a table. The table was found to be clearer. This closes **BL-UP CAR 03/10**.	conflict with where a project may wish to site a reference region **26 November 2010** No CARs or OBS raised.	
4	New	**19 August 2010** *The new paragraph added in section 1.1.1.3 to the June version of the module does not make sense as it references "a through d" which do not exist in this section.* **01 November 2010** This issue has been corrected	**19 August 2010** *Only a note; this is outside the scope of assessment. However, will need addressing.* **01 November 2010** No CARs or OBS raised.	**Reply to findings from 19 August 2010 Assessment** Now a through d is appropriate as additional criteria were added
5	158	**19 August 2010** It is not clear if the leakage belt can be in the reference region or not. If not, then it is not clear what takes priority, assigning the land to the leakage belt, to using it as a reference region. If they can overlap, it is not clear how leaked deforestation would be accounted for in the reference region, when the baseline is reassessed. **01 November 2010** The methodology now has two reference	**19 August 2010** **BL-UP CAR 04/10** The Module Developer shall clearly define the reference region. **01 November 2010** **BL-UP OBS 05/10**	**Reply to findings from 19 August 2010 Assessment** This is now much clearer in that we now have a reference region for rate which can not include the project area and leakage belt and a reference area for location which must include both. **Reply to findings from 01 November 2010 Assessment** A table has been added in 1.1

		regions. RRD (1.1.1.1), the reference region for predicting the rate of deforestation, which does not include the leakage belt or project area, and the RRL (1.1.1.2), the reference region for projecting the location of deforestation, which does include the project are and leakage belt. This closes **BL-UP CAR 04/10**. The module would benefit from a figure showing the relationships between these areas. **26 November 2010** A table has been added in section 1.1 which provides more guidance.	The Module Developer should include a figure to explain the relationship between the various spatial components of a project. **26 November 2010** No CARs or OBS raised.	

6	219	**19 August 2010** In section 1.2.1 it is stated that data for baseline determination "for three points in time no less than three years apart covering no less that 12 years is required…" The module has no requirement to assess future driver patterns. The Developers explained during discussions that any attempt to model forward deforestation rates was subject to uncertainty and assumptions. Instead their proposed method of including 'triggers' that could, during the project period, be hit and require a re-assessment of the baseline. In principal the auditors found that this was an acceptable approach. However, the current use of triggers in the methodology was found not to be appropriate. Firstly, the 'land scarcity trigger' (equation 8) incorrectly references the project area, rather than the reference area. Secondly, since the baseline setting relies on historical data, if the baseline is immediately re-assessed, then the result will be the same as the original baseline (or very similar), so the intended outcome of using the trigger to reduce baseline rates would not work. The one trigger that exists does not cover all scenarios in which a baseline could be deemed to be no longer applicable given the nature of the baseline agent's ability and incentive to deforest. **01 November 2010**	**19 August 2010** **BL-UP CAR 05/10** The Module Developer shall develop safeguards such that the projection of rates is not likely to lead to baselines that exceed what would likely occur. **01 November 2010**	**Reply to findings from 19 August 2010 Assessment** The land scarcity trigger has now been updated and is much improved referencing the region. Now a trigger leads to the need for a baseline update within 5 years so new data points would be incorporated We hope the new trigger with regard to commodity prices will satisfy your final concern plus the updated trigger focused now on migration rather than population (which would have been difficult and/or expensive to demonstrate) **Reply to findings from 01 November 2010 Assessment**

		The following triggers have been introduced to induce a baseline re-assessment within 5 years: - 1. Construction and / or paving of a road through the project and / or leakage belt, or within 500 m of project geographic boundary This trigger does not differentiate between those roads which were already considered in the development of the baseline (i.e. planned), and those which were not. The former would not require a baseline reassessment. - 2. Changes in Government policy with regard to migration into the project region. This seems an appropriate trigger. - 3. Commodity prices for non-forest land use in the project region that differ by ≥30% above inflation over a sustained period (2 years) from prices present in the 5 years prior to the baseline period This may be unnecessary if commodity prices are not a driver of deforestation in the project area, but as the modules do not require a driver analysis, there would not be an analysis through use of the module to distinguish projects that this would affect and those which it would not. Whilst not applicable in some cases, this is a suitable trigger to have. - 4. Forest Scarcity: When the area suitable for expansion of non-forest land	**BL-UP CAR 05/10** The Module Developer shall develop safeguards such that the projection of rates is not likely to lead to baselines that exceed what would likely occur.	In discussion with project investors and the VCS we have grown concerned about the negative impacts of triggers on project certainty and thus potential investment. Also as they stand with verification only required every five years and revision required within 5 years of a trigger there would actually never be a need to respond to a negative trigger prior to the fixed revision date. As such we have removed all triggers except for the trigger concerned with forest scarcity. This trigger now leads to an immediate baseline revision if 5 or more years have passed since the baseline validation or if 5 years have not passed a revision the moment five years have been reached.

		in the RRL is less than or equal to 50 times the projected area of unplanned baseline deforestation in the RRL in year t. (see 2.4.2, BL-UP) The decision to have the exact criteria as an un-numbered condition in section 2.4.2 'identification of forest land that is suitable for deforestation', rather than in REDD-MF where the trigger is listed was not clear. The list of triggers is not exhaustive. It does not appear to be complete, for example, legal/policy changes, currency changes, adoption of voluntary policies, increased law enforcement. Because the module does not require a baseline driver analysis, it has to be assumed, any of these (and more) could be important, but many will not be. The triggers mean a re-assessment must be performed within 5 years. If the re-assessment is done immediately, then the issue raised in the August 2010 assessment regarding the change in conditions not having had sufficient time to have any impact on the rate still applies. In summary, whilst improvements have been made, issues remain with the scope of the triggers and their ability to make meaningful changes to baselines through reassessments. It should be noted that since the baseline rates are no longer extrapolated from a reference region, but taken directly from them, the initial concerns of the auditors around providing safeguards for the application of realistic rates has been appeased. **26 November 2010**	**26 November 2010**	

		The reason why triggers were introduced was as a way to try and reduce the risk that deforestation rates extrapolated (perhaps in an increasing non-linear manner) from past deforestation rates would prove to be unrealistic. This risk existed because the module demanded no analysis of the likely future trends in the deforestation drivers. Due to the changes made in the previous version this risk is not longer present. This is because rates are no longer extrapolated. Rather, the rates in the project scenario are only ever based on actual rates that have happened in the RRD. It is therefore acceptable to remove the triggers for baseline revision. This closes **BL-UP CAR 05/10.**	No CARs or OBS raised.	
7	228	**<u>19 August 2010</u>** Regarding section 1.2.4, there is a concern that 80% accuracy in distinguishing forest from non-forest would not allow statistically significant results of deforestation to be produced if deforestation rates are low. In addition the 80% is not mandatory as it is a "should" condition, so in fact no minimum exists. **<u>01 November 2010</u>** There is now a mandatory accuracy of 90%.	**<u>19 August 2010</u>** **BL-UP CAR 06/10** The Module Developer shall provide an explanation as to how the 80% threshold will not be too high as to detect low deforestation rates or change the allowable thresholds. **<u>01 November 2010</u>** No CARs or OBS	**<u>Reply to findings from 19 August 2010 Assessment</u>** Now it is a shall. This is now in section 2.1.1/2.1.4 We do not agree that setting the accuracy threshold to 80% for detecting change in forest cover is too broad and it would not result in high uncertainty in areas of low deforestation—change detection does not subtract two maps but rather just tracks actual pixels that went from forest to non-forest, which for majority of cases is readily detected. However, having said that we did pursue this topic further with discussions with a couple of remote sensing experts and have determined that PPs can be pushed further in this area without overly great harm. The experts tell us that setting an accuracy level of 90% for tracking deforestations is doable and should not create great technical difficulties except perhaps in some of the more open, low carbon forests, but even this can be overcome with more groundtruthing. So, in the interest of being more conservative in this methodology we have changed the 80% accuracy to 90% accuracy in the pertinent sections of Part 2.

		This closes **BL-UP CAR 06/10**.	raised.	
8	233	**19 August 2010** It is not clear in section 1.2.2 and 1.2.3 if it is necessary to track gross deforestation or net deforestation (including regrowth). Through discussions with the Module Developers it was understood that the intention was to calculate gross deforestation rates. If some land reverted back to 'forest', for example as plantations, the carbon balance would be accounted for through the allocation of a high post-deforestation biomass for those pixels. **01 November 2010** In section 2.2.3 the following sentence has been added, "Gross deforestation shall be measured rather than net deforestation." This closes **BL-UP CAR 07/10**.	**19 August 2010** **BL-UP CAR 07/10** The Module Developer shall be clear about whether gross or net deforestation must be calculated. **01 November 2010** No CARs or OBS raised.	**Reply to findings from 19 August 2010 Assessment** You are correct. In section 2.2.3 the following sentence has been added: Gross deforestation shall be measured rather than net deforestation.
9	273	**19 August 2010** In step 1.3 the rate of deforestation is projected forwards based on historical data and statistical tests. The results of this projection are of fundamental importance in projecting the number of credits that can be awarded for avoiding the deforestation. The section was found to be inadequate in terms of guidance for selecting the most appropriate regression, and too wide in allowing any non-linear regression. In step 1.3 p values are used to determine the appropriateness of the regressions defined. P values are not suitable on their own for assessing non-linear regressions. Any statistical tests prescribed, must be suitable for their purpose.	**19 August 2010** **BL-UP CAR 08/10** The Module Developer shall provide structured instructions for selecting the most appropriate and statistically significant baseline projection.	**Reply to findings from 19 August 2010 Assessment** Old step 1.3 now 2.2 has been greatly improved. For non-linear only power and logarithmic relationships are allowed. For all regressions an r2 of 0.75 or better is required along with the p

		01 November 2010 Section 2.2 has been clarified significantly. There are now only, historical average, linear, power and logarithmic options. The statistical tests for linear and non-linear regressions are that the regression must be significant ($p<=0.05$) and there must be an r^2 value >= 0.75. It is now also clearer that the rate from the first year of the historical reference period is applied to the first year of the baseline period. This closes BL**-UP CAR 08/10**.	**01 November 2010** No CARs or OBS raised.	
11	331	**19 August 2010** In step 1.5 there is a requirement to carry out an assessment of constraints. The link to the analysis in part 2 was found to be unclear. In the introduction to step 1.5, the reference region is mentioned as the place where the analysis is to be conducted. In section 1.5.1 it is not clear what area is to be assessed. Section 1.5.2 is about the project area. Section 1.5.1 is not clear on what needs to be done with the results. For example, is a parameter changed (such as area of suitable land), or is a new mask created for a map? It was not clear how the results of this feed into the parameter on the LHS of equation 8. Equation 8 was not understood by the auditors, as it seems to assume that all the original project area is suitable for deforestation. However this may not be the case (see comments above regarding section 1.5.1).	**19 August 2010** **BL-UP CAR 09/10** The Module Developer shall include clear and consistent guidance as to when lands unsuitable for deforestation are excluded from the emissions calculation process. **BL-UP CAR 10/10** The Module Developer shall ensure, if triggers for baseline re-assessment are used, that the time they get tested for is clear and that if they are triggered the data will be available to	**Reply to findings from 19 August 2010 Assessment** Hopefully this step is greatly clarified now. The focus is on the reference region for projection of location (RRL). We have created a new term LSC_{RRL} which is the forest area in the RRL that is suitable for conversion to an alternate land use. See also the entry in the parameter table for LSC_{RRL}. Equation 8 has been entirely reworked using LSC_{RRL}. As the area of deforestation each year is calculated as an area of the reference region for rate (RRD), the relationship between the available area for deforestation in RRL and the area for initial calculation in RRD. Where renewal is triggered the baseline must be updated within 5 years to allow time for new data to accumulate.

		The condition that triggers a baseline revision is not understood by the auditors. Is it saying that if, at the current rate the project area would be deforested in less than 50 years, then the baseline must be renewed? This implies no model which predicts deforestation within 50 years is allowed. How does it cope with rates that are increasing (linear or non-linear)? When a renewal is done, what needs to change in the way baselines are assessed? After discussion with the Developers, they acknowledged that the equation 8 was in error, and should actually refer to the reference region. It was also acknowledged that some time would need to pass before historical data to calculate new baseline rates accumulates.	adjust the baseline accordingly.	
		01 November 2010 The approach to calculating the forest area to be deforested in the baseline has changed primarily due to the introduction of a new reference region for projecting the location of deforestation and also the creation of a new parameter LSC_{RRL} which is the forest area in the RRL that is suitable for conversion to an alternate land use. However, the approach was still found to have logical flaws. Step 2.2 determines the historical rate of deforestation in the RRD that is to be projected into the future, $A_{BSL,RR,unplanned,t}$. Step 2.3 then calculates the rate of deforestation in the project area and leakage belt by adjusting the rate according to the ration of project area to RRD to create $A_{BSL,PA,unplanned,t}$ and $A_{BSL,LK,unplanned,t}$ (equations 4 and 5). Step 2.4 is an analysis of the constraints to	**01 November 2010** **BL-UP CAR 09/10** The Module Developer shall include clear and consistent guidance as to when lands unsuitable for deforestation are excluded from the emissions calculation process.	**Reply to findings from 01 November 2010 Assessment** A new parameter P_{RRL} which is the "Ratio of forest area in the *RRL* at the start of the baseline period to the total area of the *RRD*" has been added which adjusts the rate of deforestation in the project area and the leakage belt. We think it would be incorrect to limit the deforested area to suitable areas in this step. It would function as a double-deduction. The reference area according to the criteria must be representative of the project area. Deforestation is calculated per unit of the reference area and then applied to the project area. Similar proportional areas of unsuitable forest will exist in the reference area and in the project area. The per unit area deforestation therefore incorporates this unsuitability already. To have lowered the rate of deforestation due to the presence of unsuitable areas in the reference region and then do so a second time during this step would unfair on projects and not accurate with respect to what is occurring.

		deforestation. Step 2.4.1 is an analysis of potential constraints to deforestation in the RRL, which results in the creation of a parameter $LSC_{RRL,}$ which is the forest area suitable for conversion in the RRL. In step 2.4.2, equation 8 takes this parameter and subtracts the area that would have been deforested up to time t by multiplying the deforestation rate for the RRD by the ratio of land area in he LSC_{RRL} to the RRD's area. The outcome of this is a test to see if the remaining land area is greater than 50 times the rate of deforestation, if so a baseline re-assessment is triggered. It is not understood why the LSC_{RRL} is only used to determine if a trigger is required and not for adjusting the rate of deforestation in the project area and leakage belt. **BL-UP CAR 09/10** thus remains open. In step 3.4.2, where the location of future deforestation is mapped (in cases where a spatial analysis has been conducted), the area of deforestation assigned to the RRL each year is $A_{BSL,RR,unplanned,t}$. This value is based on the rate projected for the RRD (see equation 4) without an adjustment for the relative size of the RRL, or the area of suitable land available, which makes it inappropriate for use in the RRL. This issue was discussed with the developer. It was explained that the intention was that the RRL and RRD would be approximately the same size. To ensure this, a clause in section 1.1.1.2 states that the RRL must have an area within 5% of MREF. However MREF represents the minimum area of the RRD, not its actual area. As such, RRL and RRD could be very different sizes. Even if they were the same size, there would be no adjustment for the area of suitable land.		

		The trigger for baseline re-assessment is still present. It was explained to the auditors that because a project has 5 years to re-assess the baseline if the trigger is met, then this avoids projects being stuck in a loop of re-assessing the baseline each year. This addressed one aspect of **BL-UP CAR 10/10.** **26 November 2010** The Developers explanation that the LSC parameter should not be used to limit deforestation is acceptable given that the same proportion of unsuitable land must have existed in the RRD during the historical reference period. This closes **BL-UP CAR 09/10.** The minimum area of the RRL is now related to the RRD's area and not MREF. This is a logical approach. The module includes a new equation (4), which derives a baseline deforestation rate for RRL based in the rate in RRD and the ratio of their forested areas. This is a logical approach. **BL-UP CAR 10/10** is now closed.	**26 November 2010** No CARs or OBS raised.	
12	465	**19 August 2010** The lack of multicolinearity tests on the driver maps used to predict deforestation is not following modelling best practice.	**19 August 2010** **BL-UP CAR 11/10** The Module Developer shall include a test for co-linearity between driver maps used to estimate deforestation.	**Reply to findings from 19 August 2010 Assessment** Colinearity is not a concern here. Adding in additional terms does not necessarily increase the fit of the model, it can do the opposite. We just want to allow users to select the terms available to them that best predict deforestation. And even if related fine differences can be important. For example roads and cleared areas or roads and logging mills will be correlated but will be not provide an identical explanation of deforestation. We received the following comments from spatial modelers we consulted:

				"*I would guess the reviewer is applying his experience with parameteric statistics, where multicollinearity is more of a concern because you are trying to estimate and interpret model coefficients (e.g. slope coefficients in linear regression) and what they reveal about the strength and direction of the relationship between the response and a predictor variable. Within quantitative traditions that stress accurate prediction (such as machine learning and nonparametric techniques like Generalized Additive Models), multicollinearity is not given the 'air time' it is in parameteric statistics. This is because if two variables can effectively substitute for each other (they are highly collinear) then they should be equally good predictors of the phenomenon and having them both in the model won't change predictions significantly.* " "*Multicollinearity is a large concern when interpreting the regression coefficients of the independent variables in multiple regression analysis. However, spatial models do not interpret regression coefficients because they do not use regression. Thus the concern for multicollinearity is misplaced in my opinion. I have thought about this deeply for many years. There are an infinite number of ways to generate a suitability map. Geomod uses one repeatable method. All sorts of other methods exist, many of which entirely disregard tests for multi-collinearity, i.e. the neural net in LCM. Furthermore, I do not see how multicolllinearity has any influence on predictive accuracy. If anything, the presence of multicollinearity would indicate we could predict just as accurately with fewer variables. The presence of multicollinearity means that we have redundant variables, but that would not somehow boost our level of accuracy. We make certain we do not over inflate accuracy by separating calibration and validation information.*"
		<u>01 November 2010</u> The consulted spatial modellers are correct. The methodology for estimation does not require unbiased parameter estimates as for the spatial prediction the driver data does not seem to be used. Therefore **BL-PL CAR 11/10** can be closed	**<u>01 November 2010</u>** No CARs or OBS raised	

13		**19 August 2010** *New text has been added in section 2.4.2 of the June version of the module. It is not clear how the risk calculation affects rate.* **01 November 2010** Please see finding 11 above, where the new text is assessed.	**19 August 2010** *Only a note; this is outside the scope of assessment. However, will need addressing.* **01 November 2010** No CARs or OBS raised, although see finding 11 and related CARs.	**Reply to findings from 19 August 2010 Assessment** This was loose language. I can see how the word risk makes you think of permanence while in the language of spatial modelling risk means risk of deforestation since we are predicting deforestation rather than knowing exactly where it will occur. Now reads: Where location analysis has been conducted the area of deforestation to be used is $A_{BSL,RR,unplanned,t}$ allowing the allocation of deforested areas throughout the reference region for location of deforestation (RRL) based on highest likelihood of deforestation at any point in time as predicted by the spatial model. In this manner the specific spatial model may allow a higher deforestation rate in the project area than expected from a linear proportion if the model indicates higher likelihood of deforestation in the project area than elsewhere in the reference region, or alternately the model may lead to a lower rate within the project area.
14	Gen	**19 August 2010** The auditors are concerned that the current approach is not suitable for frontier regions. It is incorrect for the rate of deforestation to be projected into the future from a reference region which has already undergone frontier deforestation, this is because the project area will be 'behind' the reference region in terms of the timeline of frontier expansion.	**19 August 2010** **BL-UP CAR 12/10** The Module Developer shall provide clear guidance for mosaic, transition and frontier patterns on how the rates and spatial areas will be applied to generate a likely deforestation scenario. This must	**Reply to findings from 19 August 2010 Assessment** The VCS is moving to the situation where there is a single category for unplanned. We want to be in conformance with this. There will then be deforestation configurations – mosaic, transition and frontier. These configurations can lead to wrinkles and differences in calculation methods and some developers may choose to focus methods on just one configuration. However, broadly the same approach should be applicable and that is the direction we have taken. Now it is clear that the rate to be applied is the rate as calculated during the historical reference period. See Step 2.2. This is aided by the splitting of reference regions between a reference region for rate and a reference region for location.

			be especially considerate of cases where the reference region is in a different area from the project area.	
		01 November 2010 Changes have been made to address this CAR. Whilst the changes appear to be part way towards a solution, there are still issues that mean the baseline projected into the reference region is not being done in a mathematically logical way and that in some cases the outcome could be non-conservative. There has been a separation of the reference regions for rate calculation and location which ties into Step 3.0 where the configuration dependant requirements for spatial analysis are defined. This change appears logical, although as explained in finding 11 above, there are issues with how the rates are projected from the RRD to the RRL, without consideration for their differing sizes and the availability of suitable land. There is a clarification in step 2.2 that where a regression model is used, the rate from the first year of the historical reference period is applied to the first year of the project baseline period. This appears appropriate for situations where frontier wave patterns that happened historically elsewhere are being mapped into new frontier regions. However, it does not seem appropriate for mosaic cases where the change in rate in the	**01 November 2010** **BL-UP CAR 12/10** The Module Developer shall provide clear guidance for mosaic, transition and frontier patterns on how the rates and spatial areas will be applied to generate a likely deforestation scenario. This must be especially considerate of cases where the reference region is in a different area from the project area. **BL-UP OBS 03/10** The Module Developer should consider if the need to find areas where conditions matched historically will preclude the use of surrounding areas in mosaic deforestation cases and be overly	**Reply to findings from 01 November 2010 Assessment** The criteria for *RRD* have been adapted to make clear all must be appropriate at the start of the historical reference period as exist in the project at this time. The only exceptions are elements like soil type, slope, elevation and navigable river density which should not change through time. A single method is presented which is appropriate across all forms of unplanned deforestation. Frontier, transition and mosaic are artificial constructs (that we are responsible for). They help set methodological requirements such as how leakage should be considered and whether spatial modelling is required but they should not be overused. Deforestation is deforestation and a single method can be used to look at rates of historical deforestation. We believe artificially creating multiple methods is an unnecessary and unwarranted complication.

		RRD coincides with the change in rate that is happening around the project area (in cases where the rate is falling this would lead to an non-conservative scenario whereby the higher rates from the past were projected into the future). During a discussion with the developer it was explained that the intention was that in all cases the rate of deforestation to be projected would need to come from a historical period in the reference region. As such conditions in RRD at the start of the historical reference period must be similar to the conditions at the start of the project in the project area. However, where RRD is defined this was not found to be the case. In section 1.1.1.1.a the main agents of deforestation must be the same at the start of the historical reference period as they are at the start of the project. However in sections 1.1.1.1b-f were other criteria are listed, there is no such clause. This approach, whilst appropriate for frontier cases, may lead to difficulties for mosaic projects that want to use the surrounding area as a reference region. **<u>26 November 2010</u>** In section 1.1.1.1 the criteria for *RRD* have been adapted to make clear all must be appropriate at the start of the historical reference period as exist in the project at this time. Above, the Developer states that the only exceptions are physical factors not expected to change. This closes **BL-UP CAR 12/10**. It is accepted by the auditors that the Developers do not believe the requirements for RRD definition to be overly restrictive for projects. The modules future use can be the only test of this.	restrictive for project development. **<u>26 November 2010</u>** No CAR or OBS raised.	

15	524	**19 August 2010** In Step 3.1 "homogenous" carbon stocks are mentioned, but non definition is provided. This condition seems to create the condition for using the X-STR module or not. Considering the detail in the X-STR module it does not seem appropriate to have such a loose definition to determine if it is required or not. **01 November 2010** Step 3.1 is now Step 4.1. In Step 4.1 the use of X-STR is now mandatory. **BL-UP CAR 13/10** is closed.	**19 August 2010** **BL-UP CAR 13/10**: The Module Developer shall clearly define when the module X-STR is required. **01 November 2010** No CARs or OBS raised.	**Reply to findings from 19 August 2010 Assessment** Yes this is incorrect X-STR is mandatory and any conditions regarding how it is used will lie within X-STR. The text has been modified accordingly.
16	Gen	**19 August 2010** The equations, parameters, and parameter descriptions were found to include many inconsistencies. These were both internal (within one equation or table) and external (not linking to other modules). Examples are provided below, but a thorough review and correction of these is required by the project developer. a. Eqn 8: Parameter PA not defined beneath b. Eqn 10 and 11: The parameter $C_{AB,iPD}$ is not divided into tree and non-tree as in the module C-AB, so the parameters do not match. c. Eqn 12: The parameter C_{TOT-wp} differs from equation 15 where it is C_{TOT-hp} . It is also written in a different format beneath equation 15. $C_{HP,t}$ in equation 15 does not match the CP-W module. d. Eqn 16: The parameter on the LHS does not match the parameter listed below the equation. e. In section III (parameter tables) the	**19 August 2010** **BL-UP CAR 14/10**: The Module Developer shall present equations and parameters correctly and consistently within and between modules.	**Reply to findings from 19 August 2010 Assessment** A thorough review and correction has been undertaken. a. No longer relevant b. Non-tree is now included in both equations 10 and 11. c. It now is consistent within the module and with CP-W d. It does now e. No longer relevant f. Corrected

		parameter PA is not described the same way as it is within the methodology. PA is used in equation 8, but the table only says it is used in equations 1 and 2. f. In section III (parameter tables) the parameter $C_{wp,I}$ is said to be used in equations 10 and 11. When those equations were checked, it was found not to be used in them. **01 November 2010** The errors a-f listed above have been corrected. This closes **BL-UP CAR 14/10**.	**01 November 2010** No CARs or OBS raised.	
17		**19 August 2010** The flow of time through the equations was not found to be consistent. For example: a. Output parameters table – The first parameter has no time reference. t * has not yet been been defined in this module or the framework. b. Below equation 3 "t" is defined as, "a year of the proposed project term" which does not match with definitions found elsewhere (see lines 328 and 354 for examples) c. In line 487 "year X" is referred to, a convention not used elsewhere. d. In equation 16 two parameters which are "during year t" are added to one which is "in year t" and summed across the "years elapsed since the start of the REDD VCS activity". The result is a parameter ($GHG_{BSL,E}$) that is GHG emissions, "at year t". When this same parameter is used in equation 17 (although note that it changes subscript", it is now said to be for emissions	**19 August 2010** **BL-UP CAR 15/10**: The Module Developer shall present equations that have a logical flow of time.	**Reply to findings from 19 August 2010 Assessment** We have worked to increase consistency in the flow of time throughout all of the modules. Specifically: A 2nd output parameter should not have had a time component (to be consistent with calculation and with subsequent use). We would argue that you don't define t in the output parameter tables. These tables just show the outputs but for full understanding you clearly have to go to where each is calculated B t is now consistently defined through all the modules C Now year t D Corrected and made consistent with the modules where these parameters were defined E They do not and this is correct. This all have time summed already so they are values up to time t*. If you look at the CDM meths for example CAR-CDM = Delta C actual minus Delta C BSL – LK and then your offsets are time2 minus time1. So once you have summed by time all subsequent parameters are the current number and these are the basis of offset calculation

		"up to time t*". There appear to be multiple inconsistencies here. e. The first three parameters beneath equation 19 have no reference to time. **01 November 2010** The issues raised above have now been corrected. There is now a more consistent flow of time through the equations. With regard to the response to point 'e', whilst it is acknowledged that in REFF-MF equation 8 does have a form similar to that found in CDM methodologies, it does not explain (as CDM methodologies do) what t1 and t2 are. In addition, $A_{e.dRRL}$ (equation 8) does not have a time component, yet it changes depending on the year. Therefore **BL-UP CAR 15/10** remains open. **26 November 2010** A correction has been made to $A_{e.dRRL.}$ Appropriate text has been added to REDD_MF regarding the flow of time through the VCU calculation. This closes **BL-UP CAR 15/10.**	**01 November 2010** **BL-UP CAR 15/10**: The Module Developer shall present equations that have a logical flow of time. **26 November 2010** No CARs or OBS raised.	**Reply to findings from 01 November 2010 Assessment** $A_{e.dRRL}$ is now $A_{e.dRRL,t}$ Equation 8 in REDD-MF has been altered to include text similar to in the CDM methodologies.
18	Gen	**19 August 2010** The module was found to have a number of typos. Some examples are provided below: a. Line 149: the "(s)" after "discrete". b. Line 343 : ")" is missing c. Line 353ff : words are underlined here and not elsewhere d. Line 66ff: The list of steps 1.1-6 beneath the heading 'Part 1' do not match the steps that follow.	**19 August 2010** **BL-UP OBS 01/10**: The Module Developer should present the module free from typos.	**Reply to findings from 19 August 2010 Assessment** Corrected

		01 November 2010 The errors a-d listed above have been corrected. However new issues are now present: a. Line 21-22: required and exclusionary conditions are mentioned, when these no longer exist in the module. b. Line 264, Part 2. It is stated that six steps are implemented, when only four are listed below. c. Line 274, Step 2.1. it is stated the historical deforestation rate in the RRD and project area is calculated, yet the following steps only calculate it for the RRD (which does not include the PA). The PA by definition has no historical deforestation. d. The module uses paramaters that have the for P_x where X is a spatial component of the project such as PA. The description of these takes parameters was found to be ambiguous. For example, P_{PA} is, "Project area as a proportion of the total are of RRD." Using the word 'proportion' was found to be confusing since the PA is not part of the RRD. Rather, it appears the parameter is supposed to require a ratio of the two areas to be calculated (no calculation step for doing this is required). The parameters of this form would benefit from a clearer description. e. In step 2.4.1 it is stated that a parameter, "LSC_{RRL}" is "used" for this step. It appears that in fact it is the product of the step. f. Line 594, Step 3.4.1: Step 2.0 is referenced, when step 3.0 contains the eligibility criteria. g. Although not incorrect, the naming of the first and second parameters beneath equation 19 was found to be potentially confusing. The only difference between the two is that one has the extra subscript 'PA',	**01 November 2010** **BL-UP OBS 01/10**: The Module Developer should present the module free from typos.	**Reply to findings from 01 November 2010 Assessment** Corrections made for all apart from g. We can see how there can be room for confusion but there is the issue of consistency between modules that prevents much change here. Note one is net greenhouse gas emissions and one is net CO_2.

		yet both are for the project area. It is not clear why in the parameter description neither mentions that the value is for the project area. This omission makes the first parameter's meaning ambiguous, since it could be for any area (and there is no subscript to hint at the location either). h. The title of Step 4.5 is 'Calculation of net CO_2 equivalent emissions' is no longer in alignment with the language used in the parameters calculated in that step (net GHG emissions and net CO_2 emissions). **26 November 2010** The corrections have been made.	**26 November 2010** No CARs or OBS raised.	
19	168	**01 November 2010** In the definition of the RRL, it was not clear, or defended why 25% of the area must be non-forest. After discussions with the developer, it was understood that spatial models would require deforested areas from which to model deforestation. This is acceptable, however the 25% seems arbitrary and high, which could make setting RRLs in frontier regions difficult. **26 November 2010** The module has been updated to now require only 5% non-forest in the RRL. This is now better justified.	**01 November 2010** **BL-UP OBS 02/10**: The Module Developer should justify the minimum forest area for the RRL. **26 November 2010** No CARs or OBS raised.	**Reply to findings from 01 November 2010 Assessment** The 25% is arbitrary and you are correct that it is likely too high for some situations. Following discussion with our spatial modelling staff we have lowered the minimum to 5%. This is a sufficient area for the modelling but is not overly restrictive. Now non-forest can be between 5 and 50% and forest between 50 and 95% in the *RRL* at the beginning of the historic reference period.
20	Gen	**01 November 2010** In the revised version of the module changes have been made to the way reference regions are selected and how baseline deforestation	**01 November 2010** **BL-UP OBS 04/10**: The Module Developer should	**Reply to findings from 01 November 2010 Assessment** We do not agree. Changes can occur in the *RRD* during the historical reference period. By definition the project boundary will be areas of forest. Roads may be nearby – we are looking for the same in the *RRD*

		rates are applied to the project area. These could potentially limit the ability of projects to apply the methodology, so here we outline the impact of the revised changes. These are limitations of applicability for projects rather than non-conformities. Projects are now required to find RRDs that have conditions at the start of their historical reference period that are similar to those in the project area at the project start date. This will preclude the use of surrounding areas for projects where the main agents of deforestation, transportation networks, social factors, policies or regulations have changed during the historical reference period. This could be a common scenario. The baseline rates applied to the project area are no longer extrapolations from past data. Rather, as per lines 391-392, the rate pattern during the historical reference period is applied directly (i.e. the rate calculated from the 1st year of the historical reference period is applied in the first year of the project and so on). This means that the concerns over the extrapolation of trends is no longer relevant. However, this comes at the expense making reference region location more difficult (and in some cases potentially impossible), as explained above. **26 November 2010** The auditors accept that proof can only come in time. More importantly, the response confirms that the module has bee understood correctly.	consider the limitations of the methodologies use given the revised approach to RRD location. **26 November 2010** No CARs or OBS raised.	at the start of the historical reference period. We do not see this as a limitation to projects but proof will be when implementation occurs!

Module:	**26 November 2010 findings based on:** BL-DFW Estimation of baseline emission from forest degradation caused by extraction of wood for fuel, Version 1.0, November 24, 2010	**Date Complete:**	26 November 2010 (Final)
Filename:	9. BL-DFW Fuelwood baseline	**Auditors:**	Adam Gibbon and Frank Werner and Jeff Hayward

Module:	**01 November 2010 findings based on:** BL-DFW Estimation of baseline emission from forest degradation caused by extraction of wood for fuel (Version 1.0, August 2010)	**Date Complete:**	01 November 2010 (Draft Final)
Filename:	9. BL-DFW Fuelwood baseline	**Auditors:**	Adam Gibbon and Frank Werner

Module:	**19 August 2010 findings based on:** BL-DFW Estimation of baseline emission from forest degradation caused by extraction of wood for fuel (Version 1.0, April 2010)	**Date Complete:**	19 August 2010 (Draft)
Filename:	9. BL-DFW Fuelwood baseline	**Auditors:**	Adam Gibbon and Frank Werner

Audit Ref	Doc Ref	Findings	CAR/OBS	Actions taken by Module Developer to address CARs
1	19	**19 August 2010** Footnote one is worded in an ambiguous manner, it could be understood that the module is limited to biomass residues, although the auditors do not believe this is the intention. **01 November 2010** Footnote 1 has been clarified.	**19 August 2010** **BL-DFW OBS 01/10** The Module Developer should clarify the meaning of footnote 1. **01 November 2010** No CARs or OBS raised.	**Response to findings of 19 August 2010** Clarified

2	35	**19 August 2010** Unit of $F_{GBSL,i,t}$ is not "per year" but at time t. **01 November 2010** The unit and parameter description in line 35 (parameter table) have been changed, but unit and description have not been changed in line 129f (beneath equation 1). **BL-DFW CAR 01/10** therefore remains open. **26 November 2010** The unit and parameter descriptions were made consistent. This closes **BL-DFW CAR 01/10.**	**19 August 2010** **BL-DFW CAR 01/10** The Module Developer shall present equations with a logical flow of time. **01 November 2010** **BL-DFW CAR 01/10** The Module Developer shall present equations with a logical flow of time. **26 November 2010** No CARs or OBS raised.	**Response to findings of 19 August 2010** Corrected **Response to findings of 01 November 2010** Now corrected and consistent
3	93	**19 August 2010** It is stated that "Mobile/ commercial charcoal producers shall be considered a separate stratum. It was not understood what was meant by 'stratum' in this context. **01 November 2010** The text has been clarified to remove reference to people as a 'stratum'.	**19 August 2010** **BL-DFW OBS 02/10** The Module Developer should clarify or remove the use of stratum for people. **01 November 2010** No CARs or OBS raised.	**Response to findings of 19 August 2010** Now reads: *Mobile/commercial charcoal producers shall be considered separately from fuelwood collection for household use. In this case, estimates will be generated from interviews and official statistics to attain mean annual production of charcoal per producer.*

4	Gen	**19 August 2010** A number of typos were found: a. Line 35, "parameter" instead if "parameters" b. Line 80, "others" instead of "other" c. D_{mn} is said to be used in equation 4. In fact it is used only in equation 1. d. The parameter $V_{BSL,FW,i,t}$ appears twice, once in section IV, once in V. e. In equation 1 the brackets should not include the two sigmas. A pair of brackets is missing. **01 November 2010** These issues have been solved through updates to the methodology.	**19 August 2010** **BL-DFW OBS 03/10** The Module Developer should present the module free of typos. **01 November 2010** No CARs or OBS raised.	**Response to findings of 19 August 2010** Corrected
5	Gen	**19 August 2010** There is no method presented to define the project area for the DFW baseline. On line 294f of REDD-MF it is stated, "Refer to BL-DFW (for degradation due to removals for wood fuel or charcoal) for the detailed procedures to define these boundaries." BL-DFW does not appear to have detailed procedures on this matter.	**19 August 2010** **BL-DFW CAR 02/10** The Module Developer shall provide the methodological steps for defining the project area when BL-DFW is used.	**Response to findings of 19 August 2010** The methodology previously only made abstract references (especially term PAF). We have made this clearer now with a new step specifically defining project area. These however may not be seen as detailed procedures. We felt detailed procedures would be an over complication. Once the area is defined it is used to calculate the baseline rate of fuelwood collection and is the basis of expost monitoring. We do not see potential here for gaming. If areas are all high risk for fuelwood collection then expost the area will have to be defended against degradation. If the whole area is low risk then a low baseline will result… New step 2 added: Step 2: Define project area The project area shall be spatially defined. The VCS requires all REDD projects to submit boundary data in a KML file. The

				project area shall be used for calculation of baseline fuelwood collection/charcoal production and shall be the area subject to monitoring ex-post for deforestation and degradation. Definition of the project area shall be with reference to accessibility for fuelwood collection / charcoal production (e.g. with consideration of local communities, roads and markets).
		01 November 2010 A new step has been included providing general guidance on how to define the project area. This closes **BL-DFW CAR 02/10.**	**01 November 2010** No CARS or OBS raised.	

Module:	**26 November 2010 findings based on:** LK-ASP Estimation of emissions from activity shifting for avoided deforestation, Version 1.0, November 24, 2010	**Date Complete:**	26 November 2010 (Final)
Filename:	10. LK-ASP Planned leakage	**Auditors:**	Adam Gibbon, Frank Werner and Jeff Hayward

Module:	**01 November 2010 findings based on:** LK-ASP Estimation of emissions from activity shifting for avoided deforestation (Version 1.0 – August 2010)	**Date Complete:**	01 November 2010 (Draft Final)
Filename:	10. LK-ASP Planned leakage	**Auditors:**	Adam Gibbon and Frank Werner

Module:	**18 August 2010 findings based on:** LK-ASP Estimation of emissions from activity shifting for avoided deforestation (Version 1.0 – April 2010)	**Date Complete:**	18 August 2010 (Draft)
Filename:	10. LK-ASP Planned leakage	**Auditors:**	Adam Gibbon and Frank Werner

Audit Ref	Doc Ref	Findings	CAR/OBS	Actions taken by Module Developer to address CARs
1	13ff	**18 August 2010** In general, the logic behind the setting of the applicability conditions was not understood, especially when they are compared to other modules. For example: a. If as per the second required condition increased fertiliser use is found to have occurred, how are these emissions calculated? The 24 May 2010 Program Update appears to allow the exclusion of N_2O emissions from the project area, but does not mention there exclusion for leakage b. It is not understood how the third required condition can be an applicability condition. It appears to set tolerance limits for fluctuations, but then these are not reflected in the subsequent equations. c. The first two exclusionary conditions are conditions that are already in BL-PL, which must be used, so this seems to be a repetition, yet all the conditions of	**18 August 2010** **LK-ASP CAR 01/10**: The Module Developer shall present the applicability conditions consistently between modules and ensure they are possible to apply ex-ante.	**Response to findings of 18 August 2010** A Where a specific agent has been identified it is now required in a new Step 6 that emissions from biomass burning and fertilizer use outside the project boundaries be accounted B No longer applicable C These conditions have been removed. There is no value in repetition D This condition has been removed following discussions with RA

		BL-PL are not repeated. d. How could the forth exclusionary condition be demonstrated? Is a full modelling exercise required? Even if unplanned deforestation were found to be likely, would this impact carbon calculations? Discussions with RA indicated that there would not be any impact on carbon calculations. **01 November 2010** All required conditions and exclusionary conditions have been removed, except one; "and leakage to peatland shall not be allowed". The removal of conditions and exclusions is considered correct as the use of this module is directly linked to the use of module BL-PL. The one remaining condition is not well worded for a standalone condition, and appears to be an error, since in response to finding '3' of this report it is explained that a different applicability condition has been used. It is not clear how this condition can be controlled when the agent is not known. **LK-ASP CAR 01/10** has been closed. See finding '3' below for a discussion of leakage to peatlands.	**01 November 2010** No CARs or OBS issued.	
2	36	**18 August 2010** There is a concern that the module will penalise projects for leakage which is not attributable to them. The third required condition is for situations when only the class of deforestation agent is known. The area of annual deforestation by a whole class could exceed those of the baseline by orders of magnitude. These rates could fluctuate for reasons that have nothing to do with the project. If they fluctuate upwards during the project a project could end up being penalised for leakage for an area many times the size of the project. **01 November 2010** The methodology is now divided into two parts as explained in the response. This division is found appropriate. For cases where the agent is not known, a	**18 August 2010** **LK-ASP CAR 02/10**: The Module Developer shall only apply activity shifting leakage deductions that are attributable to the project activities. **01 November 2010** **LK-ASP OBS 02/10**: The Module Developer should include objective factual evidence, e.g. planned	**Response to findings of 18 August 2010** We agree and have had the same concerns. In the light of what you write here it makes us fear such projects would face to much uncertainty to go ahead. We have therefore divided the module in two with the existing methods where an agent has been defined and conservative deductions where only a class of agent is identified. **Response to findings of 01 November 2010** We included this option in an early version of the module and were told it would be unacceptable as it would be unverifiable as it is overly subject to

		process similar to the VCS market leakage tool is followed whereby a pre-assigned percentage is deducted based on the productivity of the land. These assumptions, because they are consistent with the pre-existing VSC tool, where found to be acceptable. This closes **LK-ASP CAR 02/10.** However, as well as historical statistical analysis, factual evidence such future concessions could be used to determine the future baseline rate of deforestation if the agent is known. This is because an agent may have future plans that differ from a historical linear projection. **26 November 2010** The auditors acknowledge the methodology developer's response to the observation. However, it is not apparent why this would be open to gaming any more than that the future projection of deforestation through plans in BL-PL.	concession permits, as the basis to determine the future baseline rate of deforestation if the agent is known. **26 November 2010** **LK-ASP OBS 02/10**	gaming and lying.
3	58f	**18 August 2010** How could it be known ex-ante if an activity could be lead to drainage as per the third exclusionary condition? If this does occur during the project, what is the status of the project, considering that the module is now not applicable? After discussions were held with the Developer, RA concluded that it was not correct for the methodology to suddenly to become non-applicable, without clear guidance (in conformance with VCS requirements) about how the project would need to be terminated. However, it was still important that the methodology somehow accounts for the possibility that activities are leaked to peat land. **01 November 2010**	**18 August 2010** **LK-ASP CAR 03/10**: The Module Developer shall account for the possibility that activities may leak from mineral soils to peat soils. **01 November 2010**	**Response to findings of 18 August 2010** A new applicability condition has been added: • *In States/Provinces with peatland and where the planned deforestation baseline landuse is for a commodity that can be produced on drained peatland, the specific agent shall be identified and leakage to peatland shall not be allowed* In addition, a Part 3 has been added dealing explicitly with this issue. The baseline agent must be known, projects shall attempt to prevent any leakage. Any leakage that does occur shall be considered as 500% of the carbon stock of an identical area within the project boundaries. **Response to findings of 01 November 2010**

		The condition that the module developers say was added has not been changed in the version supplied to the auditors. The suggested applicability condition referred to here, in combination with Part 3, does cover all scenarios. The module will no longer allow projects without an identified agent where there is a risk of leakage to peatland. It was not found acceptable that the condition be limited to only States/Provinces with peatland, because leakage to a neighbouring state/province may not be accounted for. It should be clarified if intra-state/province leakage is meant to be included. The decision to multiply the change in carbon stock in all pools by 5 if leakage is traced to peat is not defended, although it may be conservative. Some justification must be offered for this value. Due to the apparent typing errors and missing text, lack of consideration for leakage spreading across states or at the level of the whole country, and the lack of justification of the multiplier 5 for peat emissions; then **LK-ASP CAR 03/10** remains open.	**LK-ASP CAR 03/10**: The Module Developer shall account for the possibility that activities may leak from mineral soils to peat soils.	Applicability condition has been reinserted and now reads: In countries with peatland and where the planned deforestation baseline landuse is for a commodity that can be produced on drained peatland, the specific agent shall be identified and leakage to peatland shall not be allowed. This allows leakage between states/provinces to be considered. The factor of 5 was derived from the following analysis (briefly described in footnote 3): From a project Winrock has worked on in Kalimantan Indonesia and from associated literature work and the VCS approved "Methodology for Conservation Projects that Avoid Planned Land-Use Conversion in Peat Swamp Forests", we showed emissions of 45 t CO_2/ha/yr arising from peat drainage to 50 cm depth. Assuming trees are about 440 t CO_2/ha (120 t C/ha) then drainage emissions exceed the emissions from the trees in about 10 years. So five times the stock would be emitted in 50 years. What we were seeking here is a conservative number for an emission that must be taken upfront. Just as there is a time value of money there is a time value of carbon and so in this case you would be taking the full emission in year zero that in reality would only occur over 50 years. Essentially this five times factor raises the stakes for project developers to make sure leakage does not occur.

		26 November 2010 The applicability condition referred to by the developers has now been inserted. However, the condition implies that leakage to peatlands is not allowed, when in fact it is. When this was queried with the developer, a revised applicability condition and removed, "and leakage to peatland shall not be allowed". Justification was provided for the factor of five from a VCS approved methodology. The issue of leakage within country, across states or provinces was addressed. These changes close **LK-ASP CAR 03/10.**	**26 November 2010** No CARs or OBS raised.	
5	106ff	**18 August 2010** Parameters representing rates and amounts in one year are mixed up in several equations of the document: a. Eq. 2: *WOPR* is not a rate but the amount of hectares in year t (the rate b is multiplied by t, thus resulting in "ha") b. Eq. 3: here *WOPR* is calculated as a rate c. Eq. 4: *NewR* is calculated as a difference of rates (whereas *WOPR* of Eq. 2 is not a rate) d. Eq. 5: *LKAplanned* is calculated as a difference in rates, whereas its unit is "ha" **01 November 2010** The issues listed above have been corrected. This closes **LK-ASP CAR 04/10.**	**18 August 2010** **LK-ASP CAR 04/10**: The Module Developer shall present equations with consistent units of time. **01 November 2010** No CARs or OBS raised.	**Response to findings of 18 August 2010** Corrected
6	Gen	**18 August 2010** Parameters and parameter descriptions were not presented consistently: a. Line 132, the notation used to state the maximum number of agent of deforestation "ag" was not consistent with other parameters. (see i and t for examples) b. WoPR has different subscripts in the equations 2, 3 and 4 compared with the description below. c. WoPR could vary by year (if derived via option 1.1),	**18 August 2010** **LK-ASP CAR 05/10**: The Module Developer shall present equation and parameters in a mathematically correct and consistent manner.	**Response to findings of 18 August 2010** Corrected Note on c that the t parameter will allow variation by year

		but equation 4 does not allow this. d. The third parameter beneath equation 5 is missing a subscript i. **01 November 2010** The issues listed above have been corrected. This closes **LK-ASP CAR 05/10**.	**01 November 2010** No CARs or OBS raised.	
7	161	**18 August 2010** Step 3 refers to the 'project region', it is not clear why it is necessary to refer to this here. **01 November 2010** Reference to project region has been deleted. This closes **LK-ASP CAR 06/10.**	**18 August 2010** **LK-ASP CAR 06/10**: The Module Developer shall be consistent in the use of geographic boundary descriptions. **01 November 2010** No CARs or OBS raised.	**Response to findings of 18 August 2010** Removed now just refers to anywhere in the host country

Note – Audit reference finding 8 was removed, since it was a duplication of finding 3.

Module:	**26 and 01 November 2010 findings based on:** LK-ASU - Estimation of emissions from activity shifting for avoided unplanned deforestation, V1.0 November 24, 2010	**Date Complete:**	26 November 2010 (Final) 01 November 2010 (Draft Final)
Filename:	11. LK-ASU Unplanned leakage	**Auditors:**	Adam Gibbon and Michael Obersteiner

Module:	LK-ASU - Estimation of emissions from activity shifting for avoided unplanned deforestation, V1.0 April 2010	**Date Complete:**	19 August 2010 (Draft)
Filename:	11. LK-ASU Unplanned leakage	**Auditors:**	Adam Gibbon and Michael Obersteiner

General Comments

Audit Ref	Doc Ref	Findings	CAR/OBS	Actions taken by Module Developer to address CARs
1	19	**19 August 2010** In the applicability conditions it is stated that the configuration can be mosaic or frontier. However BL-UP has a third option – transition. **01 November 2010** The applicability condition has been removed. The module is mandatory of BL-UP has been used. BL-UP still has three configurations. This closes **LK-ASU CAR 01/10.**	**19 August 2010** **LK-ASU CAR 01/10**: The Methodology Developer shall ensure consistency with the BL-UP module. **01 November 2010** No CARs or OBS raised.	**Response to findings of 19 August 2010** The framework is clear that this module must be used with BL-UP. BL-UP sets this criterion and there is no point having unnecessary repetition so it has been removed from here.
2	20	**19 August 2010** The module states that, "The following required and exclusionary conditions are full applicability conditions". The other modules do not include this statement. This is one example of a number of occurrences where the general structure, layout or style varies between modules. In each individual case they are not serious, but accumulate such that the modules do not have a consistent feel.	**19 August 2010** **LK-ASU OBS 01/10**: The module developer should ensure the same formatting, writing style and instructive style is used in all the modules.	**Response to findings of 19 August 2010** We have worked to increase consistency across modules.

Audit Ref	Doc Ref	Findings	CAR/OBS	Actions taken by Module Developer to address CARs
		To provide another example; underneath the heading "applicability" in LK-ASP, it is stated that the module is mandatory if BL-PL was used. There is no similar statement in LK-ASU referring to BL-UP. Many more examples can be found by comparing any two modules side by side. **01 November 2010** The modules now have a significantly more consistent structure.	**01 November 2010** No CARs or OBS raised.	
3	24ff	**19 August 2010** The second and third applicability conditions appear to be repeats of conditions from BL-UP. Considering this must have been used (first applicability condition), then these are unnecessary. Likewise the first exclusionary condition appears like it could never happen given the first. If the second exclusionary condition is not met, it is not clear how a project proceeds. There would be no way of quantifying activity shifting leakage. There is no guidance how often this test has to be performed, or how the emissions from the leakage prevention activities are quantified. **01 November 2010** Repeated applicability conditions have been removed. A new section, Step 5, has been added to calculate fertiliser and biomass burning emissions. This closes **LK-ASU CAR 02/10.**	**19 August 2010** **LK-ASU OBS 02/10**: The Module Developer should avoid unnecessary repetition. **LK-ASU CAR 02/10**: The Module Developer shall not include requirements to calculate emissions from leakage prevention activities for which calculation steps are not provided. **01 November 2010** No CARs or OBS raised.	**Response to findings of 19 August 2010** Repeated applicability conditions have been removed. On leakage prevention we have included methods to calculate the fertilizer and biomass burning emissions and therefore have removed this applicability condition. (see Step 5)
4	BL-UP	**19 August 2010** After considering the module BL-UP which defines the leakage belt , it was not understood why only landscape and transport factors used in the leakage belt definition. For	**19 August 2010** **LK-ASU CAR 03/10**: The Module Developer shall define the leakage belt in a way that limits it to areas	**Response to findings of 19 August 2010** Policies and regulations and social factors have been added to the list of factors for defining the leakage belt in BL-UP

Audit Ref	Doc Ref	Findings	CAR/OBS	Actions taken by Module Developer to address CARs
		example, policies and regulations could influence the ability of agents to move to an area. **01 November 2010** Within BL-UP section 1.1.3, policies, regulations and social factors are now used to define the leakage belt. This closes **LK-ASU CAR 03/10.**	that the agent would be likely to move to. **01 November 2010** No CARs or OBS raised.	
5	Eqn 1	**19 August 2010** Equation 1 allows for positive leakage if the actual emissions are greater than the baseline emissions. **01 November 2010** The addition of a new clause prevents positive leakage being credited. This closes **LK-ASU CAR 04/10.**	**19 August 2010** **LK-ASU CAR 04/10** The Module Developer shall not allow positive leakage to be credited. **01 November 2010** No CARs or OBS raised.	**Response to findings of 19 August 2010** The following sentence has been added: If $\Delta C_{LK\text{-}ASU\text{-}LB}$ as calculated is <0 then $\Delta C_{LK\text{-}ASU\text{-}LB}$ shall be set equal to 0 (this prevents positive leakage).
6	Eqn 1	**19 August 2010** It appears there may be an error in the sign of the leakage value that is derived. $\Delta C_{BSL,LK,unplanned}$ is derived from equation 19 in BL-UP, where it is said to be equal to $\Delta C_{TOT,LB}$. In turn $\Delta C_{TOT,LB}$ is derived from equation 12 when applied to the baseline. It appears that since the forest stock would be a larger number than the post deforestation stock $\Delta C_{TOT,LB}$ would be a positive number. When a similar tracing of parameters is done through M-EXP (see Eqn 3 and 5), $\Delta C_{P,LB}$ is also a positive number. Therefore when the actual deforestation in the leakage belt, as measured in the project scenario, exceeds the baseline, equation 1 will show $\Delta C_{LK-ASU-LB}$ to be negative. When this is then applied in equation 3 and 1 in REDD-MF, leakage	**19 August 2010** **LK-ASU CAR 05/10** The Module Developer shall correct the error in signage of values related to leakage (this must be done for all modules).	**Response to findings of 19 August 2010** You are correct. I switched around equation 1 so that the baseline is subtracted from the project case. This gives a positive number for leakage which is what is necessary for subsequent application in REDD-MF

Audit Ref	Doc Ref	Findings	CAR/OBS	Actions taken by Module Developer to address CARs
		emissions end up being added to the total net GHG emissions. **01 November 2010** The changes made to the equations mean that leakage is now deducted rather than added to the GHG benefit calculation. This closes **LK-ASU CAR 05/10.**	**01 November 2010** No CARs or OBS raised.	
7	187ff	**19 August 2010** Step 4c requires the application of the module X-STR to national data. X-STR specifically talks about the 'project area. It was not clear exactly how it would be applied.	**19 August 2010** **LK-ASU CAR 06/10** The Module Developer shall provide guidance on how to stratify at a regional level.	**Response to findings of 19 August 2010** Now doesn't reference X-STR but instead reads: Stratify *AVFOR* by carbon stock. The stratification shall use peer-reviewed assessments of forest carbon stocks across the country in combination with coarse forest type maps. An initial stratification should be derived from biophysical parameters (e.g. soil type, elevation, precipitation regime, temperature, slope and aspect, tree species composition, age class/disturbance history). Carbon stocks data shall be associated with each of the strata either through limited field measurements or through values derived from the peer-reviewed literature. Carbon stock shall include only live above-ground tree biomass (C_{AB_tree} – see Module CP-AB). AVFOR shall be separated into different strata where contiguous areas of at least 100 ha differ in stocks by ≥20%.[1]

[1] At validation the source national datasets/maps shall be presented alongside the stratification of AVFOR and any divergence shall be explained

Audit Ref	Doc Ref	Findings	CAR/OBS	Actions taken by Module Developer to address CARs
		01 November 2010 The module has been amended such that it no longer references X-STR but provides its own guidance. This closes **LK-ASU CAR 06/10.**	**01 November 2010** No CARs or OBS raised.	
8	Eqn 7	**19 August 2010** Equation 7 is another example of where the units of time are confusing. The LHS parameter is described as being, "*Total area deforested by immigrant agents in the baseline and project scenario at year t"* Does this actually mean during year t? The third parameter is an "annual area of unplanned deforestation…". It is not clear why this is described as being annual, but the other parameters are not. **01 November 2010** The descriptions of parameters have been clarified. This closes **LK-ASU CAR 07/10.**	**19 August 2010** **LK-ASU CAR 07/10**: The Module Developer shall ensure time units are used and described clearly and consistently. **01 November 2010** No CARs or OBS raised.	**Response to findings of 19 August 2010** Clarified. At time t. And it is area of deforestation not annual area. Subsequently summed by t.
9	Gen	**19 August 2010** Numerous inconsistencies and ambiguities were found in the equation parameters and their description. Some examples follow: a. Eqn 1: The second parameter listed below the equation is, "sum of baseline carbon stock changes..", whilst the third is "Net CO_2 equivalent emissions …". It is not clear, without further discussion if these are described differently because they are derived in fundamentally different ways, of whether this is just inconsistent wording. b. Eqn 6: The parameter on the LHS does not match the one listed below. **01 November 2010** The equation parameters and their descriptions are now consistent. This closes **LK-ASU CAR 08/10.**	**19 August 2010** **LK-ASU CAR 08/10**: The Module Developer shall present equations and parameters correctly and consistently within and between modules. **01 November 2010** No CARs or OBS raised.	**Response to findings of 19 August 2010** A This is now consistent. Achieved this by going back to the source modules and copying in the exact definition which was already consistent B Corrected
10	Gen	**19 August 2010**	**19 August 2010**	**Response to findings of 19 August 2010**

Audit Ref	Doc Ref	Findings	CAR/OBS	Actions taken by Module Developer to address CARs
		Small grammatical errors/typos were found: a. Line 63 should say and/or to reflect the option presented above. b. Line 75 is awkwardly worded; "*Leakage prevention measures may not be sufficient to avoid some level of activity displacement to happen."* c. Line 228, typo: "*due the*" d. The module does not contain page numbers **<u>01 November 2010</u>** With regard to 'a', it refers to line 65 of the revised (track changes) version which only has the word 'and'. It was suggested that 'and/or' may be clearer, however, on re-assessment, it would not make much difference and therefore does not need addressing. This closes **LK-ASU CAR 09/10.**	**LK-ASU CAR 09/10**: The Module Developer should present the module free from typos. **<u>01 November 2010</u>** No CARs or OBS raised.	A We could not identify what this referred to B Now reads: Leakage prevention measures may not be sufficient to avoid some level of activity displacement from happening. C Corrected D It does now

Module:	**26 & 01 November 2010 findings based on:** LK-ME Estimation of emissions from market effects, Version 1.0, November 24, 2010	**Date Complete:**	26 November 2010 (Final) 01 November 2010 (Draft Final)
Filename:	12. LK-ME Leakage Market Effects	**Auditors:**	Adam Gibbon, Frank Werner and Michael Obersteiner

Module:	**19 August 2010 findings based on:** LK-ME Estimation of emissions from market effects (Version 1.0 – April 2010)	**Date Complete:**	19 August 2010 (Draft)
Filename:	12. LK-ME Leakage Market Effects	**Auditors:**	Adam Gibbon, Frank Werner and Michael Obersteiner

Audit Ref	Doc Ref	Findings	CAR/OBS	Actions taken by Module Developer to address CARs
1	19f	**19 August 2010** The restriction of applicability to tropical broadleaf species in this module, limits the use of the whole methodology. **01 November 2010** The restriction has been removed.	**19 August 2010** **LK-ME OBS 01/10** The Module Developer should not limit the scope of the methodology in the market leakage module. **01 November 2010** No CARs or OBS raised.	**Response to findings of 19 August 2010** *(Already addressed in June version)* *No longer applicable*

2	81	**19 August 2010** On line 81, the concept of, "each forest type (PML_{FT})" is introduced. There is no description of the parameter, nor any guidance on how to identify or distinguish forest types. VCS have indicated that simply referencing the ML table is sufficient. However, the more guidance is provided the less has to be done by each project developer (also subject to double approval). **01 November 2010** Guidance is provided in the parameter table.	**19 August 2010** **LK-ME OBS 02/10** The Module Developer should provide more explanatory text to explain how 'other forest types' are identified, and what they are. **01 November 2010** No CARs or OBS raised.	**Response to findings of 19 August 2010** See the parameter table
3	88ff	**19 August 2010** The GAFOLU update (May 2010) indicates that international market leakage needs not be taken into account. The methodology is not clear that such a restriction applies. **01 November 2010** A statement has been introduced.	**19 August 2010** **LK-ME OBS 03/10** The Module Developer should make it clear that international market leakage need not be taken into account. **01 November 2010** No CARs or OBS raised.	**Response to findings of 19 August 2010** In the scope this statement is now clearly made
4	Eqn2	**19 August 2010** The text below implies that market leakage would need to be summed across strata. However equation 2 has no way to do this. **01 November 2010** The equation has been modified accordingly and several parameter descriptions adjusted accordingly. This closes **LK-ME CAR 01/10.**	**19 August 2010** **LK-ME CAR 01/10** The Module Developer shall provide equations for summing across strata for market leakage as appropriate. **01 November 2010** No CARs or OBS raised.	**Response to findings of 19 August 2010** Summing across strata now included

5	Eqn7	**19 August 2010** Equation 7 could generate positive leakage. VCS does not allow crediting for positive leakage. **01 November 2010** Respective text has been included. This closes **LK-ME CAR 02/10.**	**19 August 2010** **LK-ME CAR 02/10** The Module Developer shall not allow positive leakage to be credited. **01 November 2010** No CARs or OBS raised.	**Response to findings of 19 August 2010** If $C_{BSL,XBFWC,i,t}$ as calculated in equation 7 is <0 then $C_{BSL,XBFWC,i,t}$ shall be set equal to 0 (this prevents positive leakage).
6	Gen	**19 August 2010** It was noted that VCS do not require market leakage deductions from anything other than reduced timber supply. However, doing so is conservative.	**19 August 2010** Note: No action required.	**Response to findings of 19 August 2010** We elect to include to be complete and conservative
7	Gen	**19 August 2010** A number of typos were found, for example: a. Line 38 (table) and 48, the parameter description is different for the same parameter ($\Delta C_{LK\text{-}ME}$) b. Line 126, the parameter VBSL,EX,j,t includes the letter 'j'. In the equation and parameter description 'i' is used. **01 November 2010** Typos have been corrected.	**19 August 2010** **LK-ME OBS 04/10** The Module Developer should present the methodology free from typos. **01 November 2010** No CARs or OBS raised.	**Response to findings of 19 August 2010** a. Corrected b. Corrected

8	Gen	**19 August 2010** It was noted by the auditors that the current approach to market leakage could lead to a double deduction of leakage emissions from timber harvests in cases where activity shifting timber harvesting is detected. The modules in their current form are conservative. **01 November 2010** No modification made as considered a conservative approach	**19 August 2010** **LK-ME OBS 05/10** The Module Developer should avoid double deductions of leaked timber harvesting emissions. **01 November 2010** No CARs or OBS raised.	**Response to findings of 19 August 2010** For REDD projects we consider market effects will likely be a minor component of total leakage. We therefore elect to be conservative and leave in this risk of double-counting.

Module:	**26 November 2010 findings based on:** LK-DFW Estimation of emissions from displacement of fuel wood, Version 1.0 November 24, 2010	**Date Complete:**	26 November 2010 (Final)
Filename:	13. LK-DFW Fuelwood leakage	**Auditors:**	Adam Gibbon, Frank Werner and Jeff Hayward

Module:	**01 November 2010 findings based on:** LK-DFW Estimation of emissions from displacement of fuel wood (Version 1.0 – August 2010)	**Date Complete:**	01 November 2010 (Draft Final)
Filename:	13. LK-DFW Fuelwood leakage	**Auditors:**	Adam Gibbon, Frank Werner

Module:	**19 August 2010 findings based on:** LK-DFW Estimation of emissions from displacement of fuel wood (Version 1.0 – April 2010)	**Date Complete:**	19 August 2010 (Draft)
Filename:	13. LK-DFW Fuelwood leakage	**Auditors:**	Adam Gibbon, Frank Werner

Audit Ref	Doc Ref	Findings	CAR/OBS	Actions taken by Module Developer to address CARs
1	80 ff	**19 August 2010** The units of many parameters are stated to be per year, whereas according to the mathematical structure of this module, they are amounts in a specific year (note that rates need to be multiplied with the number of years). **01 November 2010** Units have been corrected in the current revision of the module. This closes **LK-DFW CAR 01/10**.	**19 August 2010** **LK-DFW CAR 01/10** The Module Developer shall present equations with a logical flow of time. **01 November 2010** No CARs or OBS raised.	**Response to findings of 19 August 2010** Corrected
2	Gen	**19 August 2010** The module contained a number of typos. For example: a. Line 73 contains a reference to "CDM". b. This is the only module where the unit "Mg" is used instead	**19 August 2010** **LK-DFW OBS 01/10** The Module Developer should present the module free from	**Response to findings of 19 August 2010** Corrected

Audit Ref	Doc Ref	Findings	CAR/OBS	Actions taken by Module Developer to address CARs
		of tonnes, see line 81. c. It is not clear why D_{mn} refers to commercially harvested species when fuelwood would not be limited to such species. d. Line 97 appears to be missing the word "renewable" in the sentence "Demonstrably biomass collected at time…". e. Equation 1 should not have the sigma sign contained within the bracket. **01 November 2010** The listed typos have been corrected. However, a new typo will result after acceptance of the changes in line 110 ("…for wood fuel up;") **26 November 2010** The previous typo was corrected. This addresses **LK-DFW OBS 01/10.**	typos. **01 November 2010** **LK-DFW OBS 01/10** The Module Developer should present the module free from typos. **26 November 2010** No CARs or OBS raised.	**Response to findings of 01 November 2010** Typo has been corrected.
3	Eqn 2	**01 November 2010** When the baseline emissions from fuelwood gathering are calculated in BL-DFW, GHG emissions due to burning and fossil fuel use are included (equation 1). However, if the fuelwood is leaked, then GHG emissions are not considered. This omission is not conservative. **26 November 2010** The new equations added account for GHG emissions. This closes CAR **LK-DFW CAR 02/10.**	**01 November 2010** **LK-DFW CAR 02/10** The Module Developer shall treat GHG emissions conservatively in the baseline and leakage calculations. **26 November 2010** No CARs or OBS raised.	**Response to findings of 01 November 2010** New equations 2, 3 and 4 added to calculate GHG emissions during leakage.

Module:	**26 November 2010 findings based on:** E-BB Estimation of greenhouse gas emissions from biomass burning, Version 1.0, November 24, 2010	**Date Complete:**	26 November 2010 (Final)
Filename:	14. E-BB Biomass Burning	**Auditors:**	Adam Gibbon and Frank Werner and Jeff Hayward

Module:	**01 November 2010 findings based on:** E-BB Estimation of greenhouse gas emissions from biomass burning (Version 1.0 – August 2010)	**Date Complete:**	01 November 2010 (Draft Final)
Filename:	14. E-BB Biomass Burning	**Auditors:**	Adam Gibbon and Frank Werner

Module:	**19 August 2010 findings based on:** E-BB Estimation of greenhouse gas emissions from biomass burning (Version 1.0 – April 2010)	**Date Complete:**	19 August 2010 (Draft)
Filename:	14. E-BB Biomass Burning	**Auditors:**	Adam Gibbon and Frank Werner

Audit Ref	**Doc Ref**	**Findings**	**CAR/OBS**	**Actions taken by Module Developer to address CARs**
1	16ff	**19 August 2010** The auditors found that the text in the applicability section was somewhat ambiguous due to its complexity. After discussions with the Developers it became clear that the complexity and volume of text currently used in the applicability conditions was unnecessary. **01 November 2010** Text has been revised and applicability conditions deleted. The new text implies that accounting for fire ex-post in	**19 August 2010** **E-BB OBS 01/10** The Module Developer should simplify the applicability conditions for E-BB **01 November 2010** This is issue has its source in M-EXP, and **M-EXP CAR**	**Response to findings of 19 August 2010** Now simplified to read: *If fire is used to clear the land or constitutes a cause of forest degradation, emissions of CO_2, N_2O and CH_4 result. Inclusion in the baseline is always optional. Where used in the baseline, accounting must occur under both the baseline and with-project scenarios in both the project area and in the leakage belt. Where fires occur ex-post in areas that coincide with areas deforested or degraded in the baseline case the module shall be used to account greenhouse gas emissions.* **Response to findings of 01 November 2010** Text now reads:

		areas not degraded or deforested in the baseline is not required. This is not in compliance with the clarifications issued by the VCS on the subject of natural disturbance accounting. **26 November 2010** The revision made to the text means that the module must be used for all cases of fire in the project scenario which is in line with the 2007.1 standard. This closes **M-EXP CAR 06/10** .	**06/10** The Module Developer shall account for natural disturbances in accordance with VCS requirements. This CAR remains open. **26 November 2010** No CARs or OBS raised.	If fire is used to clear the land or constitutes a cause of forest degradation, emissions of CO_2, N_2O and CH_4 result. Inclusion in the baseline is always optional. Where used in the baseline, accounting must occur under both the baseline and with-project scenarios in both the project area and in the leakage belt. Where fires occur ex-post the module shall be used to account greenhouse gas emissions.
2	Gen	**19 August 2010** A number of typos were found. For example: a. Line 14, no subscript on the 2 of CO_2 b. In the description of $E_{BiomassBurn}$ only deforestation is mentioned, yet the emissions can also come from fire associated with degradation. c. Line 94 shows the number of greenhouse gases to be capital G, "1, 2, 3 ... *G* greenhouse gases". This is not the same as shown in the equation where it is lower case g. d. The equations in this module are surrounded by boxes. This does not occur in any other modules. Line 119 has an extra comma or missing subscript letter. **01 November 2010** Typos have been corrected.	**19 August 2010** **E-BB OBS 02/10** The Module Developer should present the methodology free from typos. **01 November 2010** No CARs or OBS raised.	**Response to findings of 19 August 2010** Corrected
3	Eqn 1	**01 November 2010** The parameter $E_{BiomassBurn}$ has been redefined to quantify	**01 November 2010** **E-BB CAR 01/10** The Module	**Response to findings of 01 November 2010** Summing by t has been removed in this module.

		GHG emission in year t. Eq. 1 however still integrates of time from project start to year t. Thus the parameter description, units and equation are not aligned. When the parameter is used in equation 16 of BL-UP, it is again summed over time. **26 November 2010** Equation 1 had been modified such that the units of time flow consistently between modules. This closes **E-BB CAR 01/10.**	Developer shall ensure a consistent flow of time through equations. **26 November 2010** No CARs or OBS raised.	

Module:	**26 and 01 November 2010 findings based on:** Estimation of emissions from fossil fuel combustion – E-FFC Version 1.0 - August 2010 and November 24, 2010	**Date Complete:**	26 November 2010 (Final) 01 November 2010 (Draft Final)
Filename:	15. E-FFC fossil fuels	**Auditors:**	Adam Gibbon and Michael Obersteiner

Module:	Estimation of emissions from fossil fuel combustion – E-FFC Version 1.0 - April 2010	**Date Complete:**	19 August 2010
Filename:	15. E-FFC fossil fuels	**Auditors:**	Adam Gibbon and Frank Werner

Audit Ref	Doc Ref	Findings	CAR/OBS	Actions taken by Module Developer to address CARs
1	Gen	**19 August 2010** The units of time are not clear in the module. In the parameters table on p1 there is no indication of over what period of time the parameter is for. **01 November 2010** The parameter descriptions now indicate that they represent emissions in 1 year, t. This closes **E-FCC CAR 01/10**.	**19 August 2010** **E-FCC CAR 01/10** The Module Developer shall present the equations with clear flows of time. **01 November 2010** No CARs or OBS raised.	**Response to findings from 19 August 2010** Now reads: *Emission from fossil fuel combustion in year t*
2	Gen	**19 August 2010** A number of typos were found: a. Line 49: "2" not subscripted. b. The parameter $Liters_{fuel\ a,t}$ is not in the data and parameters table. c. Line 51: The way fuel type a is written is not the same as similar parameters in other module. d. Other modules refer to the parameter originating from this module as ET…, whilst in this module it is written E… (see BL-DFW and BL-UP) for examples. **01 November 2010**	**19 August 2010** **E-FCC OBS 01/10** The Module Developer should present the module free from typos. **01 November 2010**	**Response to findings from 19 August 2010** a. Corrected b. It is now c. Corrected d. Modules BL-UP, BL-PL, BL-DFW and M-EXP corrected so that parameter is consistently E…

Audit Ref	Doc Ref	Findings	CAR/OBS	Actions taken by Module Developer to address CARs
		The typos above have been corrected.	No CARs or OBS raised.	

M-MON (was M-EXP)

Module:	**26 November 2010 findings based on:** M-MON Methods for ex-post monitoring of greenhouse gas emissions and removals, Version 1.0, November 24, 2010	**Date Complete:**	26 November 2010 (Final)
Filename:	16. M-MON Monitoring_2010 VERSION	**Auditors:**	Adam Gibbon, Jeff Hayward,

Module:	**01 November 2010 findings based on:** M-EXP Methods for ex-post monitoring of greenhouse gas emissions and removals (Version 1.0 – August 2010)	**Date Complete:**	01 November 2010 (Draft Final)
Filename:	16. M-EXP Monitoring_EX POST	**Auditors:**	Adam Gibbon, Frank Werner and Michael Obersteiner

Module:	**19 August 2010 findings based on:** M-EXP Methods for ex-post monitoring of greenhouse gas emissions and removals (Version 1.0 – April 2010)	**Date Complete:**	19 August 2010 (Draft)
Filename:	16. M-EXP Monitoring_EX POST	**Auditors:**	Adam Gibbon, Frank Werner and Michael Obersteiner

Audit Ref	Doc Ref	Findings	CAR/OBS	Actions taken by Module Developer to address CARs
1	50	**19 August 2010** In equation 1, references to the geographical scope of the equation and its parameters were found to be ambiguous. The first parameter listed beneath equation 1 is for the "project boundary" whilst others refer to the "project area" and one has no reference to the project area/boundary. Likewise the temporal boundaries are also discussed using different language, "in the project case", "during the project" etc. The variety of ways in which the same thing is described in parameter descriptions makes tracing parameters and their meanings through equations difficult. This applies to all modules that have been assessed. **01 November 2010**	**19 August 2010** **M-EXP CAR 01/10** The Module Developer shall present parameter descriptions in a consistent and correct manner. **01 November 2010**	**Response to findings of 19 August 2010** The methodology now consistently refers to project area rather than within project boundary **01 November 2010**

		The module has been corrected as described. This closes **M-EXP CAR 01/10.** However, the module is now less clear how it is applied to quantify carbon removals and GHG emissions in the leakage belt, to which this module should be applicable as well. After investigating how this worked, the auditors found it to be very complex. In summary, to calculate the leakage emissions for unplanned deforestation projects requires switching between REDD-MF, BL-UP, M-EXP and LK-ASU. Whilst no errors were found, the approach would benefit from simplification.	**M-EXP OBS 05/10** The Module Developer should simplify the steps, or provide better guidance on how to calculate and account for leakage emissions.	Due to the complexity of the required changes we will not be making changes at this time. We will, however, after approval be preparing a document to provide guidance on using the modules and will explicitly provide details in this area.
2	44	**19 August 2010** Equation 1 should have brackets around the four parameters to be summed to avoid confusion and be mathematically correct. **01 November 2010** Equation has been corrected. This closes **M-EXP CAR 02/10.**	**19 August 2010** **M-EXP CAR 02/10** The Module Developer shall make equation 1 mathematically correct. **01 November 2010** No CARs or OBS raised.	**Response to findings of 19 August 2010** Brackets added
3	59	**19 August 2010** The way time is referred to I the equations and parameters was found to be different from that found in other modules. For example a. Beneath equation 1 t is said to be, "*years elapsed since the projected start of the REDD project activity*" . See p22, line 650 of BL-UP for another description of t. b. Beneath equation 4, the fifth parameter has a subscript of t, but the description does not mention time. c. Beneath equation 9, "time t" and "year t" are referred to. d. Beneath equation 9 D% is stated as being a percent per year, when it appears to be a percent in a given year. Similar issues of giving units that imply rates to annual values are present in the methodology.	**19 August 2010** **M-EXP CAR 03/10** The Module Developer shall refer to time consistently and correctly in equations, parameters, parameter descriptions and text.	**Response to findings of 19 August 2010** A t now consistently defined as : 1, 2, 3, … *t* years elapsed since the projected start of the REDD project activity B Description changed C Changed to time t as it is an annual proportion making year unnecessary D Now % instead of % year-1

		01 November 2010 These issues have been corrected. This closes **M-EXP CAR 03/10.**	**01 November 2010** No CARs or OBS raised.	
4		**19 August 2010** The methodology has a number of typo and formatting issues: a. The title of section I is, "SCOPE, APPLICABILITY, DATA REQUIREMENT AND OUTPUT PARAMETERS" yet the section does not contain any 'data requirements'. b. Line 99: Appears to be missing a bullet point. c. Eqn 7: $C_{deg,l,t}$ is incorrectly described as being a stratum value when it is actually data for a number of plots within a stratum. d. The parameter on the LHS of equation 11 has an incorrect subscript. e. Lines 410 and 414 incorrectly reference previous steps. (*note the error on 410 but not 414 seems to have been fixed in the June version*) f. The text above equation 6 refers to changes in carbon stocks, but the equation below and references to other modules are for calculating stocks only (not changes). g. The module uses multiple fonts. h. The module has no page numbers. **01 November 2010** These issues have been corrected.	**19 August 2010** **M-EXP OBS 01/10**: The Module Developer should present the module free from parameter and typing errors. **01 November 2010** No CARs or OBS raised.	**Response to findings of 19 August 2010** a. Data requirements removed from title b. Bullet point added c. Now reads: Biomass carbon of trees cut and removed through degradation process from plots measured in stratum i at time t; t CO2-e d. Corrected e. Corrected f. Corrected g. All calibri now h. Page numbers added
5	83ff	**19 August 2010** Step 1 does not explain what type of remote sensing data is required.	**19 August 2010** **M-EXP OBS 02/10**: The Module Developer should include more clarification in step 1 about the types of	**Response to findings of 19 August 2010** We do not wish to be prescriptive or to quickly date the methodology. However, for clarity the following has been added: Medium resolution remotely sensed spatial data shall be used[1] (30m

[1] Guidance on the selection of data sources (such as remotely sensed data) can be found in Chapter 3A.2.4 of the IPCC 2006 GL AFOLU and in GOFC-GOLD. (2008), Reducing greenhouse gas emissions from deforestation and degradation in developing countries: a sourcebook of methods and

			remote sensing data that can be used. **01 November 2010** No CARs or OBS raised.	x 30m resolution or less, such as Landsat, Resourcesat-1 or Spot sensor data). See also footnote
		01 November 2010 Guidance on the selection of remote sensing data has been added, which is found to be appropriate.		
6	118	**19 August 2010** In step 1.2b it says that every 10 years a re-assessment must be done. However, this could happen at any time due to the triggers **01 November 2010** Text has been amended also to cover the earlier review of the baseline, which is found to be appropriate.	**19 August 2010** **M-EXP OBS 03/10**: The Module Developer should be consistent in indicating when baseline renewals could occur. **01 November 2010** No CARs or OBS raised.	**Response to findings of 19 August 2010** Now reads: Every 10 years (when the project baseline must be revisited) or every five years where conditions trigger more frequent baseline renewal:
7	155ff	**19 August 2010** In equations 3, 4 and 5, there appears to be an assumption that 1 forest strata will only ever be converted to 1 post deforestation strata. This is because there are no equations for summing between different combinations of changes. **01 November 2010** Equations have been modified accordingly. This closes **M-EXP CAR 04/10.**	**19 August 2010** **M-EXP CAR 04/10** The Module Developer shall present equations that can handle a forest stratum being converted into more than one post deforestation land use. **01 November 2010** No CARs or OBS raised.	**Response to findings of 19 August 2010** Equations changed to consider post-deforestation land use u with summing across land uses

procedures for monitoring, measuring and reporting, GOFC-GOLD Report version COP13-2, (GOFC-GOLD Project Office, Natural Resources Canada, Alberta, Canada) – available at: http://www.gofc-gold.uni-jena.de/redd/sourcebook/Sourcebook_Version_June_2008_COP13.pdf (Section 3.2.4).

8	237	**19 August 2010** Communities within the project are would not be subject to a PRA study, under the current wording. **01 November 2010** Text has been modified accordingly. This closes **M-EXP CAR 05/10.**	**19 August 2010** **M-EXP CAR 05/10** The Module Developer shall include communities living inside the project boundary in the PRAs. **01 November 2010** No CARs or OBS raised.	**Response to findings of 19 August 2010** Changed to say "communities inside and surrounding the project area"
9	289ff	**19 August 2010** In section 2.2.2 the module gives conditions whereby degradation through fire would not have to be accounted for. RA received a clarification from VCS stating that any carbon stock losses that occur within the project boundary, due to any cause (including force majeure), need to be accounted for by monitoring. Following a discussion with VCS on 20 August 2010, the requirement to account for all losses within the project boundary was confirmed. **01 November 2010** The approach to handling emissions from natural disturbance has not been changed and thus the CAR remains open. The VCS have not provided in writing, instructions that only emissions that would not have happened in the baseline are to be accounted. It is understood that text like this may form part of VCS 2011. But at this stage, the module must comply with the current standard.	**19 August 2010** **M-EXP CAR 06/10** The Module Developer shall account for natural disturbances in accordance with VCS requirements. **01 November 2010** **M-EXP CAR 06/10** The Module Developer shall account for natural disturbances in accordance with VCS requirements.	**Response to findings of 19 August 2010** Discussions with the VCS have clarified that only emissions that would not have happened in the baseline need to be considered **01 November 2010** In the 2010 version, the section now reads: Where fires occur *ex-post* in the project area, the area burned shall be delineated. The delineated area burned ($A_{burn,i,t}$) shall be used to calculate emissions using E-BB. The 2011 version does not have this change based on the preliminary text shared with us by the VCS.

		26 November 2010 The module has been revised to take into account all emissions from fire, which is in line with the VCS requirements for 2007.1. The module does not explicitly discuss other potential natural disturbance emissions sources such as tectonic activity, extreme weather (hurricane), drought or disease, however following discussions with the Developer, it was explained that such emissions would be covered in the section on deforestation (Section 2.1). This closes **M-EXP CAR 06/10**.	**26 November 2010** No CARs or OBS raised.	
10	Gen	**19 August 2010** A sample of data from the tables at the end of the methodology were checked and errors were found: a. The "Leakage Belt Forest Cover Monitoring Map" is said to be used in equation 3. It is not clear why this is the case. b. The table for $A_{RR,unplanned,hrp}$ does not mention which equations it is used in. c. $A_{BSL,PA,unplanned,t}$ is not used in equation 12, but the table in section V states that it is. **01 November 2010** These issues have been solved. This closes **M-EXP CAR 07/10**.	**19 August 2010** **M-EXP CAR 07/10**: The Module Developer shall present parameters and equations correctly and consistently. **01 November 2010** No CARs or OBS raised.	**Response to findings of 19 August 2010** a. Should be equation 4 b. It is not used in any equation. It only need be monitored for the sake of baseline revision c. Should be 11 and Section 2.2.2
11	Gen	**19 August 2010** In order to be compatible with the GAFOLU, respective terminology should be used. It should be noted that GAFOLU do not use the term "activity data" but distinguish the " land-use and land-cover (LU/LC) change component and the associated carbon stock change component". (GAFOLU, p. 20) **01 November 2010** The text has been revised accordingly. This closes **M-EXP CAR**	**19 August 2010** **M-EXP CAR 08/10** The Module Developer shall use VCS terminology and structure according to GAFOLU throughout the document. **01 November 2010** No CARs or OBS raised.	**Response to findings of 19 August 2010** Activity data changed to Land-use and land-cover change data

		08/10.		
12	Title	**01 November 2010** The scope of the module is found to be not properly described as the module does not only monitor changes in area and associated carbon stocks but also GHG emissions. The respective clause (section 2.4) lacks guidance on how to quantify the different emission sources, e.g. by referencing respective modules. **26 November 2010** The scope section now reflects the content of the module.	**01 November 2010** **M-EXP OBS 04/10** The Module Developer should revise the scope section to adequately describe the coverage of this module and provide guidance on the monitoring of GHG emissions in section 2.4. **26 November 2010** No CARs or OBS raised	**Response to findings of 01 November 2010** A point d. has been added: d. The greenhouse gas emissions associated with project implementation. Sentence added to 2.4: Emissions are calculated through applying E-BB, E-FCC and E-NA.
13	143	**01 November 2010** The methodology states, "the overall classification…must be 80% or more". It is not clear what exactly this refers to, or if it is intentionally different from the 90% accuracy required in other modules. **26 November 2010** The module no only references a 90% accuracy requirement.	**01 November 2010** **M-EXP OBS 06/10** The Module Developer should defend the use of 80% accuracy and explain exactly what it refers to. **26 November 2010** No CARs or OBS raised	**Response to findings of 01 November 2010** This was an oversight. The classification accuracy now reads 90% throughout.
14	328, 359	**01 November 2010** The parameters $C_{BSL,i}$ (equation 8) and $C_{TOT\text{-}FORiF}$ appear to be very similar, but the parameters have very different forms. It is not understood why this is the case.	**01 November 2010** **M-EXP OBS 07/10** The Module Developer should label parameters consistently.	**Response to findings of 01 November 2010** It is due to diverse original module authors. Now it is C_{BSLi} in both M-EXP and BL-UP

		26 November 2010 The parameter name has been changed and is now consistent between modules.	**26 November 2010** No CARs or OBS raised	
15	Eqn 7	**01 November 2010** In section 2.2, 'monitoring degradation' it is stated that this must be done for the project area and leakage belt. However, the section does not produce a parameter for degradation in the leakage belt (see equation 7). It is not clear if this step must be done for all three of the project types. For example, if a project BL-PL was used in isolation, there would be no leakage belt. Finally, it was found that the inconsistent use of parameter subscripts to differentiate between values calculated for specific spatial areas could lead to confusion. For example, in equations 3 and 4, the parameter includes subscripts 'PA' and 'LB' to distinguish between values for the project area and leakage belt. However in equation 7, whilst the description makes it clear the value is for the project area, this is not matched in the subscript. This issue persists in other modules as well. (for another example, see equations 17, 18 and 19 in BL-UP, it is not clear why the fist parameter listed beneath them has no subscript to show the area) **26 November 2010** The module has been changed, such that the text in section 2.2 no longer states that degradation will be quantified for the leakage belt. This addresses **M-EXP CAR 09/10**. The auditors still find the use of subscripts to differentiate between spatial areas to be inconsistently applied. To elaborate the example from BL-UP mentioned above:	**01 November 2010** **M-EXP CAR 09/10** The Methodology Developer shall clearly document which parts of M-EXP are applicable with reference to the baseline modules selected and ensure this is also reflected in the flow of equations between and within modules. **M-EXP OBS 08/10** The Methodology Developer should use consistent subscripting regarding the spatial applicability of a parameter. **26 November 2010** **M-EXP OBS 08/10** The Methodology Developer should use consistent subscripting regarding the spatial applicability of a parameter.	**Response to findings of 01 November 2010** I think this too was an oversight. The project area is not being protected against degradation so there is not a reason to track degradation in the leakage belt. The project is not taking credit for avoided emissions from avoiding degradation so should not have to take a debit for any that is displaced. On the subscripts I believe it is clear. Our intention is that subscripts are added for areas where both the PA and LB are considered if no LB consideration we felt no need to include additional parameters. In BLUP in equations 18 and 19 LB and PA are clearly indicated so I can not see the issue there.

		Regarding the following parameter: $\Delta C_{BSL,PA,unplanned}$ Net CO_2 emissions in the baseline from unplanned deforestation in the project area; t CO_2-e The subscript clearly indicates this is for the project area. There is a corresponding parameter where LK is substituted for PA. Then there is the following parameter: $\Delta C_{BSL,unplanned}$ Net greenhouse gas emissions in the baseline from unplanned deforestation; t CO_2-e Since the only change in the parameter name was that the spatial subscript had been removed, one would assume that this was the sum of the emissions in PA and LK. However, this parameter is actually still specific to the project area but now includes GHG emissions. This logic is difficult to follow. It could cause confusion, but is not incorrect.		
16		**26 November 2010** In response to auditor comments that the module was not overly focused towards the ex-post quantification of changes, the Developer renamed the module and then added extra guidance on using the module to generate ex ante estimates of the project scenario. These changes improved the module.	**26 November 2010** No CARs or OBS raised.	

Module:	**<u>26 and 01 November 2010 findings based on:</u>** X-STR - Methods for stratification of the project area, Version 1.0, November 24, 2010	**Date Complete:**	26 November 2010 (Final) 01 November 2010 (Draft Final)
Filename:	17. X-UNC Stratification	**Auditors:**	Adam Gibbon, Frank Werner and Michael Obersteiner

Module:	**<u>19 August 2010 findings based on:</u>** X-STR V1 April 2010	**Date Complete:**	19 August 2010 (Draft)
Filename:	17. X-UNC Stratification and 17. X-STR cover note	**Auditors:**	Adam Gibbon, Frank Werner and Michael Obersteiner

Audit Ref	Doc Ref	Findings	CAR/OBS	Actions taken by Module Developer to address CARs
1		**<u>19 August 2010</u>** No negative findings were raised, although it should be noted that other modules refer to X-STR to stratify data at national/regional levels, and the module is not appropriate for doing this. **<u>01 November 2010</u>** The example was removed by the developers.	**<u>19 August 2010</u>** No CARs or OBS raised. **<u>01 November 2010</u>** No CARs or OBS raised.	

Module:	**26 November 2010 findings based on:** X-UNC Estimation of uncertainty for REDD project activities, Version 1.0, November 24, 2010	**Date Complete:**	26 November 2010 (Final)
Filename:	18. X-UNC Uncertainty analysis	**Auditors:**	Adam Gibbon and Frank Werner

Module:	**01 November 2010 findings based on:** X-UNC Estimation of uncertainty for REDD project activities (Version 1.0 – August 2010)	**Date Complete:**	01 November 2010 (Draft Final)
Filename:	18. X-UNC Uncertainty analysis	**Auditors:**	Adam Gibbon, Frank Werner and Michael Obersteiner

Module:	**19 August 2010 findings based on:** X-UNC Estimation of uncertainty for REDD project activities (Version 1.0 – April 2010)	**Date Complete:**	19 August 2010 (Draft)
Filename:	19. X-UNC Uncertainty analysis	**Auditors:**	Adam Gibbon, Frank Werner and Michael Obersteiner

Audit Ref	Doc Ref	Findings	CAR/OBS	Actions taken by Module Developer to address CARs
1	67	**19 August 2010** The module BL-PL is listed in part 1, step 1, but in the following table no parameters from this module are listed. There is no mention of how uncertainty must be calculated when proxy areas are used to determine the deforestation rate in BL-PL. **01 November 2010** Part 1, Step 1a calculates the uncertainty associated with planned baseline deforestation rates calculated from proxy areas. This closes **X-UNC CAR 01/10.**	**19 August 2010** **X-UNC CAR 01/10** The Module Developer shall provide a methodology to determine the uncertainty associated with planned deforestation rates derived from proxy areas. **01 November 2010** No CARs or OBS raised.	**Response to findings of 19 August 2010** The uncertainty from use of proxy areas to determine rate in BL-PL is now included
2	76	**19 August 2010** The equation on line 76 appears to cause high levels of	**19 August 2010** **X-UNC CAR 02/10** The Module	**Response to findings of 19 August 2010** (note this has already been fixed in the version the

		uncertainty for projects with low AA_u. Following a discussion with the developer, this was found to be in error, however it has been corrected in a subsequent version seen by the auditors. **01 November 2010** The change in approach is acceptable. However, in BL-UP and M-EXP minimum levels of mapping accuracy where 90% and 80% respectively. BL-UP had its accuracy increased from 80 to 90% in response to auditor queries in the 19 August assessment. It is not clear if it was intended to increase all mapping accuracy to 90%, or only the one changed. If they are not all 90%, this difference in requirements requires explanation. **X-UNC CAR 02/10** is closed as it is no longer applicable. **X-UNC CAR 06/10** has been raised regarding this issue. **26 November 2010** All mapping accuracies mentioned in the modules are now 90%. This closes **X-UNC CAR 06/10**.	Developer shall correct the reference too AA_u. **01 November 2010** **X-UNC CAR 06/10** The Module Developer shall make mapping accuracy requirements consistent or explain the different requirements. **26 November 2010** No CARs or OBS raised.	audit team saw in DC) The focus of uncertainty is now on rates rather than image accuracy. What we want to do with this module is look at precision not accuracy. Precision is something you can improve through more sampling, accuracy is a result of your methods and the system. The image accuracy for forest vs non-forest will likely be high in all cases. Where it is not it is a result of the system. We have just set a requirement for 80% that must be met for a project to continue. **Response to findings of 01 November 2010** Edits to M-EXP were completed before edits to BL-UP. This is the sole source of the difference. M-EXP has now been edited so that the accuracy of 90% is required in all instances
3	82f	**19 August 2010** The module requires the use of MSE and a monte carlo simulation when regressions are used. It is not clear that this is the most efficient way of achieving the modules objectives. **01 November 2010**	**19 August 2010** **X-UNC OBS 01/10** The Module Developer should present the most efficient and correct means of determining percentage errors derived from rates. **01 November 2010**	**Response to findings of 19 August 2010** This has now been dropped with a new focus on the r2 of the rate projection. While statistically this might not be perfectly correct, it is an indication of the confidence in the upward projection of deforestation rates and does not require complex statistical programs or statistical experience. **Response to findings of 01 November 2010**

		The use of 1-r^2 was not found to have been adequately defended as a metric of uncertainty surrounding the baseline deforestation rate. **26 November 2010** The justification was found to be acceptable. This closes **X-UNC CAR 06/10.** During this assessment it was also noted that the units of '%' were not correct for the right hand side of equation 1. This was corrected by the developer by multiplying the RHS by 100.	**X-UNC CAR 06/10** The Module Developer shall provide a defence of the statistical technique used for assessing the uncertainty of deforestation. **26 November 2010** No CARs or OBS raised.	I have added the following text: The r^2 value is a measure of the fit of the equation to the source data. In BL-UP it is a requirement that the relationship be statistically significant and that the input data be evenly distributed across the reference period. Thus the r^2 value presents an indication of how closely the data reflects the model and provides a simple method that can be used here without the need for high level statistics.
4	84	**19 August 2010** In part 1, step 1, no guidance on how to calculate uncertainty associated with the parameter FG_{BSL} is provided. **01 November 2010** There is now an explanation the PRA results are considered conservative. This is considered acceptable and would be assessed at verification.	**19 August 2010** **X-UNC OBS 01/10** The Module Developer should present guidance on determining the uncertainty associated with the parameter $FG_{BSL.}$ **01 November 2010** No CARs or OBS raised.	**Response to findings of 19 August 2010** There is no easy means to include this as the number is the result of PRA. We now say factors derived from PRA are considered to be conservative and have no uncertainty calculations associated.
5	Eqn3 and Eqn5	**19 August 2010** Equations 1, 3, 4 and 5 are not mathematically correct.	**19 August 2010** **X-UNC CAR 03/10** The Module Developer shall present mathematically correct equations.	**Response to findings of 19 August 2010** All have now been corrected

		01 November 2010 The equations have been corrected (some have new numbers). This closes **X-UNC CAR 03/10.**	**01 November 2010** No CARs or OBS raised.	
6	171	**19 August 2010** The method presented involves the modification of a parameter. This is not consistent with the mathematical treatment of such calculations in other modules. Modifying a parameter without remaining it is not mathematically correct. *It appears this has been corrected in the June update.* **01 November 2010** Part 4 now creates a new adjusted parameter. This closes **X-UNC CAR 04/10.** However, this is still not used in REDD-MF.	**19 August 2010** **X-UNC CAR 04/10** The Module Developer shall not modify parameters, but must assign new names to changed values. **01 November 2010** No CARs or OBS raised.	**Response to findings of 19 August 2010** Corrected
7	Gen	**19 August 2010** A number of typos were found. For example: a. The equation on line 76 has no number and not all parameters are listed below. b. Line 128: A module called CP-A is referred to. No such module exists. **01 November 2010** The typos listed above have been corrected.	**19 August 2010** **X-UNC OBS 02/10** The Module Developer should present the methodology free from typos. **01 November 2010** No CARs or OBS raised.	**Response to findings of 19 August 2010** A No longer applicable B Corrected
8	Gen	**19 August 2010** There appears to be no consideration of uncertainty associated with leakage. It is not clear why this is the case.	**19 August 2010** **X-UNC CAR 04/10** The Module Developer shall present a method for calculating the uncertainty associated with leakage or demonstrate that the method is conservative.	**Response to findings of 19 August 2010** None of the calculation methods include sampled parameters that would derive uncertainty values. We argue our method is indisputably conservative (e.g. see the deductions for immigrant leakage in LK-ASU) far exceeding what you see in other methodologies. This module therefore focuses on sampled parameters and places where a question

				should exist on where there is sufficient sampling and thus the uncertainty in the numbers derived from sampling. Text has been added through the module to clarify this issue.
		01 November 2010 It is accepted that the current treatment of leakage is conservative. The auditors note that in deriving the unplanned leakage value, the baseline of deforestation is required. This is a value that is subject to uncertainty treatment in the baseline case. This closes **X-UNC CAR 04/10**.	**01 November 2010** No CARs or OBS raised.	
9	108	**19 August 2010** The classical formulation of the law of error propagation provides a weighting of uncertainty with the respective marginal effect on the quantity of interest. In addition, co-variance correction is provided. It is not clear why equation 2 ignores such formulation although co-variances can be expected to be non-zero. **01 November 2010** It is accepted this would be difficult for projects to apply.	**19 August 2010** **X-UNC OBS 03/10** The Module Developer should account for co-variance in uncertainty analysis. **01 November 2010** No CARs or OBS raised.	**Response to findings of 19 August 2010** We don't understand this point and thought we agreed at our in person meeting that this was not a valid issue.
10		**01 November 2010** The precision target has been revised and are now in line with the other modules and the draft 2010 VCS AFOLU requirements (p1). However, it appears that Part 4 has not been fully amended to reflect the new tolerance limits. It still references10% at the 90% confidence interval. **26 November 2010** The module has been updated to consistently reference	**01 November 2010** **X-UNC CAR 05/10** The Module Developer shall set a consistent allowable uncertainty. **26 November 2010** No CARs or OBS raised.	**Response to findings of 01 November 2010** This has now been corrected

		the same confidence intervals. This closes **X-UNC CAR 05/10.**		