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# VCS METHODOLOGY ELEMENT ASSESSMENT REPORT

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## VALIDATION OF PROPOSED VCS METHODOLOGY ELEMENT “IMPROVED FOREST MANAGEMENT THROUGH EXTENSION OF ROTATION AGE”

REPORT No. 2010-9022

REVISION No. 02



VCS METHODOLOGY ASSESSMENT REPORT

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Client: <b>Ecotrust Forest Management, Inc.</b>	Client ref.: <b>Steve Dettman</b>

**Name of Methodology:** Improved Forest Management Through Extension of Rotation Age

**Assessment Phases:**

- Desk Review
- Follow up interviews
- Resolution of outstanding issues

**Assessment Status**

- Corrective Actions Requested
- Clarifications Requested
- Full Approval by DNV
- Rejected

In summary, it is DNV’s opinion that the proposed VCS methodology element “Improved forest management through extension of rotation age” as described in MED of April 21, 2010, meets all relevant VCS requirements for VCS methodology elements. The second MED validation of proposed VCS methodology “Improved Forest Management through Extension of Rotation Age” for Ecotrust Forest Management, Inc resulted in revision of the MED, dated December 10, 2009. DNV recommends the methodology element for approval and request VCSA to finally approve the methodology element, contingent to the first validator’s approval to changes in the proposed VCS methodology “Improved Forest Management through Extension of Rotation Age”, dated May 4, 2010.

Report No.: <b>2010-9022</b>	Date of this revision: <b>5 May 2010</b>	Rev. No. <b>02</b>
Report title: <b>Validation of Proposed VCS Methodology “Improved forest management through extension of rotation age”</b>		
Work carried out by: <b>Shruthi P Bachamanda Sam Stevenson Barbara Toole O’Neil Guy Pinjuv</b>		
Work verified by: <b>Gordon Smith</b>		

Key words:  
**VCS  
 Methodology Element  
 Validation**

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## Abbreviations

A/R	Afforestation/Reforestation (under CDM)
AFOLU Guidelines	Agriculture, Forestry and Other Land Uses section of Guidelines for National Greenhouse Gas Inventories 2006
CAR	Corrective action request
CDM	Clean development mechanism
CL	Clarification request
DNV	Det Norske Veritas
EB	Executive Board
GPG	Intergovernmental Panel on Climate Change's Good Practice Guidance for
LULUCF	Land-Use Land Use Change and Forestry
GWP	Global warming potential
IFM	Improved forest management (under VCS)
MED	Methodology element documentation
VCS	Voluntary Carbon Standard
VCSA	VCS Association
VCU	Voluntary Carbon Unit
WBCSD	World Business Council for Sustainable Development
WRI	World Resources Institute



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## 1 ASSESSMENT STATEMENT

Det Norske Veritas Certification AS (DNV) has performed the validation of proposed VCS methodology “Improved Forest Management through Extension of Rotation Age” for Ecotrust Forest Management, Inc. The validation was performed on the basis of VCS criteria for methodology development.

The methodology element was prepared based on the requirement of VCS 2007.1 and VCS Program Normative Document: Double Approval Process, version 1.1. The methodology element additionally follows the VCS guidelines and tools listed below:

- VCS Guidance for Agriculture, Forestry and Other Land Use Projects (AFOLU), November 18, 2008
- VCS Tool for AFOLU Non-Permanence Risk Analysis and Buffer Determination, November 18, 2008
- VCS Tool for AFOLU Methodological Issues, November 18, 2008

The methodology element belongs to the scope of *agriculture, forestry and other land use*.

The desk review was performed using the following artifacts –

- proposed new MED dated 10 December 2009 /1/;
- the first methodology validation report /14/; and
- other supporting documentation including referenced, published scientific literature, reports and exiting methodologies listed in section 2.1 of this document.

In summary, it is DNV’s opinion that the proposed VCS methodology element “Improved forest management through extension of rotation age” as described in MED of April 21, 2010, meets all relevant VCS requirements for VCS methodology elements. DNV thus recommends the methodology element for approval and request VCSA to finally approve the methodology element.

## 2 INTRODUCTION

Ecotrust Forest Management, Inc has commissioned Det Norske Veritas Certification AS (DNV) as the second validator to perform an assessment of the methodology element “Improved Forest Management through Extension of Rotation Age”. This report summarizes the findings of the assessment of the methodology element, performed on the basis of VCS criteria for methodology elements. VCS criteria refer to VCS 2007.1 and the subsequent VCS Program Normative Documents.

The methodology element “Improved Forest Management through Extension of Rotation Age”, is a deviation from the CDM approved methodology AR-ACM0001 “Afforestation and reforestation of degraded land”, version 3/8/. AR-ACM0001 is applicable to project activities that are implemented on degraded land, expected to remain degraded or to continue to degrade in the absence of the project, and hence the land cannot be expected to revert to a non-degraded state without human intervention.

### 2.1 Desk Review of the New Methodology

The following table lists the documentation that was reviewed during the assessment:

- /1/ Ecotrust Forest Management, Inc , Methodology element documentation “Improved Forest Management through Extension of Rotation Age”, 10 December 2009
- /2/ Ecotrust Forest Management, Inc , Methodology element documentation “Improved Forest Management through Extension of Rotation Age”, 21 April 2009
- /3/ VCSA, Voluntary Carbon Standard 2007.1.
- /4/ VCSA, VCS Program Normative Document: Double Approval Process, v1.0, January 21, 2010
- /5/ VCS Guidance for Agriculture, Forestry and Other Land Use Projects (AFOLU), November 18, 2008
- /6/ VCS Tool for AFOLU Non-Permanence Risk Analysis and Buffer Determination, November 18, 2008
- /7/ VCS Tool for AFOLU Methodological Issues, November 18, 2008
- /8/ UNFCCC CDM EB: AR-ACM0001 “Afforestation and reforestation of degraded land”, version 3  
(available at:  
<http://cdm.unfccc.int/UserManagement/FileStorage/R91NFM6OXC4GJBW5PY0D8Q2HKLVASU>)
- /9/ UNFCCC CDM EB: “Combined tool to identify the baseline scenario and demonstrate additionality in A/R CDM project activities”, version 1  
(available at: <http://cdm.unfccc.int/methodologies/ARmethodologies/tools/ar-am-tool-02-v1.pdf>)
- /10/ The UNFCCC “Tool for testing significance of GHG emissions in A/R project

- activities”, Version 1  
(available at: <http://cdm.unfccc.int/methodologies/ARmethodologies/tools/ar-am-tool-04-v1.pdf>)
- /11/ The UNFCCC tool for the “Calculation of the number of sample plots for measurements within A/R CDM project activities”, version 2  
(available at: <http://cdm.unfccc.int/methodologies/ARmethodologies/tools/ar-am-tool-03-v2.pdf> )
- /12/ CDM EB, Tool for the demonstration and assessment of additionality, version 5.2.
- /13/ WRI/WBCSD, The GHG Protocol Project Accounting.
- /14/ Scientific Certification Systems : GHG Methodology Review Report for the proposed VCS methodology “Improved Forest Management through Extension of Rotation Age”, December 11. 2009

## 2.2 Follow-up Interviews

The follow up interview was conducted on March 17, 2010 through a telephone conference. The attendees and topics discussed have been listed in the below Table.

Date	Name	Organization	Topic
03.17.2010	Steve Dettmann	EcoTrust	1. The methodology element’s eligibility criteria;
	Tim Pearson	Winrock International	
	Shruthi Bachamanda	DNV	2. The baseline approach and additionality;
	Sam Stevenson	DNV	3. Project boundary;
	Guy Pinjuv	Ptarmigan Forestry	4. Emissions, including leakage;
			5. Monitoring, data and parameters.
			6. Baseline modeling

## 2.3 Resolution of Outstanding Issues

The objective of this phase of the assessment is to resolve any outstanding issues that need to be clarified prior to DNV’s positive conclusion on the methodology element. The assessment findings relate to the methodology element as documented and described in the initial methodology element documentation /1/.

In order to ensure transparency the issues raised and the methodology element developer’s response are documented in Appendix A.

Findings established during the assessment can either be seen as a non-fulfillment of VCS criteria or where a risk to the fulfillment of methodology element objectives is identified. Corrective action requests (CAR) are issued, where:

- I. mistakes have been made with a direct influence on methodology application;
- II. VCS specific requirements have not been met; or
- III. there is a risk that the methodology element would not be accepted as a VCS methodology.

A request for clarification (CL) may be used where additional information is needed to fully clarify an issue.

Fig 1 below provides a sample table for presentation of the CARs and CLs and subsequent response from Ecotrust Forest Management, Inc.

<i>Assessment Table: Resolution of Corrective Action and Clarification Requests</i>		
<i>Draft report clarifications and corrective action requests</i>	<i>Methodology element developer response</i>	<i>Assessment conclusion</i>
<i>If the conclusions from the draft assessment are either a CAR or a CL, these should be listed in this section.</i>	<i>The responses given by the methodology element developer during the communications with the assessment team should be summarized in this section.</i>	<i>This section should summarize the assessment team's responses and final conclusions.</i>

**Figure 1 Assessment Table**

## 2.4 Internal Quality Control

The draft assessment report, final assessment report and methodology element underwent a technical review before DNV submitted the draft assessment report to Ecotrust Forest Management, Inc. The technical review was performed by a technical reviewer qualified in accordance with DNV's qualification scheme.

## 2.5 Assessment Team

The table below lists the details and involvement of the DNV team for the methodology assessment

<i>Role/Qualification</i>	<i>Last Name</i>	<i>First Name</i>	<i>Type of involvement</i>					
			<i>Desk review</i>	<i>Interviews</i>	<i>Reporting</i>	<i>Supervision of work</i>	<i>Technical review</i>	<i>Expert input</i>
Project manager	Stevenson	Sam	√	√		√		
Technical Team Lead	Toole O'Neil	Barbara				√		
GHG auditor	Bachamanda	Shruthi	√	√	√			



Technical reviewer	Smith	Gordon	√
Sector Expert	Pinjuv	Guy	√

### 3 ASSESSMENT FINDINGS

The methodology assessment findings have been documented as clarification (CL) and corrective actions (CAR). The CARs and CLs raised during the methodology assessment, responses to the CLs and CARs and the basis on which the response was accepted by DNV have been described in detail in Appendix A.

#### 3.1 Eligibility Criteria

The eligibility criteria for the methodology element are clearly defined in the methodology element documentation (MED). The eligibility criteria were defined as below /2/:

- Forest management in both baseline and projects cases involves clear cut or patch cut practices (with or without seed trees)
- Forests must be certified by the Forest Stewardship Council (FSC) or become FSC Certified within one-year of the Project Start Date
- Project participants must define the minimum project length in their project description document
- The project does not encompass managed peat forests and the proportion of wetlands are not expected to change as part of the project
- Project participants must have a projection of management practices in both with and without project scenarios
- If fire is used as part of forest management then fire control measures, such as installation of fire-breaks or back-burning, shall be taken to ensure fire does not spread outside the project boundary—that is, no biomass burning shall be permitted to occur beyond the project boundary due to forest management activities.
- The *Project Start Date*<sup>1</sup> and the *Project Crediting Period Start Date*<sup>2</sup> are identical.
- There may be no leakage through activity shifting to other lands owned or managed outside the bounds of the VCS carbon project.

#### 3.2 Baseline Approach

The methodology element's approach to determine the baseline scenario is clearly defined as below:

- 1) Preliminary screening based on the starting date of the IFM project activity

<sup>1</sup> As defined by VCS: "Date on which the project began reducing or removing GHG emissions"

<sup>2</sup> As defined by VCS: "The date on which the first monitoring period commences"



- a) Provide evidence that the incentive from the planned sale of VCUs was seriously considered in the decision to proceed with the project activity.
- 2) Identify credible alternative forest management scenarios to the proposed VCS project activity
  - a) The alternative forest management scenarios considered should be limited to forested land uses; and
  - b) The legal requirements for forest management and land use in the area; however if the documented common practice provides evidence that these are not enforced then this requirement does not have to be met; and
  - c) They should take into consideration the relevant national and/or sectoral policies regulations and policies<sup>3</sup> and circumstances, such as historical land uses, practices and economic trends; and
- 3) Conduct barrier analysis or an investment analysis comparison to determine the most likely baseline scenario in lines with Step 2 and/or Step 3 of CDM “Tool for demonstration and assessment of additionality”, version 5.2.

The MED provides guidance on the modeling requirement of the historic and common practice baseline.

The approach for determining the project baseline is deemed by DNV appropriate and adequate.

### 3.3 Additionality

The latest version of CDM “Tool for the demonstration and assessment of additionality”, is used in the MED as the tool to determine project additionality. This is deemed by DNV as appropriate and adequate.

### 3.4 Project Boundary

The project’s physical boundary is clearly and properly defined. The carbon pools included in or excluded from the project boundary are shown in Table 1; the justification to include or exclude certain type of carbon pools is justified reasonably. DNV is able to confirm that the project boundary is defined in lines with VCS guidance for AFOLU /5/.

**Table 1: Selected carbon pools**

Carbon pools	Selected (Yes or No)
Above-ground biomass	Yes
Below-ground biomass	Yes
Dead wood	Yes (alternatively No)
Litter	No

<sup>3</sup> The Annex 3 to the report of the EB at its twenty-second meeting and the Annex 19 to the report of the EB at its twenty-third meeting clarify how the relevant national and/or sectoral policies shall be taken into account during identification of a baseline scenario. See: <http://cdm.unfccc.int/Reference/Guidclarif>.

Soil organic carbon	No
Wood products	Yes (alternatively No)

The emission sources included in or excluded from the project boundary area is shown in Table 2. The emission sources included in project boundary is in lines with AR-ACM0001/8/.

**Table 2: Emissions sources included in the project boundary**

Sources	Gas	Included / Excluded	Justification / Explanation of choice
Burning of biomass	CO <sub>2</sub>	Excluded	However, carbon stock decreases due to burning are accounted as a carbon stock change
	CH <sub>4</sub>	Included	Non-CO <sub>2</sub> gas emitted from biomass burning
	N <sub>2</sub> O	Excluded	Potential emissions are negligibly small

### 3.5 Emissions

The approach provided for calculating baseline emissions, project emissions and emission reductions are deemed appropriate by DNV.

#### 3.5.1 Baseline GHG removals

The baseline net GHG removals by sinks is determined as the carbon stock changes in all pools deducting the GHG emission as a result of forest management activities within the project boundary in the baseline. The carbon pools considered in the baseline include carbon stock changes in trees, deadwood and wood products. The carbon stock changes in the trees, deadwood and wood products is estimated using peer reviewed forestry models of forest management across baseline period. Few examples of models that can be used have been listed in the MED.

The MED provides guidelines for the modeling of historical and common practice baseline. The MED mandates the common practice baseline to be determined by a qualified forestry consultant from the region the project is being developed.

#### 3.5.2 Project GHG removals

The actual net GHG removals by sink is estimated as the difference between carbon stock in tree above-ground biomass, dead wood and wood products in project scenario and increase in GHG emissions as a result of project activity.

The project GHG removals estimation methodology is in lines with AR-ACM0001 /8/ with minor deviations. DNV has reviewed the deviations to the methodology.

The MED provides the option of considering GHG removal from wood products. The GHG removal from wood products can be estimated using *Winjum et al method* or *1605b method*.

### 3.5.3 Emission reductions

The emission reductions are the net GHG emission removals by sink minus the baseline net GHG removals by sinks minus leakage.

$$C_{IFM-VCS} = \Delta C_{ACTUAL} - \Delta C_{BSL} - LK$$

where:

$C_{IFM-VCS}$  Net anthropogenic greenhouse gas removals by sinks; t CO<sub>2</sub>-e

$\Delta C_{ACTUAL}$  Actual net greenhouse gas removals by sinks; t CO<sub>2</sub>-e

$\Delta C_{BSL}$  Baseline net greenhouse gas removals by sinks; t CO<sub>2</sub>-e

$LK$  Total GHG emissions due to leakage; t CO<sub>2</sub>-e

The calculation of the emission reduction from improved forest management practice through increased rotation age has been described clearly.

### 3.6 Leakage

The consideration of leakage from market effects resulting from a shift in harvest through time in lines with VCS guidance for AFOLU/5/ and Tool for AFOLU Methodological Issues/7/. Additionally, the leakage calculation method closely follows the Climate Action Reserve Forestry Protocol for leakage and secondary effects. This method is considered conservative and accurate.

### 3.7 Monitoring

The monitoring of project implementation, sampling design and stratification has been sourced from AR-ACM0001 “Afforestation and reforestation of degraded land”/8/. The sample size and allocation among strata, the MED uses the latest version of the tool for the “Calculation of the number of sample plots for measurements within A/R CDM project activities” (Annex 3), approved by the CDM Executive Board. This is in lines with the VCS requirements and is accepted by DNV.

Any deviations from the sampling requirements from the methodology have been assessed by DNV to be accurate and specific to improved forest management projects.

### 3.8 Data and Parameters

Both monitored and not monitored data and parameters used in emissions calculations are defined in the MED clearly and appropriately to make it possible for the emission reductions to be estimated and verified in the verification periods.



Not monitored data and parameters include area of baseline stratum, biomass expansion factor, carbon fraction, wood density, root shoot ratio, etc. The references used in the MED for the various data parameters have been described clearly.

Requirements for data and calculation reviews are clearly defined in the MED; these requirements are deemed proper by DNV for uncertainties related to the emission reductions to be reduced reasonably.

### **3.9 Adherence to the project-level principles of the VCS Program**

The MED was developed in line with the project-level principles of VCS 2007.1 as elaborated in the above. It is also deemed by DNV that the principles of relevance, completeness, consistency, accuracy, transparency, and conservativeness are properly addressed in the MED.

### **3.10 Comments by Stakeholders**

Ecotrust Forest Management, Inc has submitted the proposed MED “Improved Forest Management through Extension of Rotation Age”, to VCS for stakeholder consultation. The MED was published on the VCS website for a period of 30 days from October 16, 2009 – November 15, 2009 for public stakeholder consultation. There were no comments received from stakeholders during the stakeholder consultation period

<http://www.v-c-s.org/docs/Ecotrust%20IFM%2010-15-09.pdf>

### **3.11 Comments by First Validator**

Scientific Certification Systems (SCS) completed the first assessment of the proposed methodology on December 11, 2009. SCS requested new information, identified opportunities for improvement and non-conformance during the validation of the methodology element. Ecotrust Forest Management, Inc has submitted all new information requested, and addressed all opportunities for improvement and non-conformance. DNV concurs with all comments and consequent revision by the methodology developer. The first assessment by SCS concluded that the proposed VCS methodology element “Improved Forest Management through Extension of Rotation Age”, meets all relevant requirements of the VCS.

## **APPENDIX A**

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### **RESOLUTION OF CORRECTIVE ACTION AND CLARIFICATION REQUESTS**

Draft report clarifications and corrective action requests by assessment team	Summary of methodology element developer response	Assessment team conclusion
<p><b>CAR 1</b></p> <p><b>Eligibility criteria:</b></p> <ul style="list-style-type: none"> <li>- (Reference (b) above) - The applicability criteria states that project must not lead to a decrease in total volume harvested of more than 25% over the life of the project relative to the baseline.</li> <li>- <i>DNV has identified that the life of project is not defined in the MED.</i></li> </ul>	<p>Previously projects that led to a harvest decrease of more than 25% over the project lifetime were not eligible. We now consider this to be overly restrictive. We have thus removed this applicability condition and rewritten the leakage section to allow the VCS default leakage deductions for projects that lead to a greater than 25% deduction in volume harvested. However, we do still want to allow projects to take the lower leakage deduction (10%) for situations where harvest is decreased by less than 25% over the project lifetime and we agree fully with your point that in this case a project lifetime must be defined. We have thus added a new applicability conditions:</p> <ul style="list-style-type: none"> <li>-Project participants must define the minimum project length in their project description document</li> </ul> <p>The leakage section now reads as follows:</p> <p>Leakage due to market effects is equal to the baseline emissions from logging multiplied by a leakage factor:</p> $LK_{MarketEffects} = LF_{ME} * (\Delta C_{ACTUAL} - \Delta C_{BSL})$	<p>Specifying project participants to define the minimum project length in their project description document does meet this requirement.</p> <p>Further, the leakage calculation method suggested here closely follows methods for leakage and secondary effects in the Climate Action Reserve (CAR) protocol and seems sufficient.</p> <p><b>CAR 1 is closed</b></p>

<sup>4</sup> Defined here as the minimum project lifetime elected by project proponents in their project description document. If the project is extended beyond this time period harvests may not be decreased by more than 25% across through each additional crediting/baseline period

<sup>5</sup> Volumes shall be converted to merchantable biomass using wood densities/specific gravities. A weighted wood density shall be used to convert multi-species data on growing stock volume to merchantable biomass

<sup>6</sup> Brown, S. 1997. Estimating biomass and biomass change of tropical forests: a Primer. FAO Forestry Paper 134. <http://www.fao.org/docrep/W4095E/W4095E00.htm>

<sup>7</sup> The FIA mapmaker program (<http://www.ncrs2.fs.fed.us/4801/fiadb/fim30/wcfim30.asp>) was used. For the lower 48 states the total biomass and merchantable biomass by forest type were downloaded in order to calculate the proportions given here

Draft report clarifications and corrective action requests by assessment team	Summary of methodology element developer response	Assessment team conclusion
	<p style="text-align: center;">(41)</p> <p>Where:</p> <p><math>LK_{MarketEffects}</math> Total GHG emissions due to market-effects leakage through decreased timber harvest; t CO<sub>2</sub>-e</p> <p><math>LF_{ME}</math> Leakage factor for market-effects calculations; dimensionless</p> <p><math>\Delta C_{ACTUAL}</math> Actual net greenhouse gas removals by sinks; t CO<sub>2</sub>-e</p> <p><math>\Delta C_{BSL}</math> Baseline net greenhouse gas removals by sinks; t CO<sub>2</sub>-e</p> <p>The leakage factor is determined by considering where in the country logging will be increased as a result of the decreased supply of the timber caused by the project. If the areas liable to be logged have a higher carbon stock than the project area it is likely that the proportional leakage is higher and vice versa:</p> <p><math>LF_{ME} = 0</math> if it can be demonstrated that no market-effects leakage will occur within national boundaries,</p> <p>e.g. if no new concessions are being assigned AND annual extracted volumes cannot be increased within existing national concessions AND illegal logging is absent (or <i>de minimis</i>) in the host country</p> <p>OR if the project is able to demonstrate</p>	



Draft report clarifications and corrective action requests by assessment team	Summary of methodology element developer response	Assessment team conclusion
	<p>that any decrease in wood products produced by the project relative to the baseline is less than 5% and any temporal displacement in the total production of wood products is less than 5 years.</p> <p><math>LF_{ME} = 0.1</math> where rotations are moderately extended (5-10 years) leading to a shift in harvests across time periods but a change in total timber harvest equal to <math>\leq 25\%</math> over the project lifetime<sup>4</sup></p> <p><i>Where rotations are extended by &gt;10 years and/or harvest is decreased by &gt;25% over the project lifetime as per the VCS standards:</i></p> <p>The amount of leakage is determined by where harvesting would likely be displaced to. If in the forests to which displacement would occur a lower proportion of forest biomass in commercial species is in merchantable material than in project area, then in order to extract a given volume higher emissions should be expected as more trees will need to be cut to supply the same volume. In contrast if a higher proportion of the total biomass of commercial species is merchantable in the displacement forest than in the project forests then a smaller area would have to be harvested and lower emissions would result.</p> <p>Each project thus shall calculate within each stratum the proportion of total biomass in commercial species that is merchantable (<math>PMP_i</math>). This shall then be compared to mean proportion of total biomass that is merchantable for each forest type (<math>PML_{FT}</math>).</p> <p>Merchantable biomass is defined as:                      “Total gross biomass (including bark) of a tree 5 inches (12.7 cm) DBH or larger from a 1 foot (30.48 cm) stump to a minimum 4 inches top DOB of the central stem”</p> <p style="text-align: right;"><i>Definition from</i></p> <p><i>US Forest Service FIA Program</i></p>	

Draft report clarifications and corrective action requests by assessment team	Summary of methodology element developer response	Assessment team conclusion										
	<p>The following deduction factors (<math>LF_{ME}</math>) shall be used:</p> <p>Where:</p> <p><math>PML_{FT}</math> is equal (<math>\pm 15\%</math>) to <math>PMP_i</math>;  <math>LF_{ME} = 0.4</math></p> <p><math>PML_{FT}</math> is &gt; 15% less than <math>PMP_i</math>;  <math>LF_{ME} = 0.7</math></p> <p><math>PML_{FT}</math> is &gt; 15% greater than <math>PMP_i</math>;  <math>LF_{ME} = 0.2</math></p> <p>Where:</p> <p><math>PML_{FT}</math> Mean merchantable biomass as a proportion of total aboveground tree biomass for each forest type; % (default values see Section X or Annex 3)</p> <p><math>PMP_i</math> Merchantable biomass as a proportion of total aboveground tree biomass for stratum <math>i</math> within the project boundaries; %</p> <p><math>LF_{ME}</math> Leakage factor for market-effects calculations; dimensionless</p> <table border="1" data-bbox="726 1037 1354 1440"> <tr> <td data-bbox="726 1037 898 1102">Data / parameter:</td> <td data-bbox="909 1037 1354 1102"><math>PMP_i</math></td> </tr> <tr> <td data-bbox="726 1110 898 1151">Data unit:</td> <td data-bbox="909 1110 1354 1151">%</td> </tr> <tr> <td data-bbox="726 1159 898 1224">Used in equations:</td> <td data-bbox="909 1159 1354 1224">Leakage section 6.2</td> </tr> <tr> <td data-bbox="726 1232 898 1330">Description:</td> <td data-bbox="909 1232 1354 1330">Merchantable biomass as a proportion of total aboveground tree biomass for stratum <math>i</math> within the project boundaries</td> </tr> <tr> <td data-bbox="726 1338 898 1440">Source of data:</td> <td data-bbox="909 1338 1354 1440">Within each stratum divide the summed merchantable biomass (defined as “Total gross biomass (including bark) of a tree 5” (12.7 cm) DBH or larger from a 1’ (30.48</td> </tr> </table>	Data / parameter:	$PMP_i$	Data unit:	%	Used in equations:	Leakage section 6.2	Description:	Merchantable biomass as a proportion of total aboveground tree biomass for stratum $i$ within the project boundaries	Source of data:	Within each stratum divide the summed merchantable biomass (defined as “Total gross biomass (including bark) of a tree 5” (12.7 cm) DBH or larger from a 1’ (30.48	
Data / parameter:	$PMP_i$											
Data unit:	%											
Used in equations:	Leakage section 6.2											
Description:	Merchantable biomass as a proportion of total aboveground tree biomass for stratum $i$ within the project boundaries											
Source of data:	Within each stratum divide the summed merchantable biomass (defined as “Total gross biomass (including bark) of a tree 5” (12.7 cm) DBH or larger from a 1’ (30.48											

Draft report clarifications and corrective action requests by assessment team	Summary of methodology element developer response		Assessment team conclusion
		cm) stump to a minimum 4" (10.2 cm) top DOB of the central stem") by the summed total aboveground tree biomass	
	Measurement procedures (if any):		
	Monitoring frequency:	At least every five years at the time of verification	
	QA/QC procedures:		
	Any comment:	Ex-ante a time zero measurement shall be made of this factor	
	<b>Data / parameter:</b>	$PML_{FT}$	
	Data unit:	%	
	Used in equations:	Leakage Section 6.2	
	Description:	Mean merchantable biomass as a proportion of total aboveground tree biomass for each forest type	
	Source of data:	<p>The source of data shall be chosen with priority from higher to lower preference as follows:</p> <ol style="list-style-type: none"> <li>1. Peer-reviewed published sources (including carbon/biomass maps or growing stock volume<sup>5</sup> maps with a scale of at least 1km)</li> <li>2. Official Government data and statistics</li> <li>3. Original field measurements</li> </ol> <p>The forest types considered shall be only</p>	

Draft report clarifications and corrective action requests by assessment team	Summary of methodology element developer response		Assessment team conclusion																				
		<p>those relevant for the specific market effects leakage ie. only forest types with active timber production.</p> <p>An appropriate source of data will be Government records on annual allowable cuts for the areas of commercial forests.</p> <p>Where volumes are used the source of data wood density is required to convert to merchantable biomass. The source of data on wood densities shall be chosen with priority from higher to lower preference as follows:</p> <ol style="list-style-type: none"> <li>1. Knowledge on commercial species and thus an appropriately weighted wood density derived from the density of these species</li> <li>2. A region-specific mean wood density as given e.g. in Brown 1997<sup>6</sup></li> </ol> <p>For the lower 48 US States the following defaults have been calculated<sup>7</sup> from the US Forest Service Forest Inventory Analysis Database and shall be used where appropriate:</p> <table border="1" data-bbox="930 1084 1331 1433"> <thead> <tr> <th data-bbox="940 1092 1115 1187">Forest Type Group</th> <th data-bbox="1125 1092 1320 1187">Merchantable Biomass as Proportion of Total Biomass</th> </tr> </thead> <tbody> <tr> <td data-bbox="940 1195 1115 1219">White Red Jack</td> <td data-bbox="1125 1195 1320 1219"></td> </tr> <tr> <td data-bbox="940 1219 1115 1243">Pine</td> <td data-bbox="1125 1219 1320 1243">77%</td> </tr> <tr> <td data-bbox="940 1243 1115 1268">Spruce Fir</td> <td data-bbox="1125 1243 1320 1268">58%</td> </tr> <tr> <td data-bbox="940 1268 1115 1292">Longleaf Slash</td> <td data-bbox="1125 1268 1320 1292"></td> </tr> <tr> <td data-bbox="940 1292 1115 1317">Pine</td> <td data-bbox="1125 1292 1320 1317">73%</td> </tr> <tr> <td data-bbox="940 1317 1115 1341">Loblolly Shortleaf</td> <td data-bbox="1125 1317 1320 1341"></td> </tr> <tr> <td data-bbox="940 1341 1115 1365">Pine</td> <td data-bbox="1125 1341 1320 1365">73%</td> </tr> <tr> <td data-bbox="940 1365 1115 1390">Ponderosa Pine</td> <td data-bbox="1125 1365 1320 1390">64%</td> </tr> <tr> <td data-bbox="940 1390 1115 1414">Oak Pine</td> <td data-bbox="1125 1390 1320 1414">71%</td> </tr> </tbody> </table>	Forest Type Group	Merchantable Biomass as Proportion of Total Biomass	White Red Jack		Pine	77%	Spruce Fir	58%	Longleaf Slash		Pine	73%	Loblolly Shortleaf		Pine	73%	Ponderosa Pine	64%	Oak Pine	71%	
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		<table border="1"> <tr><td>Oak Hickory</td><td>73%</td></tr> <tr><td>Oak Gum Cypress</td><td>72%</td></tr> <tr><td>Elm Ash</td><td></td></tr> <tr><td>Cottonwood</td><td>73%</td></tr> <tr><td>Maple Beech</td><td></td></tr> <tr><td>Birch</td><td>76%</td></tr> <tr><td>Aspen Birch</td><td>61%</td></tr> <tr><td>Douglas Fir</td><td>70%</td></tr> <tr><td>Western White Pine</td><td>62%</td></tr> <tr><td>Fir- Spruce/Mountain</td><td></td></tr> <tr><td>Hemlock</td><td>62%</td></tr> <tr><td>Lodgepole Pine</td><td>64%</td></tr> <tr><td>Hemlock/Sitka</td><td></td></tr> <tr><td>Spruce</td><td>67%</td></tr> <tr><td>Western Larch</td><td>66%</td></tr> <tr><td>Redwood</td><td>43%</td></tr> <tr><td>Western Oak</td><td>69%</td></tr> </table>	Oak Hickory	73%	Oak Gum Cypress	72%	Elm Ash		Cottonwood	73%	Maple Beech		Birch	76%	Aspen Birch	61%	Douglas Fir	70%	Western White Pine	62%	Fir- Spruce/Mountain		Hemlock	62%	Lodgepole Pine	64%	Hemlock/Sitka		Spruce	67%	Western Larch	66%	Redwood	43%	Western Oak	69%		
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<p>CAR 2</p> <p><b>Baseline determination:</b></p> <p>The MED does not conform to the following requirement in the VCS 2007.1 (Page 18); this can result in improper determination of the baseline scenario for a project.</p> <p>“Methodologies shall be informed by a comparative assessment of the project and its alternatives in order to identify the baseline scenario. Such an analysis shall include, at a minimum, a comparative assessment of the implementation barriers and net benefits faced by the project and its alternatives.”</p> <p>Since the tool provided in the MED to determine the baseline scenario does not consider alternatives to determine the baseline, there is no possibility of having a conclusion that the VCS project activity could be a possible baseline.</p>	<p>Conservatively in this methodology we do not consider the possibility of alternative land uses in the baseline. The alternative to a forested land use is a non-forest land use which is not applicable to the IFM project class and will inevitably have significantly higher emissions than any IFM baseline.</p> <p>Thus what we are dealing with in the baseline determination is a definition of how forested baseline shall be modeled. Once this broad criterion for the baseline is determined it is compared directly against the with-project case so that it may be conclusively shown that the project is not the baseline.</p> <p>We realize that the text was not sufficiently clear on this point. Step 2 now reads:</p> <p>The project proponent shall test the additionality of the project using the current CDM A/R Tool for demonstration and assessment of additionality<sup>8</sup>. In application of the Additionality Tool the project scenario as described ex-ante using this methodology and monitored using this methodology shall be evaluated alongside the baseline scenario identified in Step 1. If a financial analysis or a demonstration of barriers does not lead the preclusion of the project scenario then the project shall be considered non-additional.</p> <p><b>Outcome of Step 2:</b> A project scenario with proven additionality or identification of a non-additional project.</p>	<p>DNV does not consider the response satisfactory to address CAR 2. Please refer to CAR 2 (continued)</p>

<sup>8</sup> <http://cdm.unfccc.int/methodologies/ARmethodologies/tools/ar-am-tool-01-v2.pdf>

<b>Draft report clarifications and corrective action requests by assessment team</b>	<b>Summary of methodology element developer response</b>	<b>Assessment team conclusion</b>

Draft report clarifications and corrective action requests by assessment team	Summary of methodology element developer response	Assessment team conclusion
<p>CAR 2 (continued)</p> <p>The requirement in the VCS 2007.1 (Page 18) methodology refers to a comparative assessment of the project and its “alternatives”. This does not say “alternative land uses” as referred to in the methodology element developer response e.g. “forested land use and non forested land use”.</p> <p>A comparative assessment of project alternatives can include various forested land use alternatives such as even aged vs. uneven aged management and may need to be included in the methodology. Historical baseline, common practice and sustainable baseline can also be considered alternative to project activity. The baseline determination procedure described above does not conform to the following requirement in the VCS 2007.1: “Methodologies shall be informed by a comparative assessment of the project and its alternatives in order to identify the baseline scenario. Such an analysis shall include, at a minimum, a comparative assessment of the implementation barriers and net benefits faced by the project and its alternatives.” (Section 6.1, Page 18)</p>	<p>We have redrafted the language in the methodology to comply with the VCS Program Guidelines 2007.1, specifically to following the requirement to assess implementation barriers and net benefits. The specific section we have redrafted is STEP 1 – the determination of baseline scenario.</p> <p><b>STEP 1. Determination of Baseline Scenario</b></p> <p>As per the applicability conditions the project must demonstrate a baseline of clear cut or patch cut forest management using such evidence as management plans, forest inventories, assessments by reputable forestry consultants, the common practice of alternative land owners and common practice in the region.</p> <p>If such a baseline can not be demonstrated then this methodology can not be applied.</p> <p>Identify realistic and credible land-use scenarios that would have occurred on the land within the proposed project boundary in the absence of the IFM project activity under the VCS2. The scenario should be feasible for the project participants or similar project developers taking into account relevant national and/or sectoral policies<sup>3</sup> and circumstances, such as historical land uses, practices and economic trends.</p> <p>The identified land use scenario shall be limited to forested land uses. This process should clearly identify barriers and benefits of all potential scenarios.</p> <p>The possible land-use scenarios to be evaluated may include:</p> <ul style="list-style-type: none"> <li>• Continuation of the pre-project forest management</li> <li>• Forest management as modeled under the project but in the absence of registration as an IFM VCS project</li> </ul>	<p>The baseline determination has been revised as is deemed appropriate by DNV.</p> <p><b>CAR 2 is closed</b></p>



Draft report clarifications and corrective action requests by assessment team	Summary of methodology element developer response	Assessment team conclusion
	<p>activity</p> <ul style="list-style-type: none"> <li>• If applicable forest management of least part of the land within the project boundary as modeled as a result of legal requirements</li> <li>• Unmanaged forest (with no planned timber extraction)</li> <li>• Management under individual tree selection</li> </ul> <p>For identifying the realistic and credible land-use scenarios; land use records, field surveys, data and feedback from stakeholders, and information from other appropriate sources, including Participatory Rural Appraisal (PRA) may be used as appropriate.</p> <p>All current land uses within the boundary of the proposed IFM VCS project activity may be deemed realistic and credible. For all other land use scenarios, credibility shall be justified through an assessment of</p> <ul style="list-style-type: none"> <li>• Investment analysis to determine that the proposed project activity is either: 1) not the most economically or financially attractive, or 2) not economically or financially feasible;</li> <li>• Barriers analysis; and</li> <li>• Common practice analysis.</li> </ul> <p>Project IFM project developers must at a minimum evaluate the baseline management regime, including:</p> <ul style="list-style-type: none"> <li>• A documented history of the operator (e.g., operator must have at least 20 years of management records to show normal historical practices). Common records to document</li> </ul> <p>history include data on timber cruise volumes, inventory levels, harvest levels, etc. on the property; AND</p> <ul style="list-style-type: none"> <li>• The legal requirements for forest management and land</li> </ul>	

Draft report clarifications and corrective action requests by assessment team	Summary of methodology element developer response	Assessment team conclusion
	<p>use in the area; however if the documented common practice provides evidence that these are not enforced then this requirement does not have to be met; AND</p> <ul style="list-style-type: none"> <li>• A commonly considered environmental minimum standard among similar landowners in the area.</li> </ul> <p>In all cases these three scenarios must be described by the project developer, then reviewed, and approved as accurate by an independent forest consulting entity. Requirements for forest consultant qualifications will vary by region; however, the verifier should consider the following elements when reviewing consultant qualifications:</p> <ol style="list-style-type: none"> <li>1) In those regions where a legally recognized certified forester designation exists, the forest consulting entity must have that designation</li> <li>2) In those areas where there are no legal certified forester designations, the consultant must have either:             <ol style="list-style-type: none"> <li>a. Accreditation under a widely recognized elective accreditation program that grants “certified forester” designation (e.g. Society of American Foresters); OR</li> <li>b. Publicly filed management plans or harvest plans that demonstrate the participation of the consulting entity and their qualifications to review the required documentation IFM project developers should use the following guidelines to determine the baseline scenario to be modeled:                 <p><i>Historical Baseline</i></p> </li> </ol> </li> </ol>	

Draft report clarifications and corrective action requests by assessment team	Summary of methodology element developer response	Assessment team conclusion
	<p>Historical Baseline must be modeled as the project baseline if the following documents exist for the forest property:</p> <ol style="list-style-type: none"> <li>1) Historical records of forest management exist for 20 or more years preceding the project start date.</li> <li>2) Historical records indicate that the management practices have surpassed the legal barriers provided by conforming with all local and regional forest legislation</li> <li>3) Historical records that indicate that the historical management surpasses financial barriers by providing above average market returns.</li> </ol> <p><i>Common Practice Baseline</i></p> <p>All other cases must model common practice in the region. It is possible that the common practice and project scenarios are the same, in which case the project scenario would not be considered additional.</p> <p>Common practice will be defined by an accredited forest consultant entity and should consider the following elements of forest management:</p> <ol style="list-style-type: none"> <li>1) Harvest rotations</li> <li>2) Harvest methods</li> <li>3) Species harvested and planted</li> <li>4) No harvest zones</li> <li>5) Riparian management areas</li> <li>6) Areas of steep slope or unstable soils</li> <li>7) Maximum patch cut areas</li> </ol> <p>During verification the forest consultant shall share with the verifying organization evidence for their determination of common practice. Such evidence shall in all situations be considered confidential and shall not be published or shared by the verifier. Such evidence</p>	

Draft report clarifications and corrective action requests by assessment team	Summary of methodology element developer response	Assessment team conclusion
	<p>may include management plans for other entities in the region, National or regional government statistics on forest management in the region, published data and analyses on forest management in the region, spatial analyses on management options and / or carbon stocks in the focal region.</p> <p><b>Outcome of Step 1:</b> An identified baseline scenario.</p>	
<p><b>CAR 3</b></p> <p><b>Baseline determination:</b></p> <p>The baseline scenario determination methodology described in MED results in three possible baselines (1) Historical baseline (2) Common practice and (3) Sustainable baseline.</p> <p>(2) Common practice: The MED does not provide a geographical boundary within which the common practice is to be determined. E.g. country or region with common regulatory and political boundaries that affect forest management.</p> <p>(3) Sustainable: The MED does not provide guidance on the determination of the sustainable baseline.</p>	<p>We agree that common practice should be more fully described. The footnote for common practice now reads:</p> <p><sup>6</sup> Common practice may be identified from the management plans of other landowners or alternatively through the opinions of established forestry consultants (qualification for this role may include: professional certification and a history and reputation in the region in which the project is located). The common practice assessment shall include form of management (even vs uneven), species harvested, length of rotation, common standards for set-asides and seed trees. The forestry consultant must prepare a report for publication describing the determination of common practice and certifying the baseline with respect to the relevant years of experience in the region. The area surrounding the project shall be defined as the highest subnational political region that has regulatory jurisdiction over forest management activities – the equivalent of the State-level with the United States of America.</p> <p>For sustainable the text already described how carbon stocks should be maintained through time:</p> <p>“creation of a new baseline scenario representing a forest management practice that at a minimum maintains carbon stocks over the forest management cycle”</p> <p>A new footnote has been added to further clarify:</p> <p><sup>7</sup> The carbon stock as projected in the modeled baseline (Section 4.1) shall be the same or higher immediately prior to harvest in each</p>	<p>DNV does not consider the response satisfactory to address CAR 3. Please refer to CAR 3 continued</p>

Draft report clarifications and corrective action requests by assessment team	Summary of methodology element developer response	Assessment team conclusion
	management cycle	
<p><b>CAR 3 continued</b>                      Common Practice: The revised MED provides a definition for the determination of a geographical boundary within which common practice is to be determined. Once the boundary has been established, the MED mandates an established forestry consultant determine the common practice in the area. However, absent any requirement to document why the statistical representativeness of the common practice finding, this method could leave considerable subjectivity in choosing which management plans of other landowners they want to include or exclude in common practice, and its conclusion could very easily be inconsistent between established forestry consultants.</p>	<p>We feel that the development of a rigorous statistical analysis of regional forest management actions would be overly burdensome on the project developer, specifically given the difficulties of receiving detailed information on neighboring forest management activities on private lands. Instead we are proposing more detailed definition of requirements that forest consultants must provide before allowing their analysis of common practice in regional forests. New language is provided below:                      In all cases these three scenarios must be described by the project developer, then reviewed, and approved as accurate by an independent forest consulting entity. Requirements for forest consultant qualifications will vary by region; however, the verifier should consider the following elements when reviewing consultant qualifications:                      3) In those regions where a legally recognized certified forester designation exists, the forest consulting entity must have that designation                      4) In those areas where there are no legal certified forester designations, the consultant must have either:                      a. Accreditation under a widely recognized elective accreditation program that grants “certified forester” designation (e.g. Society of American Foresters); OR                      b. Publicly filed management plans or harvest plans that demonstrate the participation of the consulting entity and their qualifications to review the required documentation</p>	<p>The use of a qualified forestry consultant to determine common practice in the region is considered appropriate by DNV. The baseline determination procedure has been revised. The new baseline determination procedure does not result in a plausible sustainable baseline scenario. Hence, no procedure for modeling of sustainable baseline is required.  <b>CAR is closed</b></p>

Draft report clarifications and corrective action requests by assessment team	Summary of methodology element developer response	Assessment team conclusion
<p><b>CL 1</b>  <b>Eligibility Criteria:</b>                      – (Reference (f) above)- The eligibility criteria for the application of this methodology requires the project start date and project crediting period start date to be the same.  <i>- The reason for this requirement is to be explained to DNV.</i></p>	<p>This was a request from the first verifier. We can not see a reason why the date of project start and the date for the start of the first monitoring period should differ. We are willing to consider alternative approaches to this issue especially if clear situations exists where a project could start prior to monitoring.</p>	<p>The eligibility criteria of requiring the project start date and project crediting period start date to be the same does not affect the conservativeness of project emission reduction estimation.  <b>CL 1 is closed.</b></p>
<p><b>CL 2</b>  <b>Eligibility Criteria:</b>                      – (Reference (a) above)  <i>- The methodology does not include limits to clear cut and patch cut in the project activity boundary to ensure the project is conducted in a sustainable manner. Projects using the proposed methodology could implement large clear cuts, on steep slopes in wet environments that could have an impact on the future growth of wildlife habitat and tree growth.</i></p>	<p>The following applicability condition has been added:                       Forests must be FSC Certified or become FSC Certified within one-year of the Project Start Date                       This represents a highly conservative response to this CL. FSC requirements will ensure no negative environmental impacts</p>	<p>Response is sufficient and would be consistent among project participants.   <b>CL 2 is closed</b></p>
<p><b>CL 3</b>                      – (Reference (c) above)  <i>- The MED is not applicable to all managed peat forests. This might subsequently exclude management efforts of restoration in peat forests that might increase wetlands. Please provide explanation for excluding all types of</i></p>	<p>Peatlands are excluded as there are no methods for accounting the associated non-CO<sub>2</sub> gases or the potential impacts on drainage. Exclusion is conservative in all cases.</p>	<p>Methodology element developer response is sufficient.  <b>CL 3 is closed</b></p>

Draft report clarifications and corrective action requests by assessment team	Summary of methodology element developer response	Assessment team conclusion
<p><i>managed peat forests.</i></p>		
<p><b>CL 4</b>  <i>Rationalization behind each step in the tool for baseline determination is to be explained to DNV.</i></p>	<p>The purpose of STEP 1 of the baseline determination is to define the basis for modeling the forest management baseline. Ultimately should that baseline be sustainable (ie no degradation of stocks over time allowed), should it be based on the historic practices within the project boundaries or should it be based on the common practices in the region (now defined as the highest subnational political region).</p> <p>The purpose is to use the most applicable and best available data. Key drivers are that if the land has been owned by conservation organization in the absence of the project it is not justifiable to have a baseline that degrades the forest.</p> <p>Historical data should be used as long as the historical practices are legally allowable and represent an economically reasonable management of the land. In other situations common practice shall be used.</p> <p>Detailed Justification:</p> <ul style="list-style-type: none"> <li>A. If no historical data exists for the last 20 plus years then common practice must be considered</li> <li>B. Even if historical data does exist if it does not conform with enforced legal requirements then common practice should be considered.</li> </ul> <p>Following the precedent of the CDM particularly for developing countries if there are non-enforced laws they should not be a restriction on the</p>	<p>The baseline determination procedure described above does not conform to the requirement in the VCS 2007.1. The VCS 2007.1 states, “Methodologies shall be informed by a comparative assessment of the project and its alternatives in order to identify the baseline scenario. Such an analysis shall include, at a minimum, a comparative assessment of the implementation barriers and net benefits faced by the project and its alternatives.” This brings us back to CAR 2. This clarification will be closed and will be carried over to resolution of CAR 2.</p> <p><b>CL 4 is closed</b></p>

Draft report clarifications and corrective action requests by assessment team	Summary of methodology element developer response	Assessment team conclusion
	<p>project baseline</p> <p>C. If the historical data reflects very poor forest management with regard to financial returns then common practice should be considered. It could be expected that historical practices could be changed if there is a more optimal way of managing the lands in terms of financial returns</p> <p>D. If the implementing project proponent is an organization with a conservation mission then it is not reasonable to consider a baseline that will degrade carbon stocks</p> <p>E. And F. Unless the project starts with transfer of the project area to the conservation organization so that it can be shown that the baseline would be management by an alternate organization who justifiably could degrade carbon stocks</p> <p>G. If the baseline can not be historical it should be common practice unless the implementing project proponent is an organization with a conservation mission then it is not reasonable to consider a baseline that will degrade carbon stocks</p> <p>H. And I. Unless the project starts with transfer of the project area to the conservation organization so that it can be shown that the baseline would be management by an alternate organization who justifiably could degrade carbon stocks</p>	
<p><b>CL 5</b>  <b>Additionality:</b>                      The MED refers to the current CDM</p>	<p>Agree. We meant the A/R Additionality tool. This was just an oversight that has been corrected.</p>	<p>CL 5 (continued)</p>



Draft report clarifications and corrective action requests by assessment team	Summary of methodology element developer response	Assessment team conclusion
<p>Tool for the demonstration and assessment of additionality<sup>1</sup>. <i>Justification needs to be provided for not using the “Tool for the Demonstration and Assessment of Additionality in A/R CDM Project Activities”, which might be more relevant, since this MED falls under the sectoral scope of agriculture, forestry and other land use</i></p>		
<p><b>CL 5 (continued)</b>                      After the review of the CDM A/R Tool for demonstration and assessment of additionality”, DNV has ascertained that this tool is not applicable to this methodology. This CDM A/R Tool for demonstration and assessment of additionality is applicable only under the following conditions:</p> <ul style="list-style-type: none"> <li>• <b>Forestation of the land</b> within the proposed project boundary performed with or without being registered as the A/R CDM project activity shall not lead to violation of any applicable law even if the law is not enforced;</li> <li>• The use of this tool to determine additionality requires the baseline methodology to provide</li> </ul>	<p>We are proposing a return to the more general tool be used for determining additionality, since the CDM A/R Tool is clearly geared for afforestation and reforestation projects only. We would like to be able to use the general CDM Tool for Additionality – (<a href="http://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-01-v5.2.pdf">http://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-01-v5.2.pdf</a>).</p> <p>Methodology language below:</p> <p>The project proponent shall test the additionality of the project using the current CDM “Tool for the demonstration and assessment of additionality”. In application of the Additionality Tool the project scenario as described ex-ante using this methodology and monitored using this methodology shall be evaluated alongside the baseline scenario identified in Step 1. If a financial analysis or a demonstration of barriers does not lead the preclusion of the project scenario then the project shall be considered nonadditional.</p>	<p>The MED uses the CDM “Tool for the demonstration and assessment of additionality” for demonstration of additionality. This is considered appropriate and accepted by DNV.</p> <p><b>CL 5 is closed.</b></p>

Draft report clarifications and corrective action requests by assessment team	Summary of methodology element developer response	Assessment team conclusion
<p>for a stepwise approach justifying the determination of the most plausible baseline scenario<sup>2</sup>. Project participants proposing new baseline methodologies shall ensure consistency between the determination of a baseline scenario and the determination of additionality of a project activity;</p> <ul style="list-style-type: none"> <li>• This tool is not applicable to small - scale afforestation and reforestation project activities.</li> </ul>		
<p><b>CL 6</b>  <b>Baseline estimation:</b>                      The VPS: Visual Forester Professional model is listed as one the examples. <i>DNV could not find any documentation or literature on this model. Evidence needs to be provided that the Visual Forester Professional model is a peer reviewed model.</i></p>	<p>We do not know this model either and so have cut it from the eligible list</p>	<p>Methodology element developer response is sufficient.</p> <p><b>CL 6 is closed.</b></p>
<p><b>CL 7</b>  <b>Project GHG Removal:</b>  <i>The default values, equations and monitored data to be used for ex ante</i></p>	<p>For the parameters monitored through time guidance on ex-ante usage has been given under comments in each parameter table. Ultimately the with-project change in carbon stocks will</p>	<p>The Methodology element developer’s response is sufficient.</p> <p><b>CL 7 is closed.</b></p>

Draft report clarifications and corrective action requests by assessment team	Summary of methodology element developer response	Assessment team conclusion
<p><i>calculation are not described consistently in the MED.</i></p>	<p>have to be modeled ex-ante. The following footnote was added:  <sup>12</sup> For the ex-ante estimation of changes in above-ground biomass, dead wood and wood products in the project scenario projects shall model the expected changes in stocks through the with-project management scenario using methods as described in Section 4.1</p>	
<p><b>CL 8</b>  <b>Project GHG Removal:</b>                      The MED specifies that the root-shoot ratio should be adjusted based on forest type and stand structure. <i>However, Justification is need to ensure that these parameters are sufficient to ensure accuracy and that there are no other parameters that significantly affect the root-shoot ratio, e.g. age, temperature, precipitation, soil nutrition etc.</i></p>	<p>The approach we have taken is directly derived from the precedence of the CDM. It is also determined by the available data. The most common approaches are the equations of Cairns et al. 1997 which has different equations for tropical, temperate and boreal forests, or the IPCC Guidelines for National Inventories 2006 which has ratios that vary by climatic region and to some extent by forest type and carbon stock.</p>	<p>Methodology element developer response is sufficient. It would be helpful for the project participant if the methodology included table excerpts from the referenced literature such as Cairns et al. 1997 in an appendix.  <b>CL 8 is closed</b></p>
<p><b>CL 9</b>  <b>Project GHG Removal:</b>                      The 1605b method is one of the methods provided in the MED to estimate GHG removal sink in wood products. This method is critically depended on supplemental information provided for proportions of extracted timber still “in use” or sequestered in a “landfill” as wood products 100 years after production. The MED refers users to the below given websites with</p>	<p>OK new links provided:  <a href="http://www.eia.doe.gov/oiaf/1605/Forestryappendix[1].pdf">http://www.eia.doe.gov/oiaf/1605/Forestryappendix[1].pdf</a>                      Also available as a US Forest Service General Technical Report at:  <a href="http://www.fs.fed.us/ne/durham/4104/papers/ne_gtr343.pdf">http://www.fs.fed.us/ne/durham/4104/papers/ne_gtr343.pdf</a></p>	<p>Methodology element developer response is sufficient.  <b>CL 9 is closed.</b></p>

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<p>documents containing conversion factors.  <a href="http://www.pi.energy.gov/enhancingGHGregistry/documents/PartIForestryAppendix.pdf">http://www.pi.energy.gov/enhancingGHGregistry/documents/PartIForestryAppendix.pdf</a>  <a href="http://www.pi.energy.gov/enhancingGHGregistry/documents/PartIForestryAppendix.pdf">http://www.pi.energy.gov/enhancingGHGregistry/documents/PartIForestryAppendix.pdf</a></p> <p><i>It should be noted that these links are no longer active and the location of these files have been moved, an updated link to these documents should be provided.</i></p>		
<p><b>CL 10</b>  <b>Leakage:</b>                      The guidance provided in the “Tool for AFOLU Methodological Issues” describes that the leakage is low and a 10% credit adjustment can be used for moderate extension rotation age (5-10 years). Moderate extension leads to a shift in harvests across time periods but minimal change in total timber harvest</p>	<p>An extension of more than 10 years would then lead you to using the default deduction factors. Leakage section now reads:</p> <p>Leakage due to market effects is equal to the baseline emissions from logging multiplied by a leakage factor:</p> $LK_{MarketEffects} = LF_{ME} * (\Delta C_{ACTUAL} - \Delta C_{BSL}) \quad (41)$	<p>Leakage calculation method suggested here closely follows methods for leakage and secondary effects in the Climate Action Reserve (CAR) protocol and seems sufficient.</p> <p>It should be noted that de minimis is referred to in several sections of the proposed</p>

<sup>9</sup> Defined here as the minimum project lifetime elected by project proponents in their project description document. If the project is extended beyond this time period harvests may not be decreased by more than 25% across through each additional crediting/baseline period

<sup>10</sup> Volumes shall be converted to merchantable biomass using wood densities/specific gravities. A weighted wood density shall be used to convert multi-species data on growing stock volume to merchantable biomass

<sup>11</sup> Brown, S. 1997. Estimating biomass and biomass change of tropical forests: a Primer. FAO Forestry Paper 134. <http://www.fao.org/docrep/W4095E/W4095E00.htm>

<sup>12</sup> The FIA mapmaker program (<http://www.ncrs2.fs.fed.us/4801/fiadb/fim30/wcfim30.asp>) was used. For the lower 48 states the total biomass and merchantable biomass by forest type were downloaded in order to calculate the proportions given here

Draft report clarifications and corrective action requests by assessment team	Summary of methodology element developer response	Assessment team conclusion
<p>over time. <i>However, the MED does not provide guidance on credit adjustment if the rotation age is above 10 years.</i></p>	<p>Where:</p> <p><math>LK_{MarketEffects}</math> Total GHG emissions due to market-effects leakage through decreased timber harvest; t CO<sub>2</sub>-e</p> <p><math>LF_{ME}</math> Leakage factor for market-effects calculations; dimensionless</p> <p><math>\Delta C_{ACTUAL}</math> Actual net greenhouse gas removals by sinks; t CO<sub>2</sub>-e</p> <p><math>\Delta C_{BSL}</math> Baseline net greenhouse gas removals by sinks; t CO<sub>2</sub>-e</p> <p>The leakage factor is determined by considering where in the country logging will be increased as a result of the decreased supply of the timber caused by the project. If the areas liable to be logged have a higher carbon stock than the project area it is likely that the proportional leakage is higher and vice versa:</p> <p><math>LF_{ME} = 0</math> if it can be demonstrated that no market-effects leakage will occur within national boundaries,</p> <p>e.g. if no new concessions are being assigned AND annual extracted volumes cannot be increased within existing national concessions AND illegal logging is absent (or <i>de minimis</i>) in the host country</p> <p>OR if the project is able to demonstrate that any decrease in wood products produced by the project relative to the baseline is less than 5% and any temporal</p>	<p>methodology (for Litter, and Soil organic carbon on Page 4, and for leakage on Page 30). This term is clearly defined for leakage, but is not for the other two sections.</p> <p><b>CL 10 is closed.</b></p>

Draft report clarifications and corrective action requests by assessment team	Summary of methodology element developer response	Assessment team conclusion
	<p>displacement in the total production of wood products is less than 5 years.</p> <p><math>LF_{ME} = 0.1</math> where rotations are moderately extended (5-10 years) leading to a shift in harvests across time periods but a change in total timber harvest equal to <math>\leq 25\%</math> over the project lifetime<sup>9</sup></p> <p><i>Where rotations are extended by &gt;10 years and/or harvest is decreased by &gt;25% over the project lifetime as per the VCS standards:</i></p> <p>The amount of leakage is determined by where harvesting would likely be displaced to. If in the forests to which displacement would occur a lower proportion of forest biomass in commercial species is in merchantable material than in project area, then in order to extract a given volume higher emissions should be expected as more trees will need to be cut to supply the same volume. In contrast if a higher proportion of the total biomass of commercial species is merchantable in the displacement forest than in the project forests then a smaller area would have to be harvested and lower emissions would result.</p> <p>Each project thus shall calculate within each stratum the proportion of total biomass in commercial species that is merchantable (<math>PMP_i</math>). This shall then be compared to mean proportion of total biomass that is merchantable for each forest type (<math>PML_{FT}</math>).</p> <p>Merchantable biomass is defined as:  “Total gross biomass (including bark) of a tree 5 inches (12.7 cm) DBH or larger from a 1 foot (30.48 cm) stump to a minimum 4 inches top DOB of the central stem”</p> <p style="text-align: right;"><i>Definition from</i></p> <p><i>US Forest Service FIA Program</i></p> <p>The following deduction factors (<math>LF_{ME}</math>) shall be used:  Where:</p>	

Draft report clarifications and corrective action requests by assessment team	Summary of methodology element developer response	Assessment team conclusion										
	<p><math>PML_{FT}</math> is equal (<math>\pm 15\%</math>) to <math>PMP_i</math>;  <math>LF_{ME} = 0.4</math></p> <p><math>PML_{FT}</math> is <math>&gt; 15\%</math> less than <math>PMP_i</math>  <math>LF_{ME} = 0.7</math></p> <p><math>PML_{FT}</math> is <math>&gt; 15\%</math> greater than <math>PMP_i</math>  <math>LF_{ME} = 0.2</math></p> <p>Where:</p> <p><math>PML_{FT}</math> Mean merchantable biomass as a proportion of total aboveground tree biomass for each forest type; % (default values see Section X or Annex 3)</p> <p><math>PMP_i</math> Merchantable biomass as a proportion of total aboveground tree biomass for stratum <math>i</math> within the project boundaries; %</p> <p><math>LF_{ME}</math> Leakage factor for market-effects calculations; dimensionless</p> <table border="1" data-bbox="726 914 1331 1406"> <tr> <td data-bbox="726 914 898 982">Data / parameter:</td> <td data-bbox="898 914 1331 982"><math>PMP_i</math></td> </tr> <tr> <td data-bbox="726 982 898 1036">Data unit:</td> <td data-bbox="898 982 1331 1036">%</td> </tr> <tr> <td data-bbox="726 1036 898 1105">Used in equations:</td> <td data-bbox="898 1036 1331 1105">Leakage section 6.2</td> </tr> <tr> <td data-bbox="726 1105 898 1208">Description:</td> <td data-bbox="898 1105 1331 1208">Merchantable biomass as a proportion of total aboveground tree biomass for stratum <math>i</math> within the project boundaries</td> </tr> <tr> <td data-bbox="726 1208 898 1406">Source of data:</td> <td data-bbox="898 1208 1331 1406">Within each stratum divide the summed merchantable biomass (defined as “Total gross biomass (including bark) of a tree 5” (12.7 cm) DBH or larger from a 1’ (30.48 cm) stump to a minimum 4” (10.2 cm) top DOB of the central stem”) by the summed total aboveground tree biomass</td> </tr> </table>	Data / parameter:	$PMP_i$	Data unit:	%	Used in equations:	Leakage section 6.2	Description:	Merchantable biomass as a proportion of total aboveground tree biomass for stratum $i$ within the project boundaries	Source of data:	Within each stratum divide the summed merchantable biomass (defined as “Total gross biomass (including bark) of a tree 5” (12.7 cm) DBH or larger from a 1’ (30.48 cm) stump to a minimum 4” (10.2 cm) top DOB of the central stem”) by the summed total aboveground tree biomass	
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Draft report clarifications and corrective action requests by assessment team	Summary of methodology element developer response		Assessment team conclusion
	Measurement procedures (if any):		
	Monitoring frequency:	At least every five years at the time of verification	
	QA/QC procedures:		
	Any comment:	Ex-ante a time zero measurement shall be made of this factor	
	<b>Data / parameter:</b>	$PML_{FT}$	
	Data unit:	%	
	Used in equations:	Leakage Section 6.2	
	Description:	Mean merchantable biomass as a proportion of total aboveground tree biomass for each forest type	
	Source of data:	<p>The source of data shall be chosen with priority from higher to lower preference as follows:</p> <ol style="list-style-type: none"> <li>4. Peer-reviewed published sources (including carbon/biomass maps or growing stock volume<sup>10</sup> maps with a scale of at least 1km)</li> <li>5. Official Government data and statistics</li> <li>6. Original field measurements</li> </ol> <p>The forest types considered shall be only those relevant for the specific market effects leakage ie. only forest</p>	



Draft report clarifications and corrective action requests by assessment team	Summary of methodology element developer response		Assessment team conclusion																
		<p>types with active timber production.</p> <p>An appropriate source of data will be Government records on annual allowable cuts for the areas of commercial forests.</p> <p>Where volumes are used the source of data wood density is required to convert to merchantable biomass. The source of data on wood densities shall be chosen with priority from higher to lower preference as follows:</p> <ol style="list-style-type: none"> <li>3. Knowledge on commercial species and thus an appropriately weighted wood density derived from the density of these species</li> <li>4. A region-specific mean wood density as given e.g. in Brown 1997<sup>11</sup></li> </ol> <p>For the lower 48 US States the following defaults have been calculated<sup>12</sup> from the US Forest Service Forest Inventory Analysis Database and shall be used where appropriate:</p> <table border="1" data-bbox="930 1057 1310 1430"> <thead> <tr> <th>Forest Type Group</th> <th>Merchantable Biomass as Proportion of Total Biomass</th> </tr> </thead> <tbody> <tr> <td>White Red Jack Pine</td> <td>77%</td> </tr> <tr> <td>Spruce Fir</td> <td>58%</td> </tr> <tr> <td>Longleaf Slash Pine</td> <td>73%</td> </tr> <tr> <td>Loblolly Shortleaf Pine</td> <td>73%</td> </tr> <tr> <td>Ponderosa Pine</td> <td>64%</td> </tr> <tr> <td>Oak Pine</td> <td>71%</td> </tr> <tr> <td>Oak Hickory</td> <td>73%</td> </tr> </tbody> </table>	Forest Type Group	Merchantable Biomass as Proportion of Total Biomass	White Red Jack Pine	77%	Spruce Fir	58%	Longleaf Slash Pine	73%	Loblolly Shortleaf Pine	73%	Ponderosa Pine	64%	Oak Pine	71%	Oak Hickory	73%	
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<p><b>CL 11</b>  <b>Sampling:</b>                      The MED has provided two methods for field verification of Allometric equations, which are destructive sampling and limited measurements. The following extract from MED/1/, describes the limited measurement technique:                      Limited measurement:</p>	<p>This approach goes beyond any requirement in any CDM methodology. As such any number of trees is an improvement. The purpose is to demonstrate no systematic bias. 10 trees should be sufficient. Under the CDM the only requirement is to demonstrate the applicability of an equation. This is required here and you can only use equations applicable to your vegetation type and project area. This additional requirement is a conservative step to provide an added safety net. If a systematic bias is demonstrated then the equation would</p>		<p>Methodology element developer response is sufficient.  <b>CL 11 is closed</b></p>																														

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<ul style="list-style-type: none"> <li>▪ Select at least 10 trees per species distributed across the age range (but excluding trees less than 15 years old for which there is rarely a great relative inaccuracy in equations)</li> <li>▪ Calculate volume of tree from basal and top diameters and tree height. Multiply by species-specific density to gain biomass of bole. Add an additional percentage to approximately cover biomass of branches: 15% for spruce/fir, 5% for pines and 20% for broadleaf forests</li> </ul> <p><i>Justification needs to be provided that under limited measurement the sample size of 10 trees per species distributed across the age range is sufficient for accurate verification.</i></p>	<p>be precluded.</p> <p>Ten trees per species is reasonable to avoid the necessity for very great project expenditures for a step that is itself a conservative addition. If there were 20 species and 100 trees per species had to be measured the costs to projects would run very high.</p>	
<p><b>CL 12</b>  <b>Monitoring:</b>                      The MED provides guidance that the source of data for ‘root-shoot ratio appropriate for biomass increment of forest type’ shall be chosen with priority from higher to lower preference as follows:</p> <p>(a) Research publications relevant to the project area;</p> <p>(b) National and forest type-specific or eco-region-specific (e.g. from National</p>	<p>B is preferable to a when the dataset is much larger and the relationship is tighter. Ultimately almost everyone will use B. Roots are very hard and costly to assess in terms of biomass. Thus the strongest approach is to take advantage of studies that have combined very large numbers of measurements across very many studies. A strong relationship is clearly much better than a limited project area study. We already see under the CDM that the approach of projects is to use IPCC factors and defaults.</p> <p>The IPCC factors are referred to directly under other comments in the parameter table.</p>	<p>Methodology element developer response is sufficient.</p> <p><b>CL 12 is closed.</b></p>

Draft report clarifications and corrective action requests by assessment team	Summary of methodology element developer response	Assessment team conclusion
<p>GHG inventory);                      (c) Forest type-specific or eco-region-specific from neighboring countries with similar conditions. Sometimes (b) may be preferable to (a);                      (d) Globally forest type-specific or eco-region-specific (e.g. IPCC GPG-LULUCF).  <i>Point (c) states that “sometimes (b) may be preferable to (a)”. The methodology needs to specify when (b) is preferable to (a).</i></p>		
<p><b>CL 13</b>  <b>Sampling:</b>                      The MED allows the use permanent plots and temporary plots for sampling. It has been observed that regardless of how accurately temporary sample plots are measured, two successive volume inventories based upon them cannot yield a very precise estimate of growth because of sampling errors involved.  <i>The MED needs to provide guidance on when project developers should use permanent or temporary plots for sampling.</i></p>	<p>A footnote has been added as indicated here showing that permanent plots are likely preferable:  <sup>12</sup> Note that due to covariance tighter precision and hence fewer measurements can be used if permanent plots are elected. See guidance in IPCC Good Practice Guidance for Land Use, Land Use Change and Forestry – Section 4.3. Available at: <a href="http://www.ipcc-nggip.iges.or.jp/public/gpگلulucf/gpگلulucf_files/Chp4/Chp4_3_Projects.pdf">http://www.ipcc-nggip.iges.or.jp/public/gpگلulucf/gpگلulucf_files/Chp4/Chp4_3_Projects.pdf</a>                      However, ultimately developers make their own decisions and have to meet the ultimate precision thresholds.                      For the situation where inventory data are used to create growth models (only applicable outside the US) the following footnote was added to ensure that the data used are of sufficient quality for the purpose:  <sup>9</sup> Input data including precision bounds must be made available to verifying organizations</p>	<p>Methodology element developer response is sufficient, sampling is referred to in section 4.3.3.4 Sampling Design of IPCC Good Practice Guidance for Land Use, Land Use Change and Forestry – Available at: <a href="http://www.ipcc-nggip.iges.or.jp/public/gpگلulucf/gpگلulucf_files/Chp4/Chp4_3_Projects.pdf">http://www.ipcc-nggip.iges.or.jp/public/gpگلulucf/gpگلulucf_files/Chp4/Chp4_3_Projects.pdf</a>  <b>CL 13 is closed.</b></p>

