



14 December 2009

VCS Association
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Dear Sir

Re: Comments on Improved Forest Management Through Avoidance of Re-logging and Rehabilitation of Logged Over Forest by Face the Future

Further to a correspondence with Face the Future to clarify certain sections of their submitted IFM-LtHP methodology, please find attached Carbon Planet's comments (CP-CAR).

A total of 12 CP-CARs have been raised based on the document entitled "VCS Proposed Methodology for Improved Forest Management, Conversion of Low-productive forests to High-Productive forests (LtHP)."

We commend the VCS association and express appreciation for providing the public with the opportunity to comment on methodologies as part of the global stakeholder consultation.

Yours faithfully

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CP-CAR 01: General

There are a number of general corrections required:

- (i) Ensure consistency in chapter/section numbering - see pp. 2-3. For example, for section V the sub-section 5.1 is presented, while in section VI, the sub-sections are presented as 1 and 2
- (ii) Recommend re-phrasing: see p. 5, section II, paragraph 3: please rephrase “commercially interesting species” to “species of commercial interest”
- (iii) Ensure consistency of terms - see p. 7 where “project participants (PPs)” is used, then see p. 10 where “project proponents” is used; also see p. 6 where *ex-ante* and *ex-post* are used then in p. 12, it is used as *ex ante* and *ex post*
- (iv) Number all equations
- (v) Use a multiplication sign ‘ \times ’ instead of an asterisk in equations and ensure consistency throughout. For example, see p. 14 where an asterisk is presented and then p. 15 where the multiplication sign is presented
- (vi) Sum individual strata to present total carbon in the project area. For example, see equations on p. 14 for the parameter $C_{BSL,i}$
- (vii) Consider parameters on an annual basis, and then ensure consistency throughout. For example, see p. 15, second parameter table wherein the parameter $V_{harvest,i}$ has been assigned the unit of $\text{m}^3 \text{ha}^{-1} \text{yr}^{-1}$ while the parameter $C_{harvest,i}$ only has the unit of tC ha^{-1} (without the yr^{-1}). The authors should decide whether or not to use yr^{-1} in all parameters or to state up-front that all parameters are considered on an annual basis and not include yr^{-1} in the units
- (viii) Ensure that all units are represented correctly - for example, see p. 15, parameter CF in the parameter table, has units of t d.m.^{-1} ; see also p. 17, parameter D_j in the parameter table, has units of d.m.m^{-2} ; see also p. 18, parameter CF_j in the parameter table, has units of $\text{tC t}^{-1} \text{d.m.}$
- (ix) For the all indicator/counters such as stratum i , the unit should not be “1, 2, 3...”. The unit in this case for the stratum is “dimensionless” and the description should be “stratum in the baseline scenario where $i = 1, 2, 3 \dots P$ ”. A final counter, I , is necessary in the description
- (x) Ensure consistency of presentation for all equations. Since the authors have decided to account for parameters at time t , then all equations should be presented in this way. For example, see equation on p. 17 for the parameter $C_{harvest,ty,t}$ and then equation on p. 15 for the parameter $C_{harvest,i}$. Thereafter, please also consider the equations in Section 4.4 (p. 24 ff.), where the *necessary* parameters need to be considered at time t .
- (xi) A Reference list is required.



CP-CAR 02: Applicability Conditions Regarding Regrowth

- (i) In section II. Applicability Conditions, the second dot point (p. 6), states that “... regrowth of tree biomass following secondary logging in the baseline can in some cases be assumed to be zero. Where this is not the case, *ex-ante* estimates of regrowth must be made and monitoring of the baseline for *ex-post* confirmation of regrowth rates must be conducted.”

In Section 4.3 Baseline Net GHG Emissions, it reiterates that for Case 1: the baseline case is static and is estimated from the timber removed, collateral damage, decomposition in deadwood and carbon storage in harvested wood products, i.e. no regrowth. Then for Case 2: the baseline case is estimated as for the 1st case but also subtracts regrowth.

Whilst a calculation of regrowth is provided in the methodology in Section 4.3.4, p. 23, via the parameter, $\Delta C_{woody,exist,t}$, there is no indication of where this parameter feeds back into the equation for the baseline emissions (ΔC_{BSL}) for Case 2.

- (ii) For the scenario where Case 1 applies, it is assumed that there is no regrowth. Since underestimation of regrowth from the accounting of emissions due to logging will result in an overestimation of the net anthropogenic emission reductions of the IFM-LtHP project activity, it should be a requirement that the Project Developer (see also CP-CAR 01 for term consistency, whether authors decide to use Project Proponent / Project Participant) provide adequate justification for this assumption.

There is adequate evidence in the literature that proves that regrowth can occur following logging (Priyadi *et al.*, 2006). As the Project Developer has access to the logged area, direct measurements of regrowth from permanent sample plots in logged areas can be feasibly implemented. Thus, for conservativeness it is recommended to include a parameter for regrowth for both Cases 1 and 2.

CP-CAR 03: Calculations of Emission Reductions from IFM-LtHP

The equation to calculate the total carbon benefits of the IFM project activity (ΔC_{IFM}) is presented in Section VII. Net project GHG Emission Reductions and Removals (p. 40).

$$\Delta C_{IFM} = (\Delta C_{BSL} + \Delta C_{WPS}) - C_{leakage}$$

- (i) It would be helpful for the reader (i.e. Project Developer) if this equation was presented ahead of all the other equations in order to understand the overall approach of the IFM-LtHP methodology. In addition, this equation requires a parameter table to clarify the units of these main parameters.



- (ii) The equation presented in the IFM-LtHP Methodology features a parameter ΔC_{WPS} , the net removals through the enhancement of forest growth due to liberation thinning and enrichment planting. This parameter is not present anywhere else in the methodology and hence no guidance is provided on how to calculate this. It is likely that this value is a re-representation of E_{WPS} , the net changes in carbon stocks and GHG emissions in the with-project scenario. No connection between these two parameters has been made to confirm this, as E_{WPS} is not linked to any of the other equations in the Methodology. Table 3 on p. 41 refers to $\Delta C_{PROJECT}$ to represent Project Activity carbon stock changes and emissions, and $\Delta C_{BASELINE}$ to represent baseline carbon stock changes and emissions. Consistency with parameter labeling is required.
- (iii) Further comments regarding this equation are provided in CP-CAR 04.

CP-CAR 04: Calculations of Baseline Net GHG Emissions

The equation to determine the Baseline Net GHG Emissions for Method 1. Pre-logging Aspatial Data is presented as (p. 14):

$$\Delta C_{BSL,i} = \left(C_{BSLpre,i} - \left(C_{harvest,i} + C_{damage,i} - C_{WP} \right) \right) \times \frac{44}{12} \quad (\text{sic, asterisk})$$

- (i) This equation calculates the changes in the baseline carbon stocks per stratum, however, an overall value for the entire Project Area (i.e. a summation of the carbon stocks for all strata in the Project Area) is not provided to give the parameter, ΔC_{BSL} , that would feed back into the main equation to calculate net GHG emissions. See also CP-CAR 01 point (vi).
- (ii) The equation for the baseline activity contains a parameter for the carbon stock stored in wood products in the baseline, C_{WP} , (presented in stratified form in the parameter table, i.e. $C_{WP,i}$). On p. 18, this parameter is denoted as $\Delta C_{G-WP,i}$. Consistent notation is required.
- (iii) There are fundamental problems with this equation as it does not accurately predict what is occurring during logging and the emissions that will evolve. Emissions from the baseline activity can indeed be estimated by assessing the difference between the carbon stocks before and after the logging activity, as described by Method 2, Ex-post Mid to High Resolution Spatial Data (p. 21):

$$\Delta C_{BSL,i} = \left(C_{BSLpre,i} - \left(C_{BSLpost,i} + C_{WP} \right) \right) \times \frac{44}{12}$$

where $C_{BSLpre,i}$ represents the carbon stocks before logging and $\left(C_{BSLpost,i} + C_{WP} \right)$ represents the carbon stocks remaining in the project area after logging as well as the harvested wood pool.



The difference between these two parameters would therefore be the emissions into the atmosphere ($\Delta C_{BSL,i}$).

However, using the same approach for Method 1, ($C_{harvest,i} + C_{damage,i} - C_{WP}$) does not represent the carbon stock remaining in the forest after logging. Take the carbon removed from harvesting, for example ($C_{harvest,i}$). The merchantable log component of the harvest will go to a processing mill, a fraction will be made into processed logs and enter the harvested wood products pool and slowly oxidise with time, whilst a fraction of these logs will become residue(s) and hence undergo fast(er) oxidation to the atmosphere. Additionally, biomass from collateral damage will be left on the forest floor as part of the deadwood pool, and a fraction of this will decay into the atmosphere. Table 1 (p. 8) indicates that the deadwood pool is “Optional”, whilst p. 13, line 17-18 in Section 4.3, states that decomposition of the deadwood pool will be considered, but the equation for $\Delta C_{BSL,i}$ does not reflect this. In addition, there is no mechanism for the decay of the slash component (the branches and trimmings from harvesting) which would follow the same fate as biomass from collateral damage.

Due to the complexity of the nature of transfer between carbon stocks for the harvesting process, it would be much simpler to assess the baseline net GHG emissions by directly addressing the emissions, i.e. what is removed from the project area, rather than applying the changes in carbon stocks, i.e., what remains in the project area.

Following this, baseline net GHG emissions would be a function of the decay of slash (branches and trimmings) and collateral damage of the deadwood pool, the oxidation of short term harvested wood products, and the oxidation of long term harvested wood products minus regrowth if present.

As a consequence, the net anthropogenic emissions associated with the IFM-LtHP activity could be more simply expressed as the emissions due to the baseline activity (C_{BSL}) minus any emissions created by the with project scenario (E_{WPS}) minus any emissions associated with leakage of the baseline activity as a result of the IFM-LtHP activity ($C_{leakage}$).

For Example: $\Delta C_{IFM} = C_{BSL} - E_{WPS} - C_{leakage}$

- (iv) On p. 13 of the methodology, point 1, it is indicated that the volume of biomass can be estimated from harvesting levels determined previously and reflected in management plans. This approach links with Method 1. Pre-logging Aspatial Data Calculations (p. 14). However,



there is no indication of what parameters would be extracted from these plans and applied in the calculations (for example, $V_{harvest,i}$ in $m^3 \text{ ha}^{-1} \text{ yr}^{-1}$).

- (v) On p. 19 of the methodology, wood waste fraction (WW) is described but an equation has not been provided. For consistency, an equation plus parameter table should be provided. Furthermore it is not shown how the parameter $C_{XB,ty}$ is related to $C_{harvest,ty}$. The unit for WW (shown in the parameter table on p. 18) is not clear since $\frac{tC}{tC^{-1}}$ can be interpreted as dimensionless, unless the authors are alluding to $(\frac{tC \text{ wood waste}}{tC \text{ wood product}})^{-1}$. See also the units for SLF and OF.
- (vi) On p. 19 of the methodology, for the sub-section on “short-lived fraction (SLF)”, it is stated that “where wood product class ty is unknown, are 100% oxidised within 5 years.” This is not a conservative assumption since the wood product class ty albeit unknown, could have been converted into long-lived wood products, and hence oxidised over a much longer time period.
- (vii) Page 22 provides an equation for the rate for degradation, $D\%_{planned,i,t}$. However, there is no indication where $D\%_{planned,i,t}$ is fed back into the main equation(s) to calculate emissions in the baseline due to logging.
- (viii) For the scenario where no logging rate is available, a definition as to what a proxy area is was not provided to clarify how this information can be obtained by the Project Developer.
- (ix) The methodology suggests that a Reference Area may be required in the scenario where previous forest management plans for the project area cannot be obtained. In some cases it may be difficult to (a) obtain information about the Reference Area, and (b) have access to the Reference Area in order to implement monitoring of parameters. In addition, VCS Guidelines for AFOLU Projects on p. 21, footnote 29 states:
“For new management entities with no history of logging practices in the project region, the baseline should reflect just the common practices and legal requirements. However, if the common practice is unsustainable and unsustainable practices contravene the mission of the implementing entity then a sustainable baseline is the minimum that can be adopted”.

These guidelines indicate that where harvesting plans are not available, either common practices, or a sustainable baseline should be adopted. An indication of what is common practice can be obtained from a National Code of Practice for Timber Harvesting, or equivalent document. Alternatively, a sustainable rate of logging can be derived from determination of the allowable merchantable cut in the project area from permanent sample plots of timber species of commercial interest, divided by the national sustainable logging/cutting cycle. Thus, the use of a Reference Area is not necessary in order to determine the rate of logging.



CP-CAR 05: Selection and Justification of Carbon Pools

- (i) Table 1 is unclear as to the definition of “Selected”. If the authors define “Selected” as ‘selected for inclusion in this IFM-LtHP methodology’, then Table 1 does not conform to the VCS Guidelines. It is prudent for the authors to provide a column indicating the VCS’ requirements as a comparison to what is “selected” in their methodology. See “VCS Tool for AFOLU Methodological Issues” p. 5. Note that for IFM-LtHP, the only mandatory pool is AGB trees. In the table presented by the VCS, the wood products pool is “Optional” but in the methodology the authors have stated “Yes”.
- (ii) On p. 5, the project activities aim at “cutting of climbers and vines, liberation thinning and/or enrichment planting”, while the baseline is logging. Since the baseline is logging, there is likely to be a greater increase in the deadwood pool (and therefore carbon in the deadwood pool) due to branches and trimmings, and from residual stand damage due to the baseline, than from cutting of climbers and vines, or liberation thinning/enrichment planting due to the project activity. It is queried as to why the carbon (in the deadwood) pool (see p. 8) would be anticipated to increase more under LtHP than in the logging scenario.
- (iii) On p. 8, soil organic carbon is not included. However on p. 4, dot point 4 states to use the A/R CDM tool to assess if soil carbon may be conservatively neglected. It is not clear as to why the A/R CDM tool is needed if soil organic carbon is not included in the methodology. See also p. 6 footnote 3.

CP-CAR 06: Greenhouse Gases

- (i) On p. 9, line 6: the authors have not considered materiality for Mega projects (see VCS (2008) “Voluntary Carbon Standard 2007.1”, p. 22)
- (ii) Reference used should be (VCS, 2008) instead of (VCS, 2007.1).
- (iii) On p. 9, Table 2: Natural disturbances such as forest wild fires have not been included. Note that it is not conservative to assume “no burning anticipated” since natural disturbances such as forest wild fires are difficult to anticipate and might occur during the project.

CP-CAR 07: Section V - Project Accounting

The calculation of E_{WPS} , is provided in the following equation (p. 30):

$$E_{WPS} = E_{ATH} + E_{proj_act} + GHG_{E,proj_imp}$$

- (i) Whilst emissions due to the implementation of the project activity, $GHG_{E,proj_imp}$, and emissions from the carbon stock changes as a result of the project activities (i.e. thinning and



replanting), E_{proj_act} , are necessary to calculate emissions from the with-project scenario (E_{WPS}), inclusion of avoided emissions from timber harvesting (E_{ATH}) is not required here as it is already accounted for in baseline emissions (ΔC_{BSL}). Inclusion of E_{ATH} in this equation would lead to double accounting and is hence not conservative.

CP-CAR 08: Equation for Project Activity Emissions

- (i) For the calculation of the project activity emissions in Section 5.2, an equation to calculate the parameter, $GHGE$ (increase in non-CO₂ emissions as a result of the implementation of the project activity within the project boundary) is required plus guidance as to what these emissions could be and their source(s).

Furthermore, if non-CO₂ emissions are to be accounted for, guidance must be provided to convert non-CO₂ emissions to carbon dioxide equivalents (CO₂-e). In addition, these emissions must be included in Table 2 on p. 9 along with a description of their sources.

- (ii) On p. 32, the parameter table for the equation featuring, $E_{proj_act,i,t}$, contains a parameter

$\Delta C_{AGB,i,t=0}$. Based on the equation above the parameter table, it should be denoted as

$C_{AGB,i,t=0}$.

- (i) The equation to calculate the project activity emissions does so at the strata level and on a per annum basis, $E_{proj_act,i,t}$. However, in the main equation for Section V. Project Accounting, an overall value, E_{proj_act} , is applied. There is no equation summing the strata to provide the overall emissions for the entire project area.

- (ii) For the BEF method, Step 3 refers to the selection of a biomass expansion factor (BEF) and root-shoot ratio (R). In order to select an appropriate BEF and R , guidance in the selection of BEF and R is necessary. For example, where can this factor and ratio be found, and what information is required (i.e. forest type, etc.). It has been noted that some guidance is provided in the monitoring section. It would be helpful if the relevant guidance for selecting parameters is featured in main section of the methodology where they are defined and applied.

- (iii) Whilst the BEF is applied in Step 4 of this section (p. 34) to calculate the aboveground biomass (AGB), there is no guidance as to how R is applied, or any reference to the fact that it is employed to calculate belowground biomass (BGB). The heading for this section is “Changes in Carbon Stock in Above Ground Tree Biomass”¹⁸ and footnote 18 is the only instance where the calculation of BGB in this section is mentioned.

- (iv) For the BEF method, Step 4, the parameter table describes $C_{AB_tree,l,j,i,sp,t}$ as the “Sum of changes in above ground biomass of tree l of species j, in plot sp, in stratum i, at time t”.



however, there is no summation sign in the equation calculating this parameter and it is not clear what would be summated. In addition if the root-shoot ratio was to be incorporated as Step 3 suggests, the description would not apply to AGB only, it would be the total carbon stock (AGB and BGB) of the tree and perhaps this is what the “sum of changes” is intending to indicate. In addition, R should be included in the equation for $C_{AB_tree.l.j.i.sp,t}$ and the subscript AB should be removed.

- (v) The unit for the sequence parameters for stratum and tree species is “dimensionless” (see also CP-CAR 01 point (ix)).
- (vi) For the *BEF* method, Step 5 arrives at calculating the carbon stock in tree biomass for each stratum, $C_{tree,i,t}$, from the summation of the carbon stock in trees found in stratum i , in sample plots, sp , at time, t , denoted as $C_{tree,i,sp,t}$. However, the step to link $C_{tree,i,sp,t}$ to the previously derived parameter in Step 4, $C_{AB_tree.l.j.i.sp,t}$, which would be the summation of the individual trees, l , of species, j , and the summation of these species for a particular sample plot, sp , in stratum, i , is missing.
- (vii) In the allometric method of section 5.2.1, Step 3 jumps to Step 6 which states, to calculate the mean carbon stock for each stratum, as per the *BEF* method. In order to create a better flow of sequential steps, Steps 3 through 5 should be included, and then referenced to the Steps and equations as provided in the *BEF* method.

Step 6 should actually be associated with the following sentence on p. 36, i.e. Step 6: For both the *BEF* and allometric methods calculate annual changes in carbon stocks.

CP-CAR 09: Emissions due to Infrastructure ($E_{clearing}$)

- (i) As the project area is a previously logged area, it should be mentioned that the overall parameter associated with infrastructure, $E_{clearing}$, should be due to any new establishments of infrastructure for the baseline logging cycle.
- (ii) Emissions associated with infrastructure are a summation of emissions from felling, biomass removal and grading. Emissions associated with biomass removal are based on the multiplication of an average carbon stock value per hectare that is representative of the project area, multiplied by the area assigned for infrastructure.

$$E_{biomass} = C_{biomass} \times A_{infrastructure} \times \left(\frac{44}{12} \right)$$



There is no guidance on how to derive and measure, $C_{biomass}$, the biomass lost due to the clearing for infrastructure. In addition, an equation to show how the infrastructure percentage from Pulkki (1997) is applied to determine the parameter, $A_{infrastructure}$, should be provided.

CP-CAR 10: Leakage

For an IFM-LtHP project, the VCS states that developers must demonstrate that there is no leakage within their operations including other lands they manage or operate outside the bounds of the VCS GHG project but within the same country (VCS, 2008c; p23, Step 5 point 20), as well as consideration of leakage due to market effects (VCS, 2008c; p23, Step 5 points 23, 24 and 26).

- (i) Whilst consideration of market leakage has been addressed, there is no guidance or procedure to account for leakage due to activity shifting by the Project Developer.
- (ii) The parameter associated with leakage, $C_{leakage}$, mentioned in section VII. Net Project GHG Emissions Reductions and Removals, is not presented in this section. It should be linked via an equation to the individual leakage components in this section.
- (iii) The method for calculating leakage due to market effects, section VI. 2. Quantification of leakage, states:
“AL equals emissions from harvests displaced through implementation of project activities which are the m^3 of timber that would have been removed from the project area in the baseline multiplied with the damage factor”
An equation and parameter table should be provided to express this. In addition, the mathematical expression needs to be revised to include an average density and carbon fraction of the timber that would have been removed from the project area as AL has units of tCO_2 . In addition, similar consideration to that provided in CP-CAR 04 point (iii) regarding the calculation of the emissions from harvesting, will need to be applied in the calculation of AL.
- (iv) The selection of the leakage factor for market-effects, LF_{ME} , is based on the comparison of the mean carbon stock across strata in all pools in the baseline, C_{BSL} , with the mean national forest carbon stock (NCS) multiplied by specified fractions 1, 0.85 and 1.15, indicating the degree of deviation the project area carbon stock may be from the NCS . Below the parameter table on p. 40 it states “The mean carbon stock across all pools in the baseline is derived from the baseline modules and involves area weighing the stocks across the strata”. The monitoring section indicates that C_{BSL} is determined in section 4.3 but there is no equation that relates C_{BSL} , with stratified carbon stocks, $C_{BSL,i}$.



CP-CAR 11: Monitoring

- (i) On p. 45, for the row “Source of data”, point (d) - Table 3A.1.1.10 should be Table 3A.1.10 since the authors have made reference to the IPCC (2003).
- (ii) Since authors are referring to Table 3A.1.10, point (d) should be corrected to reflect “Climatic zone” and “Forest type”, and not “species-specific”.
- (iii) Ensure correct units are presented in the monitoring section - see p. 46 for the unit of the parameter CF_j , presented as $tC t^{-1} d.m.$, see also CP-CAR 01 point (viii).
- (iv) On p. 46, for the row “Source of data”, point (d), the authors have presented the default value as $0.5 tC t^{-1} d.m.$, while on p. 16 footnote 9, the authors suggest the use of 0.47 instead. Firstly, it is important to ensure consistency in values so authors should decide whether or not to use 0.47 or 0.5; secondly, the unit attached to the value 0.5 is not correct, see point (iii) and also CP-CAR 01 point (viii); and thirdly, within the unit, the “-1” should be superscripted.

CP-CAR 12: Project Baseline Justification

VCS (2008), section 6.1 General requirements (for Methodologies), p. 18, states that VCS Program methodologies shall include (amongst other criteria) “determination criteria for the most likely baseline scenario”. The IFM-LtHP is specific to a baseline activity of logging and hence it must be demonstrated that logging is the most conservative baseline scenario amongst all other possible land use alternatives. Guidance for the establishment and/or selection of criteria and procedures to identify and assess the potential baseline scenarios must be provided.

--- END OF CP-CARs ---

References

Priyadi, H, Gunarso P., Kanninen, M. (2006) Permanent Sample Plots: More than just forest data, Proceedings of International Workshop on Promoting Permanent Sample Plots in Asia and the Pacific Region: Bogor, Indonesia, Center for International Forestry Research (CIFOR), 3-5 August.