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10 February 2010

VCS Association

1730 Rhode Island Avenue, NW

Suite 803

Washington, DC 20036

E-mail: secretariat@v-c-s.org

Dear Sir,

Re: Comments on GreenCollar Climate Solutions' Proposed Methodology for Improved Forest Management - Conversion of Logged to Protected Forest (IFM-LtPF)

Please find attached Carbon Planet's comments (CP-CAR).

A total of 21 CP-CARs have been raised based on the document entitled "Proposed Methodology for Improved Forest Management - Logged to Protected Forests (LtPF)", version 1.3 - December 2009.

The CP-CAR document addresses issues associated with the Methodology's ability to provide accurate calculations of emission reductions, conformance with VCS guidelines, and clarity in regards to scope and applicability.

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

Dr Marnie Telfer*, Dr Sunil Sharma, and Dr Samuel Phua

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CP-CAR 01: General

There are a number of general corrections required:

(i) A list of definitions (of terms) is recommended

(ii) There is a lack of consistency in the use of terminology. For example, the terms Project Proponents and Project Developers have been used interchangeably throughout, with no clear definition for these - see CP-CAR 01 (i)

(iii) The standard notation for units has not been used throughout the document. For example, the standard notation for tonnes of carbon dioxide is tonnes of CO_2 or t CO_2. Subscripts are not to be employed on unit symbols

(iv) On p. 12, parameter list of equation (4) states that $C_{|t=0}$ is "carbon stock per unit area in all pools at year 0 in tC". The description does match with the units presented

(v) On p. 26, OF_k for equation (27) was not defined in the parameter list for that equation

(vi) On p. 36, $U_{|LtPF}$ is featured twice in the parameter list

(vii) There have been inconsistencies throughout, in the use of the mathematical symbol ($\sum$). For example, there is a lack of clarity in what the summation entails in equation (8), while the expression of summation is clear in equation (7)

(viii) There are several grammatical mishaps throughout. For example, see p. 15, paragraph 2, "... is be selected for each land plot ...", p. 24, paragraph 4, "... where harvesting as occurred no earlier than 10 years ..." and others

(ix) The parameters presented for merchantable volume and lying dead wood must be differentiated more explicitly to prevent confusion. The parameter (V) represents merchantable volume and when associated with a subscript j (V_j), represents merchantable volume for species j, while the parameter (V_{ldw}) describes volume of lying dead wood. It can be misconstrued that V_{ldw} represents merchantable volume for lying dead wood

(x) There are a few section / step numbering mishaps. For example, see p. 20 line 4, "planned timber harvest rate (see step 3.1.3 below), ...". The planned timber harvest rate is not presented in step 3.1.3

(xi) A parameter list immediately after each equation, has not been presented (consistently).

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The following CP-CARs deal with a series of contradicting statements throughout the Methodology which require clarification.

CP-CAR 02: Clarification of Methodology Scope

The scope and the conceptual approach contradicts with the applicability of the Methodology. Clarification is required for the following:

(i) On p. 2, paragraph 3, the scope of the Methodology is defined as "currently logged or degraded tropical forest and plantations". Then on p. 5 and on p. 7, paragraph 1, it states that "This methodology applies to the IFM logged to protected forest (unlogged) category where timber harvest is planned, has legal authority but has not yet commenced in the project area." It is not clear in the Methodology as to what state(s) of forest the scope applies.

(ii) The addition of the term "degraded tropical forest ..." and " ... or degraded forests and plantations from further logging and degradation ..." also raises confusion as to whether the Methodology plans to accommodate cases of baseline forest management other than planned logging, such as unplanned degradation.

(iii) On p. 2, paragraph 3, the scope of the Methodology also considers plantations, however, plantations have not been referred to in the body of the Methodology. In addition, the Methodology does not specify the geographical region for plantation(s).

(iv) On p. 22, Step 3.2.2, clear felling has been included as a planned harvesting regime. Since it is not common to use clear felling and re-planting as a forest management tool for logging of tropical forests, it is not clear why this regime is included. Clear felling is commonly employed where land use change is required and for this scenario Avoided Planned Deforestation under REDD would be the appropriate methodology for accounting for emission reductions. In addition, with the inclusion of clear felling, the Methodology fails to address in its carbon accounting several key specific implications of a clear felling regime, of which one such key implication is the dynamics of replanting.

CP-CAR 03: Clarification of Project Boundaries

On p. 7 of Step 1.1 Geographical boundaries, paragraph 2, the Methodology states: "The boundary of the IFM activity shall be clearly delineated and defined and include only land qualifying as "forest" for a minimum of 10 years prior to the project start date."

(i) This statement is not actually possible to achieve and will lead to an incorrect calculation of carbon in the project area. Areas that have been sanctioned by Governments as logging concessions contain both forest and non-forest lands, such as water bodies and exclusions zones that are inaccessible to logging. VCS Guidance for AFOLU (VCS, 2008b) on p. 16, in Step 2: determine project boundary, also states that, "The area of implementation of the VCS AFOLU

project may be smaller than the entire project area ...". The current Methodology does not acknowledge that the project area is a subset of a greater project boundary and therefore does not provide any guidance to delineate forest as well as non-forest and exclusion zones, and hence, to determine a net project area from the project boundary.

(ii) On pp. 7-8, terms such as "physical project boundary", "geographical boundary" "project area", "discrete area of land", "land parcel" are mentioned without formal definitions - see CP-CAR 01 (i).

(iii) On page 6, it is stated that peat lands are excluded, however no specific guidance on how to do this is provided.

CP-CAR 04: Clarification of Requirement for a Forest Management Agreement/Plan

It is not clear if the project proponents must have a forest management agreement, forest management plan or a forest harvest plan for their project area.

(i) It is stated on p. 6, section 3, last dot point,"For all instances of planned timber harvest IFM projects, there must be an immediate site-specific forest management agreement or timber harvest plan". This is further reinforced on p. 7, in Step 0, "The baseline scenario for the project area will be timber harvest under a forest management agreement ...", as well as on p. 20 , paragraph 1, Step 3.2.1. However, these statements contradict the approach presented on p. 25, for Step 3.3 Baseline carbon sequestered in wood products - there are two presented options to calculate carbon sequestered from wood products: Option 1, if an approved harvest plan is available, and Option 2, if an approved harvest plan is not available.

(ii) What is the difference between timber harvest plan and planned timber harvest schedule?

(iii) On p. 20, Step 3.2.1, paragraph 1, it is not clear what is meant by the term "immediate".

CP-CAR 05: Clarification of Planned Timber Harvest Schedule

On p. 20, Step 3.2.1 paragraph 4 states, "For the purpose of estimating the net annual changes in carbon stocks resulting from planned timber harvest in the baseline scenario a detailed planned timber harvesting schedule will be developed ...". This paragraph suggests that a detailed planned timber harvesting schedule will be developed by the project proponent. However, on the following page the first paragraph states that "... timber harvesting plans as stipulated in the in the (*sic*) site-specific forest management agreement ...". If in the case a site-specific forest management agreement does not provide a detailed planned timber harvesting schedule, it is not clear how then, this plan could possibly be developed by the project proponent, and from whom should validation or approval be sought.

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CP-CAR 06: Clarification of the Requirement for a Reference Area

On p. 7, paragraph 2, it is stated that, "The baseline scenario for the project area will be timber harvest under a forest management agreement, forest management plan or forest harvest plan and will be calculated from carbon accounting in either a) single reference area or b) multiple proxy areas selected to be representative of 'common practice' for timber harvest."

(i) It is not clear that if a forest management plan is required and sustainable harvesting practices must be used under VCS (2008b) guidelines, why the use of a reference area, or proxy areas, would be recommended.

(ii) It is not clear what proxy areas are, and how they differ from a reference area.

(iii) Application of stratification and the BCEF Method to a reference area or set of proxy areas is not a valid approach. This is addressed in more detail in CP-CAR 16.

CP-CAR 07: Clarification of Stratification

Stratification is required for calculating ex-ante carbon stocks in aboveground biomass and deadwood pools as well as for monitoring and verification of the emission reductions over the crediting period. In this Methodology stratification has been included, however it has not been accurately and clearly applied and discussed. There are a number of specific concerns regarding the application of stratification:

(i) On p. 7, paragraph 2 , there is no mention of obtaining information for the carbon accounting from the actual project area. On p. 11, point a), also states that base year stratification could alternatively be developed by the project proponents through sampling in the reference area or a set of proxy areas. Then in later sections of the Methodology, sampling in the project area is recommended: On p. 13, Step 3.1.2., sampling in the project area to determine the mean carbon stock is recommended in the scenario where pre-existing forest inventory data is more than ten years old. Two queries arise: (1) If stratification for sampling is required, it is not clear why sampling in the project area has not been recommended in the first instance, as this would be more feasible and accurate, and (2) Why is sampling only recommended if pre-existing data is more than ten years old - is this an arbitrary number?

(ii) It is also not clear how the estimates obtained from the reference/proxy area(s) will be used to determine stratification in the project area.

(iii) On pp. 7-8, the Methodology introduces the concept of a land parcel as a discrete area of land within the project boundary. It is not clear whether stratification is to be conducted at the land parcel level for all land parcels in the project area. On p. 15 and p. 19, there exists a paragraph after the text box which suggests that representative sample plots are employed to apply its mean carbon stock values for aboveground biomass and, standing and lying deadwood to other land parcels. No guidance or specifications are provided as to how the representative sample plots are selected or found, and on what basis the plots are selected, or established.

CP-CAR 08: Exclusion of Forest Fires

On p. 6, second dot point, it is stated that, "Fire is an exclusion in this methodology".

(i) This sentence is not explicit and no justification has been provided as to why wild forest fires have been assigned as a specific exclusion. Exclusion of forest fires in the Methodology infers that (i) there will be no wild forest fires ever occurring in the project area over the project lifetime, which is simply not possible to state, or (ii) project proponents would be able to anticipate natural disturbances if they should come, which is also not possible to do. It also implies that if wild forest fires do occur, then any reduction in carbon stocks of the affected forest cannot be addressed in the current Methodology's calculations. This will therefore lead to an overestimation of VCUs for the year in which a forest fire occurs.

(ii) Contradictory to (i), is the proposed monitoring plan presented on p. 37, last paragraph: the Methodology suggests that ex-post stratification is required in the scenario where "a) unexpected disturbances occurring during the crediting period (e.g. due to fire, pests or disease outbreaks) affecting differently various parts of an originally homogeneous stratum ...". If fires are to be addressed then they should not be an exclusion. Furthermore, assessing only changes in the stratification would not completely address reduction in biomass carbon due to fire.

(iii) Finally, the Methodology does not account for emissions from other natural disturbances such as volcanoes, floods, landslides as well as illegal harvesting, and does not provide a calculation approach in the case these events happen during the project's lifetime.

CP-CAR 09: Clarification on the Duration of the Crediting Period

On p. 8, Step 1.2.2, paragraph 3, it is stated that "Projections of baseline emissions shall be presented in the VCS-PD for the 10 year period during which the baseline shall not be revisited". It is not clear why this sentence has been made since it suggests that revisions of the ex-ante calculations (i.e. application of the results of monitoring) will not be made until 10 years after project start date. Whilst it is mentioned in other parts of the Methodology for example, p. 9, paragraph 1, states: "... under VCS guidelines, if a verification does not occur within 5 years, 50% of the buffer account credits are cancelled". It is also recommended in p. 38, paragraph 4, that, "Monitoring events shall take place at intervals of 5, preferably 3 years."

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The following CP-CARs deal with a number of sections where the Methodology does not conform to VCS Guidelines.

CP-CAR 10: Project Baseline Justification

On p.11, paragraph 5, states, "A description of how the baseline scenario is identified and the description of the identified baseline scenario shall be given in the VCS-PD". However, VCS (2008a), 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-LtPF is specific to a baseline activity of logging and as such the Methodology must contain guidelines to demonstrate that logging is the most conservative baseline scenario amongst all other possible land use alternatives for the project area. Furthermore, the use of CDM Tool for Demonstration and Assessment of Additionality as recommended by this Methodology, clearly states under Section I. Scope and Applicability, point 7, "This tool does not replace the need for the baseline methodology to provide a step-wise approach to identify the baseline".

The Methodology must be re-written to conform with the VCS's Guidelines.

CP-CAR 11: Determination of the Harvesting Rate

On p. 20, in Step 3.2.1, paragraph 3, it is stated that, "The amount planned to be harvested cannot exceed the legal mandate unless common practice in proxy areas show that the mandates are not enforced." This approach (1) contradicts the VCS Guidelines (see VCS (2008b), p. 21, footnote 29, and (2) is not conservative therefore.

The Methodology must be re-written to conform with the VCS's Guidelines.

CP-CAR 12: Calculation of VCUs

On p. 35, in Step 4.2, the calculation of VCUs has not accounted for non-permanence risk buffer. However VCS (2008b) states that for the approval of new methodologies, the approach for determining non-permanence risk buffer must be addressed. See also CP-CAR 13 (viii).

The calculation approach must be re-written to confirm with the VCS's Guidelines.

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The following CP-CARs deal with equations presented throughout the Methodology. These equations have errors within (in the equations themselves), in the parameter tables, or arising from the linkages from one equation to the next. In summary, the Methodology fails to provide a comprehensive approach that can accurately reflect the annual changes in biomass due to the harvesting activities. Consequently, the calculation of the amount of emission reductions (and VCUs) to be issued for each year of the project lifetime is not correct.

CP-CAR 13: Calculation of Emission Reductions and VCUs for the IFM-LtPF Project

(i) On p. 11, it is not clear why equation (1), the calculation for the total of net GHG emissions in the baseline scenario, $GHG_{net|BSL}$, is presented in the equation flow. This parameter is not used anywhere else in the Methodology and in particular, not employed to calculate the final emission reductions of the IFM-LtPF project. Furthermore, this parameter is also not presented in the parameter list below equation (1). The parameter $GHG_{net,t|BSL}$ has been entered twice.

(ii) The equation (37) which calculates net greenhouse gas emissions for the implementation of the IFM-LtPF project will provide a negative value as the emissions due to the baseline scenario outweighs the sum of emissions due to the IFM-LtPF project plus leakage.

$$GHG_{net,t|LtPF} = GHG_{ifm,t|LtPF} - GHG_{net,t|BSL} + GHG_{leakage,t|LtPF} \qquad (37)$$

(iii) Further to CP-CAR 12 (ii), due to the discrepancy between the paragraph before equation (37) and the parameter description for $GHG_{net,t|LtPF}$, it is also not clear if this parameter is meant to represent the IFM-LtPF project's emission reductions or net GHG emissions.

(iv) The equation (41) calculates the Voluntary Carbon Units (VCUs) associated with the IFM-LtPF project activity ($VCU_{t|LtPF}$) as presented on p. 35 in Step 4.2:

$$VCU_{t|LtPF} = GHG_{net,t|LtPF} - GHG_{net,t-1|LtPF} \qquad (41)$$

The output from equation (37), $GHG_{net,t|LtPF}$, will then be substituted in equation (41) to calculate the number of VCUs. Consequently, the VCUs calculated will be a negative value (see CP-CAR 13 (ii))

(v) In addition, it is not clear why an annual VCU for the IFM project ($VCU_{t|LtPF}$) has been equated to an annual emission reduction ($GHG_{net,t|LtPF}$) minus an annual emission reduction of the year before ($GHG_{net,t-1|LtPF}$). This type of equation would only apply if both $GHG_{net,t|LtPF}$ and $GHG_{net,t-1|LtPF}$ were accumulated values. Furthermore, the Methodology has stated that these parameters are annual values.

(vi) It is not stipulated in the VCS guidelines that the uncertainty associated with the net GHG emission reductions, denoted in the current Methodology as $U_{|IFM-VCS}$, must be subtracted from the net value, $VCU_{t|LtPF}$ as presented in equation (43).

(vii) The uncertainty parameter, $U_{|IFM-VCS}$, calculated in equation (42), does not include any error associated with leakage, however, leakage is included in $GHG_{net,t|LtPF}$ which is used to calculated $VCU_{t|LtPF}$ and hence $U_{|IFM-VCS}$.

(viii) The VCS guidelines (VCS, 2008b; p. 13) state that for approval of new methodologies, these methodologies, in calculating the number of carbon credits to be issued to a given project, must account for the non-permanence risk buffer.

CP-CAR 14: Calculation of Carbon Stocks Per Stratum in the Base Year

The equations (5) and (6) in the Methodology are re-presented as:

$$C_{p|t=0} = \sum_{i=1}^{i^*} C_{i,p|t=0} \quad (5)$$

$$C_{i,p|t=0} = C_{ab,i,p|t=0} + C_{dw,i,p|t=0} \quad (6)$$

(i) For equation (5), it is not correct to directly sum up carbon stocks per unit area of all the strata. This will in effect ignore variability of the carbon stock within the stratum in the project area and provide an inaccurate total. It is also not clear why equation (5) is included if it is the intention of the Methodology to actually consider the difference in the carbon stocks of each stratum, *i*. If the stratified data is not used correctly, then the effort of obtaining stratified values is wasted.

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(ii) The parameters, $C_{p|t=0}$ and $C_{i,p|t=0}$ calculated from equations (5) and (6) are not shown to be used anywhere else in the Methodology.

(iii) Equation (6) in particular appears to be a general approach to determining the carbon stock in stratum *i* of land parcel *p*, it is not clear why these equations have been assigned strictly for t=0.

(iv) The mean carbon stock per unit area in the deadwood pool is presented as equation (16), re-presented as:

$$C_{dw,i,p|t=0} = C_{sdw,i,p|t=0} + C_{ldw,i,p|t=0} \quad (16)$$

It is not clear why the baseline carbon stock in the deadwood pool calculation ($C_{dw,i,p|t=0}$) has been based on natural deadwood (standing and lying). This type of deadwood would also exist in the IFM-LtPF project case and would not be a result of the harvesting practice. Hence it is queried as to why it can be considered a component of the overall emission reduction between the baseline and IFM-LtPF project case.

CP-CAR 15: Calculation of Changes in Carbon Stocks in the Baseline Scenario during the Harvesting Period

Calculation of the changes in carbon stocks in the baseline scenario as a resulting of timber harvesting are presented in the Methodology by the following series of equations:

$$\Delta C_{net,t|BSL} = \Delta C_{harvest,t|BSL} - \Delta C_{wp,t|BSL} \quad (3)$$

$$\Delta C_{harvest,t|BSL} = \sum_{p=1}^{p^*} \Delta C_{harvest,p,t|BSL} \quad (17)$$

$$\Delta C_{harvest,p,t|BSL} = \sum_{i=1}^{i^*} \Delta C_{harvest,i,p,t|BSL} \quad (18)$$

$$\Delta C_{harvest,i,p,t|BSL} = A_p \cdot h_{p,t|BSL} \cdot R_{i,p|BSL} \cdot C_{i,p,t|BSL} \text{ ; for t} \geq 1 \quad (19)$$

$$C_{i,p,t|BSL} = C_{i,p,t-1|BSL} - \Delta C_{harvest,i,p,t-1|BSL} \quad (24)$$

(i) The parameter $\Delta C_{harvest,t|BSL}$ is described as the annual change in carbon stock over the project area resulting in year t from planned timber harvest in the baseline scenario. According to how it is expressed in equation (3), it is supposed to represent the amount of biomass leaving the project area in year t. If this is the case, it is not clear why the parameter has a delta sign associated with it.

(ii) The calculation of carbon stock per unit area ($C_{i,p,t|BSL}$) has been proposed in equation (24). However, the equation subtracts what will be removed from the project area of the year before ($C_{harvest,i,p,t-1|BSL}$) in terms of tC yr^{-1}, from the carbon stock at the beginning of the year before ($C_{i,p,t-1|BSL}$) in terms of tC ha^{-1}, to arrive at the new carbon stock at year t. Arithmetically, the units of these parameters, as it is, cannot be reconciled, and hence (1) the equation cannot be applied, and (2) the changes in carbon stock of the forest from year to year cannot be calculated.

(iii) When equation (24) is applied at t=1, for example, at t=1, the equation becomes:

$$C_{i,p,t=1|BSL} = C_{i,p,t=0|BSL} - \Delta C_{harvest,i,p,t=0|BSL}$$

However, the Methodology does not present (anywhere within the document) the parameters $C_{i,p,t=0|BSL}$ or $\Delta C_{harvest,i,p,t=0|BSL}$.

(iv) Further to CP-CAR 15 (iii), guidance on how to calculate the following dependent parameters $C_{|t=0}$, $C_{p|t=0}$, $C_{i,p|t=0}$ is also not provided. Furthermore, the carbon stock at t=0, are provided in equations (4) to (6). However, the subscript notation for these parameters do not match with the parameters of equations (19) and (24), but as these are not featured anywhere else in Methodology, are likely to mean the same.

(v) As equation (19) applies for $t \geq 1$, there is no means to calculate $\Delta C_{harvest,i,p,t=0|BSL}$ required in point CP-CAR (ii) for the t=1 iteration. Applying equation (24) directly for t=0 to calculate $\Delta C_{harvest,i,p,t=0|BSL}$ would not accurately reflect what would be removed from the project area due to timber harvesting in the first year.

(vi) Carbon stock in the deadwood has been considered as the part of the total carbon stock and is used to calculate the carbon in the annual harvest. However, there is no justification or explanation as to why the deadwood pool from the baseline case (deadwood from harvesting) would be the same as that of (natural processes from) live trees (project case) as provided in the Methodology.

(vii) Further to CP-CAR 15 (vi), the carbon stock in the deadwood pool would not be removed in the form of $\Delta C_{harvest,i,p,t|BSL}$, but instead, decay gradually.

(viii) It is confusing to the reader that the parameter for carbon stock per unit area (in all pools) in the stratum *i* for land parcel *p* in any given year *t* for before, during and after harvesting (see Equations (23) to (25) in p. 23) is the same for all regimes. Then on p. 21, because of the multiple use of $C_{i,p,t|BSL}$ in equations (23) through (25), it is not clear which $C_{i,p,t|BSL}$ is to be used in equation (19).

The Methodology calculations do not assess accurately what actually leaves the forest during the harvesting period and has overlooked the key physical, biological and biochemical processes that would occur in the project scenario. This is due to the fact that they have employed the method of comparing carbon stock changes from one year to the next. It is problematic to calculate ex-ante the carbon biomass leaving project boundary from assessing the carbon stocks remaining in the forest. The reason for this is because in order to determine the carbon stocks remaining in the forest one would need to know what is leaving the forest each year.

CP-CAR 16: Calculation of Base Year Carbon Stocks in Aboveground Biomass Pool

(i) On p. 14, the BCEF Method is introduced to "estimate above ground carbon stock in trees as forest inventory data are in volumes and so it is appropriate to use expansion factors". This statement is incorrect. The expansion part of the BCEF factor is to determine the above ground biomass from the merchantable volumes present in the inventory data. The conversion component of the BCEF is responsible for converting wood volumes to tonnes of carbon.

(ii) For part 1 of BCEF Method, it is not clear what is to be determined.

(iii) For part 3 of BCEF Method, there is no guidance as to where to find the BCEF and which BCEF to select until Appendix 1 (p. 43).

(v) For equation (7), $BCEF_{mv,j}$ is denoted as the biomass conversion and expansion factor for conversion of merchantable volume to above ground biomass and is stated as dimensionless. The units for BCEF are tonnes of dry matter per m^3 wood volume (t d.m. m^{-3}) (IPCC, 2006, p. 4.11). As a consequence, equation (7) is incorrect.

(iv) For the parameter list following equation (7), both *sp* and the total number of sample plot parameter, *sp**, are featured. These parameters however, are not directly used, even though A_{sp} is featured in equation (7).

(vi) The merchantable volume of species, *j*, is written as $V_{j,i,sp|t=0}$ in equation (7) and as $V_{j,i,p|t=0}$ in the parameter list.

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(v) On p. 14, paragraph 2 states, "For each strata, mean stock is estimated from at least 20 sample plots/points measured at t=0 within the project area." It is recommended that a reference is provided to substantiate the value of 20 sample plots.

(vi) On p. 14, paragraph 2 also states, "If the validation estimate is outside (i.e. **greater** or less than) the corresponding estimate calculated from pre-existing forest inventory data, the estimate from pre-existing data **cannot be used**". The subsequent sentence then contradicts this by stating, "If the baseline validation estimate is **higher** than the inventory number then it is conservative to **use** the inventory number". It is also not clear what is to be used when the baseline validation estimate is lower than the inventory number.

(vii) On p. 15, paragraph 1, the term land plot is used, but throughout, the term land parcel is used.

CP-CAR 17: Calculation of Changes in Carbon Stocks in the Baseline Scenario After the Harvesting Period

(i) On p. 23, Step 3.2.3, the evolution of carbon stocks in the baseline scenario are modelled based on what is happening in each land parcel. In dot point three, after the harvesting period, it is stated, "… the carbon (all pools) in the stratum *i* for land parcel *p* in any given year *t before the harvesting period*. …" It is not clear whether this is a typing mishap and the sentence is meant to say ".....year t *after the harvesting period*", or there is the possibility of secondary logging after initial harvest and it is meant to say "… year t *before the subsequent harvesting period*".

(ii) A parameter to account for changes in carbon stock due to regrowth after harvesting ($\Delta C_{regrowth,i,p,t-1|BSL}$) is presented in equation (25), however, no calculation or equation is provided to determine this value ex ante.

(iii) $\Delta C_{regrowth,i,p,t-1|BSL}$ is not featured in the parameter list of equation (25). Instead, $\Delta C_{growth,i,p,t-1|BSL}$ is featured twice.

(iv) On p. 24, paragraph 4, states that, "Re-growth in harvested forests will be estimated by means of sampling in reference or proxy areas where harvesting has occurred no longer than 10 years from the project start date." However, the last sentence in paragraph 5 also states, "Both growth and re-growth factors will be reassessed at regular intervals on the basis of sampling performed as part of the project monitoring plan". As the project monitoring plan takes place within the project area, it is implying that regrowth will be monitored within the project area, thereby contradicting the former statement.

(v) Furthermore, it is not clear how a verifier would use the Methodology based on the guidance provided above to verify the carbon due to growth and regrowth.

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(vi) There is no guidance in the Methodology on what component of the forest will be measured to determine regrowth and how, and the means for which these values will be fed back into the calculations to verify the ex ante regrowth values.

(vii) The Methodology does not offer an alternative scenario for the case where it may not be possible for teams to enter and establish sampling plots in a reference or proxy areas.

(viii) Similarly, on p. 23, equation (23) calculates the changes in carbon stock before the harvesting period and presents the parameter, $\Delta C_{growth,i,p,t-1|BSL}$, to account for the growth. On p. 24, paragraph 3, states that, "growth in undisturbed forest could be estimated ex ante, by dividing the estimate of carbon stocks per unit area in mature forests.… " but then does not provide an equation and a more explicit procedure for which these ex ante calculations should be made.

(ix) Both the growth and regrowth parameters have not been included in the parameter tables in Appendix 1.

CP-CAR 18: Calculation of Sequestered Wood Products

(i) On p. 26, equation (27) calculates $C_{wp,i,p,t|BSL}$, the biomass carbon per unit area extracted in year *t* from stratum *i* in land parcel *p*, remaining sequestered in long-term wood products. When described in the parameter list below equation (27), this parameter has an additional '*k*' in the subscript. In addition, there is no indication of how this parameter is linked to $C_{wp,t|BSL}$ presented in equation (3) to calculate $\Delta C_{net,t|BSL}$.

(ii) In the parameter list of equation (27), SLF_k has been given two definitions, one for products that will emit biomass into the atmosphere within 5 years, and the second for products that will emit biomass into the atmosphere between 5 and 100 years. If the authors wish to distinguish between these two, different parameter symbols should be employed.

(iii) The equation (28) presents $BCEF_i$, biomass conversion and expansion factor on the stratum level which has been incorrectly used in the equation. The units for $BCEF_i$ have also been incorrectly assigned as dimensionless. There is no reference or guidance to calculate $C_{ap,i,p,t|BSL}$ and it is not featured in the parameter list for equation (28). Equation (28) therefore does not accurately calculate the harvested biomass carbon $C_{hp,i,p,t|BSL}$.

(iv) On p. 24, paragraph 1, it is not clear what is meant by this sentence and what is the difference between the "baseline case" and "project case" .

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CP-CAR 19: Step 3.4 Baseline greenhouse gas emissions from harvesting operations

(i) On p. 27, equation (30), $\Delta C_{net,t|BSL}$ is featured in the parameter list but the parameter to be calculated is $GHG_{harvest,t|BSL}$.

(ii) On p. 28, paragraph 4, it is stated that, "The records will include, where possible, information sourced from both the primary commercial forest operator and sub-contractors involved in past timber harvesting activities". It is likely that it may not be possible for the project proponents to obtain records of machinery and transport fuel consumption from the primary commercial forestry operator or sub-contractors. No guidance is provided in the Methodology as to how to determine baseline emissions when this is the case.

CP-CAR 20: Step 4.2 Leakage

On p. 33, Step 4.2 Leakage, paragraph 4, it is suggested that in order to determine leakage due to activity shifting by the project developers, that, "documentation shall be provided covering the other lands controlled by the baseline agent where leakage would occur, including at minimum, their locations(s), and type of existing land use(s), and management plans."

(i) The use of the term "baseline agent" is only mentioned at this point and it is unclear to whom the term is referring to. See also CP-CAR 01 (i). As this stipulation is applied to the IFM-LtPF project developers, this term should be more appropriately used once clearly defined.

(ii) There is no method provided to identify/prove (from the required documentation) if leakage has occurred and if so, how to measure or calculate the resulting leakage and verify it.

(iii) It is not clear how leakage from activity shifting is incorporated into the emission reduction equation for the IFM-LtPF project.

CP-CAR 21: Monitoring

(i) In general, there has been no cross referencing with the data presented in the parameter tables of Appendix 1 and 2 (p. 40-73) and the main body of the Methodology. For example, on p. 15, the parameter $CF_{ab,j}$ is introduced but no guidance is made here on where to find it until p. 45 in Appendix 1 and, no reference to this page is made.

(ii) It is not clear in the Methodology what type of sample plots (permanent or temporary) have been recommended for the monitoring plan of the project. For example, on p. 5, main dot point 6, sub-dot point 2, it states, "temporary plots are permissible in contrast to CDM methodology".

(iii) On p. 14, paragraph 3 states, "If aboveground biomass increment is monitored in the project, plots must be permanent". As monitoring of aboveground biomass is a required component of

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both the project implementation according to VCS guidelines and necessary for verification, it is therefore not optional. It is not clear why the above sentence was written conditionally.

--- END OF CP-CARs ---

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