

Comments to the TREE Standard

27 September 2019, Andres Espejo, MRV specialist

I would like to kindly request an extension for the comment period in order to enable the Global Forest Observation Initiative MGD component members and R&D members to provide comments. Apparently there has not been sufficient dissemination and notification of the commenting period; I just learned it a week ago.

INTRODUCTION

- I am missing a description of types of documents. What is a Standard? What is a template? Is there guidance in a template? Are you going to produce guidance documents or guidelines as it happens on other Standards to clarify application of requirements or acceptable means to meet a requirement?
- Moreover, what is the approval process? Are all the versions of these documents approved by the Board?
- It would be good to clarify what “shall”, “must” and “should” mean in practice. These are used across the standard.

1.2.1 Development Process for the TREES Standard

- Although the different committees have very knowledgeable persons and technicians, it is important to note that some of them work for institutions or companies that are stakeholders in REDD+ process in several countries and the industry, and might have COI. I understand that they serve in personal capacity, but their interests cannot be decoupled from the institutions or companies they are part of.
- Better than relying on a specific group of experts, there are organizations out there such as the GFOI that already have structures, much richer, that could provide better support to TREES development and implementation. For instance, the GFOI MGD component could provide technical advice to the standard which would be richer and would have a better access to world class experts. Moreover, a link to the GFOI MGD would enable understanding the needs from the TREES and try to address these in countries through the GFOI Capacity Building component. The GFOI is a voluntary initiative that actually works; it has governance structures that ensure representativeness and independence and could reinforce the TREES and its implementation.

1.2.2 Adoption of and Revisions to the TREES Standard

- Based on experience (VCS and FCPF), I would suggest that you consider a pilot period in order to refine the Standard based on a specific case, e.g. with Gabon. You are going to need flexibility as there will be a lot of lessons learned coming up as a result of the first Programs coming up, plus new science and guidance (MGD version 3 and the 2019 IPCC refinement). You have room to improve prior to the first issuance of credits, once the

first credits are issued it is better not to revise to ensure that there are no fungibility issues or quality differentiation based on the version of the standard (CORSIA is interested in the issuance per Standard version for this reason).

1.3 CONFLICT OF INTEREST

- One clear COI could exist between the consultancy services that Winrock provides to countries and their role as Secretariat. I am unsure whether the Conflict of Interest policy as detailed in Winrock's Code of Conduct considers all possible cases of COI specific to this Secretariat function. The standard should specify what COI means in this context, and what acts or behaviors could represent a COI. This is critical if ART wants to ensure that there is no COI or at least perceived COI...the latter is in this case is extremely high.

2 ART CYCLE

- Any project cycle procedure out there includes timelines, whether the documents are made publicly available and at what stage, etc.

2.1 PROCESS FOR INITIAL REGISTRATION, VALIDATION, VERIFICATION, AND ISSUANCE

- 7. *"The Proposed TREES Participant selects an approved TREES Validation and Verification Body from the list of approved ART Validation and Verification Bodies maintained on the ART website. The Participant solicits bids and negotiates contracts directly with the selected Validation and Verification Body. The selection process will include a disclosure of conflicts of interest and mitigation measures, if conflicts are identified."* Since we might be talking about very large volumes, few registered countries and small number of verifications (in comparison with projects), there might be room for a different model in this case. Having a proposed TREES participant hiring the VVB might cause a clear dependency that could hinder the environmental integrity of the process, regardless of what the VV Standard states. In the end the client of the VVBs is the country...the Standard is the Intended User of the assertion, but not the client. The Secretariat has the responsibility towards the environmental integrity, and it would make sense that has a more active role in the election, ranging from doing the selection itself to participating in the selection, or vetting the selection.

2.2 PROCESS FOR ONGOING VALIDATION, VERIFICATION, AND ISSUANCE

- *Ibidem.*

2.3 CREDITING PERIOD AND RENEWAL

- *"The initial crediting period may begin up to four years prior to the TREES Participant's submittal date of the TREES Concept Note."* You should clarify that the beginning of the

crediting period is different from the start date of the ER Program. A Program could have begun in 2015 (approval of their REDD Strategy) and end of their historical reference period, but the crediting period under TREES will only begin 4 years prior to the TCN submission, if this is in 2020, then beginning in 2016.

- It is important to define what constitutes a year. If they provide a TCN by March 2020, does it mean that the crediting period begins exactly by March 2016? Perhaps it is better to refer to calendar years not natural years, so in this case the crediting period would begin January 2016. If the submission is in August 2016, then the start date should be January 2016 or January 2017. **This is important.** You use calendar years all over the place, so you should clarify this.

2.4 DOCUMENTATION REQUIREMENTS

- *“TREES Participants shall use the latest version of the template for each of the seven documents listed below when submitting documents to the ART... version updates will not be required once a document has been submitted to the Secretariat or Validation and Verification Body”.*
 - *“version updates will not be required once a document has been submitted to the Secretariat or Validation and Verification Body”.* These are two options, which does not make sense in a Standard as you are not standardizing. It should be one or the other. It should be unambiguous
 - Unfortunately, validation and verification processes can take a very long time, meaning that templates can be quickly become outdated. I would suggest that you set a timeline after submission...
 - Perhaps “TREES participants are required to use the latest version at the time of submission to the Secretariat. TREES Participants shall update the templates to the newest versions if these are still under validation or verification 12 months after the first submission to the Secretariat”

2.5 TIMELINE AND DEADLINES

- *“a start date prior to the year of submission.”* Crediting start date, ER program start date, perhaps you should create a term for this to avoid misunderstandings.
- *“In all cases, each TREES Monitoring Report shall document ERs allocated to each calendar year.”.* Just clarify that it is from 1 January to 31 December, to avoid misunderstandings. It should be unambiguous
- There are references to “desktop reviews”. It is very important to indicate stakeholders what is the objective and the scope of these reviews. Is it completeness and compliance with the guidance in the templates? Perhaps you could provide in the future a checklist or guidance for this so that countries understand what is needed (as in CDM)? From experience, now knowing what these reviews are about creates problems..

3.1 ELIGIBLE ENTITIES

- *“TREES Participants shall be national governments.”* You might think this is obvious, but a estate government can also be a national government (Ethiopia) or in cases we talk about federal government. Perhaps you could clarify that it is the *“highest level of governance in the country”*. It should be unambiguous.

3.1.1 Subnational accounting area

- *“TREES Participants shall be national governments.”* This might sound obvious, but a estate government can also be a national government (Ethiopia) or in cases we talk about federal government. Perhaps you could clarify that it is the *“highest level of governance in the country”*
- *“The boundaries of subnational accounting shall correspond with one or several administrative jurisdictions no more than one level down from national level;”* You should be careful with this.
 - There are several countries in which their REDD+ Strategies propose the use of ecoregions (Brazil, Ghana, Colombia) or other jurisdictional boundaries. In some other countries the one level below the national is useless in terms of REDD+ (they are judicial or boundaries for decentralization of the executive arm, or not have land use planning competences).
 - Also this is placing a large burden to countries, as they might be required to include a whole Province/region that contains forest concentrated in one side just because of this. In Madagascar, where the FCPF ER Program is located (6.2 million ha of area), going provincial would require include two provinces that contain 2 million ha of forests and that have 12 million ha in size, and these forests are mostly concentrated in one side. This places a burden in terms of costs, governance, safeguards application, etc. Administrative boundaries don't always correspond to the distribution of forests.
- *“Subnational accounting areas shall ☐ Encompass an area of at least 6 million hectares OR ☐ Encompass an area of at least 4 million hectares AND represent at least 30% of the national forest area; AND”*. Please note that this means that FIJI or similar islands would not be able to benefit in any case.
- *“Legal responsibility for policy-making specific to forests shall rest with subnational governmental authority(ies) or be shared between such authorities and the national government”*. As said previously, this is an issue as the first requirement and the second obliges that one level below the national has the legal responsibility for policy-making specific to forests. In many parts of the world these two requirements are not met; in many countries the policy-making is national (many African countries such as DRC and Congo) or they are shared with decentralized agencies that depend on the national one, but there is no policy-making as such (decentralized governance institutions).
- *“After the interim period, accounting shall be at a national level.1. Defined as ≥90% of all areas in the country qualifying as forest under the national forest definition as described in Section 3.5.”* Does it make sense that the national level is less restrictive? You can

avoid including whole jurisdictions at one level below the national? For instance, in Ethiopia 90% of forests is concentrated in three states, which cover around 50% of the country. In most of countries I could think of, such as Mozambique, Madagascar, Ivory Coast, the Congos, Costa Rica, Mangroves represent less than 10% of the total forest area, does this mean that a country can exclude these? I understand that this makes sense for cases like Costa Rica, to avoid requiring them to include their islands, but in this case this would be de-facto a subnational REDD+ Program and not comprehensive. I would rather build flexibility in the subnational than in the national, or provide more flexibility in covering the whole country, e.g. first crediting period subnational, second crediting period to 90% of forest at least, and third 100% of forests.

3.1.2 National reporting requirements

- *“TREES Participants shall include forests in their NDCs and submit annual UNFCCC Summary of Information reports”*. You should make this unambiguous.
 - When they should have forests included? If the country decides to enhance the ambition of their NDC to include forests, can the start date of the crediting period prior to the submission of the revised NDC?
 - What does it mean specifically to include forests? Include all forests, or just reducing emissions from deforestation, or afforestation/reforestation?
 - if the SIRs are required, they have to submit them throughout the crediting period, or for the year of submission?
 - Never heard about the these SIRs. Do you mean the BTRs? If this is the case, we have to be careful as LDC and small island states are not required to provide these.

3.2 ELIGIBLE ACTIVITIES

- *“Emission removals associated with reforestation, afforestation, enhancement of forest carbon stocks, or improved forest management”*. It should be GHG removals or just removals, not emission removals.
- *“It is expected that the implementation plan will be the National REDD+ Strategies/Action plan submitted to the UNFCCC in accordance with the Warsaw Framework.”* . Please note my previous comment on the scale of sub-national. National REDD+ Strategies as in Ghana, Brazil, Madagascar, Mozambique, Colombia, Peru do not use the second level below the national for moving from subnational to national, but they are being required to develop these for one level below the national, etc. Of course if some flexibility exists some accommodation could be made, but I anticipate issues...
- *“Participant is using a subnational accounting area, the Participant must specify which REDD+ interventions from its National REDD+ Strategies/Action.”* . Please note that many strategies do not include specific interventions but just an indication of activities and enabling environment actions. Some countries develop investment plans detailing interventions. So don't expect anything detailed such as specific interventions per zone from these documents...or an implementation plan.

3.4 ADDITIONALITY

- I would suggest you provide more explanations on why the crediting level ensures that there is additionality, for instance by ensuring that the baseline is conservative (you will have to ensure that the VVS includes requirements on the conservativeness of the crediting level).
- Prior consideration is a key piece too that TREES should use to demonstrate additionality. In jurisdictional programs we are talking about governments and when they propose these large scale programs, a lot of political capital is invested, and it shows already the commitment from the government to change the BAU and concentrate efforts to do so. Also the process itself (approval of REDD+ strategy, and the TREES cycle) includes the prior consideration, as ER programs need to be approved beforehand, etc. and countries have time to propose interventions, include policies, etc. Moreover, the carbon finance received has to be shared through BSP, and usually countries reinvest in activities, meaning that these activities are additional as they are based on additional carbon finance.
- The reference to NDCs does not make much sense in this section. Corresponding or not adjustments should be dealt elsewhere, I don't see the link to additionality.
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3.5 FOREST DEFINITION

- *"The forest definition or definitions listed in the TREES Registration Document must be consistent with the most recent definition used by the national government in reporting to the UNFCCC".*
 - Should specify if reporting means REDD+ Annex or GHG Inventory of NC, BTRs?
 - Also by when, at the time of the beginning of the crediting period? Then the country could change it in each crediting period? I am expecting that with the ETF of the Paris Agreements, countries will substantially modified their forest definitions...many countries have scarcely produced two NC in the past, now they are going to pass to BTRs biennially. Also in the past developing countries used the 1996 Guidelines, where the forest definition was not so crucial, now moving to 2006 IPCC GL with the representation of lands, the forest definition has acquired a new dimension.

3.8 EARLIEST CREDITING PERIOD START DATE AND VINTAGE

- As said above, it is important to define when the four years begin. If they provide a TCN by March 2020, does it mean that the crediting period begins exactly by March 2016? Perhaps it is better to refer to calendar years not natural years, so in this case the crediting period would begin January 2016. If the submission is in August 2016, then the start date should be January 2016 or January 2017. **This is important.** You use calendar years all over the place, so you should clarify this.

4 CARBON ACCOUNTING

- *“TREES requires alignment with the most recent Intergovernmental Panel on Climate Change (IPCC) Guidelines endorsed by the Conference of the Parties to the UNFCCC”.*
 - COP decisions related to REDD refer to IPCC guidance and guidelines, not guidelines.
 - Also this should be unambiguous. COP decisions related to REDD encourage countries to use the 2003 LULUCF GPG. 2006 IPCC Guidelines will be required under the ETF of the PA, as decided by COP serving as the meeting of the Parties to the PA.
- *“IPCC Guidelines are not specific to the purpose of REDD+ related estimation/reporting and may not systematically provide a necessary level of detail or specification. Therefore, other sources for best practices should be referenced Footnote: For example, see GOFCC-GOLD REDD Sourcebook, The Sourcebook for Land Use, Land Use Change, and Forestry Projects, and The Global Forest Observation Initiative Methods and Guidance”.*
 - Please note that the only of the referred documents that provide concrete and updated guidance to apply the 2003 LULUCF GPG are the GFOI MGD.
 - GOFCC GOLD REDD Sourcebook has not been updated in several years (it does not include several important advancements that have occurred in the last 2 years) and it intends to provide an update on novelty methods.
 - The WB’s The Sourcebook for Land Use, Land Use Change, and Forestry Projects is completely outdated and should not be referred to in any case. It will only induce to confusion. Besides, the website is wrong.
 - I would suggest that the GFOI MGD links refers to the reddcompass page (<https://www.reddcompass.org/>), as the GFOI MGD will be subject to update in 2020 (Version 3.0) following the 2019 refinement of the 2006 IPCC GL.
- *“Participants must demonstrate that all carbon estimation and quantification approaches conform with best practices for all matters”.* This leaves things too open for a standard that will not have specific methodologies. A country could refer to a methodology of the voluntary market or a paper and state that this is best practice...which might not be true. Who defines what is best practice? If you leave this to the VVB or the country, it will lead to lack of standardization and will affect the fungibility of assets. Unless you define “best practice” clearly, you should restrict things to methods of demonstrated applicability (are operational in NFMS) or indicate that the GFOI MGD provides acceptable methods, are not required though (experience shows that 80% of FRELs follow the fundamentals described there).
- *“ART requires TREES Participants to calculate GHG reductions based on the 100-year Global Warming Potentials (GWPs) in the IPCC Fifth Assessment Report”.* Why not providing them already OR refer to the latest available at the crediting start date (e.g. in each crediting period they will have to use the latest) OR perhaps provide the values for the first crediting period, and then say that subsequent will use the latest available

4.1. ACCOUNTING REQUIREMENTS

- *“Activity data may be derived from remote sensing data or from verifiable ground-derived data.”* Would require to further specify what is meant by ground-derived data. Are we talking about logging statistics? Or to continuous inventory?
- *“Quality assurance shall result from the implementation of hot, cold, and blind checks.7 Blind checks shall derive measurement and data entry errors”*. The Shall is too strong requirement for something that is not common for remotely sensed or ground-based (logging statistics), and in comparison with the “Shoulds” shown later. While these are considered good practice in forest inventory, I would not say so for activity data (either remote sensing based or ground-based such as logging statistics). I would require proponents to define robust QA/QC procedures (there is a lot of info in Volume 1 of the 2006 IPCC GL) and define what means robust (some examples for remotely sensed data may be found on the [“Country experiences and critical issues related to estimation of activity data”](#), produced by GFOI experts. Section 4.1.4. gives some examples on QA/QC procedures)
- *“Activity data should be derived from reference data stratified by a forest area change map using a peer-reviewed method,8, 9 i.e., area estimates should be obtained through stratified area estimation Footnotes: ”*
 - In many cases countries are using non-stratified sampling, systematic sampling. In 2018 around 30% of countries used systematic sampling. The GFOI MGD that is referred here considers this as a valid option.
 - Also in other cases stratification might not be based on a forest area change map, but proxies related to probability of change, e.g. in Mozambique we use change in NDVI to define probability of change, and a buffer around these areas.
 - I would not make reference to Olofsson without making reference to [“Country experiences and critical issues related to estimation of activity data”](#), specially section 2 which puts the paper into context. Based on experience, countries get lost with Olofsson’s paper as it is about accuracy assessment not area estimation, and countries apply it without thinking the implications, for instance, Olofsson recommends to merge the change classes, which makes sense for AA, but not for area estimation with different forest types. I do think that [“Country experiences and critical issues related to estimation of activity data”](#), is much more useful for countries than Olofsson as it is based on lessons learned in the application of Olofsson in the context of REDD+
- *“Resulting area estimates and confidence intervals should be reported, choices made in the sampling, and response design (e.g., sampling design, use of a buffer, sample size, and labeling protocol) should be reported in detail, and the quantity and deviations from the stratified random sampling design should be reported”*. Good practice in reporting is provided in Section 6 of this document [“Country experiences and critical issues related to estimation of activity data”](#)
- *“For the reference data, at least three interpreters should be used for the reference data, where majority agreement is used for the final reported data. Interpretation*

disagreement should be reported, and the locations, map classification and interpreter classification of the sample data should be shared for verification purposes”.

- I would include requirements for training and doing tests to confirm the consistency in the interpretation. If the interpretations are not significantly different per interpreter for the variable of interest, then we could go ahead with having one interpreter per point. A useful publication for this to raise awareness: McRoberts 2018 <https://www.fs.usda.gov/treesearch/pubs/56379>
- Even more important that this is the requirement that interpreters should use all the imagery available to do the interpretation, a dense time series. Just interpreting from a point A to point B reduces the certainty in the interpretation. This is explained in Section 4.1.2 of “[Country experiences and critical issues related to estimation of activity data](#)”
- *“The map used for the stratified area estimation should be created through direct change detection. It should be visually inspected, and obvious errors should be corrected before applying the stratified area estimation.”*
 - It is correct that direct change detection should have a higher accuracy and would make sampling more efficient, but Section 3.6.2 “[Country experiences and critical issues related to estimation of activity data](#)” shows that any map, even if it is through post-classification will lead to improvement in the sampling efficiency over a random or systematic sampling.
 - Also, a paper of Olofsson is about to come out that shows that post-stratification could also improve the uncertainty of the estimates.
 - Section 3.6.1 of “[Country experiences and critical issues related to estimation of activity data](#)” provides guidance for stratification
- *“The minimum mapping unit for remote sensing imagery must enable tracking forest and land-use changes at the detail required by the forest definition; deviations will be expected to create systematic errors that must be duly quantified.”*
 - Perhaps consider rephrasing. Deviations could create systematic errors.
 - Information on the operationalization of the forest definition and its impacts is provided in Section 4.1.1 of “[Country experiences and critical issues related to estimation of activity data](#)”
- *“The focus under TREES is the GHG associated with land cover changes; however, for deforestation land use, change is the emphasis and methods shall demonstrate that recorded deforestation is associated with land use change.”* And *“Analyses must identify cyclical systems such as timber or tree crop harvest rotations and shifting cultivation/fallow systems such that deforestation (or emissions following temporary tree clearing for tree harvest systems) from these activities is not counted more than one time. That is, the first conversion in such a cyclical system will be calculated, net of post-harvesting regrowth; any subsequent increases or decreases in canopy cover or tree stocks during harvesting cycles—short of permanent reforestation—shall not be accounted in activity data reporting”.*
 - I think these two are contradictory. The latter will serve to address the former in part. In many cases we cannot predict the future, whether it will be a cyclical system or not, so we mask it out as deforestation, and we assume it is a land use

change. Idem for logging roads. In REDD+ we cannot do time series consistency corrections as in NGHGI so I would suggest removing the first requirement, or join it to the latter.

- I think it is important to clarify that participants should do this for every year of the every crediting period. In the sampling units they should look back to the beginning of the reference period and confirm that they were not deforested before. Please note that in many cases if not all, countries are really applying an Approach 2 with their stratified estimation, so they could capture deforestation twice if they don't take into consideration this guidance. THIS IS VERY IMPORTANT.
- I am missing requirements to the attribution to the specific calendar years. From experience, countries didn't have clear protocols to assign the year of change. In most of the cases it is possible to attribute deforestation to the specific calendar year, whereas in other cases (such as degradation with VHR imagery) we only have images for the first and last year of the series, so those years do not count as one. I would suggest you provide some guidance on the attribution to the calendar years and the calculation of the number of years, to ensure right attribution to the specific year and the counting of the number of years. I know from experience that countries divide by 10 their RLs while they should have divided by 11, for this reason.
- *"All new approaches must be subjected to review at the verification that follows the update."* It would be good to define approaches and also someone would question the consistency. Also it should be clarified what is the objective of the review...compliance with the above requirements?
- *"Where activity data result from ground-derived data—including official industry or government records and statistics (e.g., harvested volumes)—information used is subject to verification, and a quantified estimate of uncertainty must be derived and reported."*
 - Subject to verification by the VVB?
 - I don't see anything about the number of datapoints.
 - Requirements on QA/QC procedures are also critical here, specially when we refer to logging statistics.
 - Also attribution to a certain year.

4.1.2 Emission Factors

- *"Emission factors are the GHG emissions per unit of activity data. Emission factors and components of emission factors can be derived from several data sources including on-the-ground plot measurements and inventories, remote sensing-based approaches, use of models and, where allowable, use of Tier 1 and other default factor-based approaches. All methods used shall be justified and sufficiently detailed in the TREES Registration Document to allow replicability during verification"*
 - I think some more detail would be needed to avoid this being ambiguous. Guidance on remote-sensing based approaches (biomass maps) is only provided in the IPCC refinement.

- Other default factor based approaches should be defined. I don't see this term used in the IPCC. In the FCPF we had the problem that the term "proxy" is not defined, we could have the same here.
- *"Under TREES, IPCC Tier 1 methods and defaults may only be used for secondary pools and gases (in Section 4.5), or to estimate post emission carbon stocks¹⁰".*
 - Would suggest clarifying what post-emission carbon stocks mean. Are these the carbon stocks after conversion (C conversion) or the long term average of carbon stocks post-deforestation (20 years)? This has to be unambiguous. From experience countries interpret it as they like.
 - Please see my comment on SOC. In some cases the SOC of mineral soils this can represent a significant amount of emissions.
- *"Models and equations may be used where justified, shall be peer-reviewed, demonstrated to be applicable to the specified use/geographical region, and must adhere to Tier 2 and Tier 3 methods".*
 - This is not entirely clear. Emission Factors should adhere to Tier 2 and Tier 3 methods (yet Tier 3 is very broad).
 - It is not clear what adherence of Tier 2 and Tier 3 of models and equations means. Allometric models? In this case you could consider that allometric models should be based on country data, which in many cases is not possible.
 - The requirement that models are peer-reviewed and that the demonstration that is applicable to the specific area is too much. Many models are locally calibrated, but have not been peer-reviewed, and some countries use pantropical models and to demonstrate they are applicable they would have to do a validation based on destructive sampling.
 - You should be cautious. In terms of Forestland Forestland, Tier 2 indicates that it is good practice to consider the decay periods of different pools and the transfer amongst reservoirs post-disturbance. This means de facto, that for RIL, you would have to consider that the disturbance doesn't constitute a committed emission (as the RIL methodology applied by Winrock) and that there is a transfer to the dead wood pool and carbon is released in 10 years (according to the default). This would cause legacy issues and would make RIL not attractive.
- *"(including hot, cold, and blind checks)¹¹"* I think it should be more flexible and indicating this as an example, as in some NFIs I could think of they don't have the whole three checks. Also it should refer to the specific chapter on QA/QC of Volume 1 2006 IPCC GL.
- *"In cases where the post-deforestation land use includes periodic harvest cycles (e.g., timber rotation harvests, crop harvests, or shifting agriculture/fallow systems) the time averaged carbon stock should be used to capture one full rotation."* I think you should consider the same thing for forest degradation, specially forest management (in the case of rotation). You should not consider committed emissions in these cases.
- *Degradation and forest management:* There is very little guidance on this. See my previous comment on committed emissions and long term average carbon stocks, and transfer to carbon pools.

- “Inclusion of Errors ☐ *Measurement errors shall be derived from the blind QA/QC checks and reported.*” .
 - I think the “shall” is too strong. Many NFIs do not estimate this or the data was lost, in some cases emission factors are based on scientific study that don’t include these procedures. In some cases that documentation might be lost forever and it will not be possible to reconstruct. In other cases, the measurement error propagated is assumed from the literature. Include these requirements make sense for projects that have to do the whole thing, but countries are not going to go through an NFI or terrestrial inventory only for TREES.
- “Inclusion of Errors ☐ *QA/QC procedures shall be applied to data entry with blind checks used to identify and report data entry error.*” .
 - I think the “shall” is too strong. Many NFIs or inventories don’t include this or have no information on this. From experience in verification, these transfer errors are not large (they were always below the 1% materiality level) and are random in nature, not source of large BIAS, just RMSE.

4.2 STRATIFICATION

- Not sure why there is a section on stratification. Stratification refers to a sampling procedure intended to reduce standard errors. It is relevant for the estimation, but not crucial.
- Perhaps we are not talking about stratification or land use land cover classification systems, including forest types, which is critical for the policy and design decisions. These forest types and its definitions should be kept consistently across monitoring years and within the crediting period.
- I am missing guidance on the transition from sub-national to national in terms of classification systems, etc. Please note that transitioning to national will require the inclusion of new forest types, etc.

4.3 LAND-BASED VERSUS ACTIVITY-BASED ACCOUNTING

- *“For land-based accounting, Participants must have in place the means to add new forest areas (specified in stratification plans) where reforestation is occurring in the country (outside current TREES accounting) in order to capture any future emissions from areas that have regenerated after initial registration”*. Not sure how this will be done without removals. From experience in the tropics (Colombia, Panama) they are not considering the default of 20 years for move from a subcategory to another one, and they consider one year. Hence, we could have cases where “deforestation” is counted for the same areas in several crediting periods or within the same reference period.

4.4 SCOPE OF ACTIVITIES

- My comments in this section pertains the 5 years, crediting periods, etc. it is often confusing how it is presented.

- *“Emissions from forests remaining forests must be included unless exclusion can be demonstrated to be conservative. This may occur where it can be demonstrated that annual emissions from forests remaining forests are higher in the prior five years than will occur under the current TREES crediting period. A new analysis shall be conducted at the start of each crediting period”*. I am wondering how this would be done for the first crediting period. Would we be using the whole reference period, or just 5 years of this period. If it is prior five years then this is an additional requirement to countries to generate estimates. We should be practical.
- *“Emissions from forests remaining forests can also be excluded where emissions total < 10% of reported deforestation emissions (and should remain <10%) for the entire crediting period”*. I am wondering how this is done for the first crediting period. Are you considering the whole reference period or 5 years prior to the first crediting period?
- *“In cases where activity-based analysis is conducted, individual forest emission activities (e.g., timber harvest or fuel wood collection) can be excluded where considered minor, such that Tier 1 estimation of emissions are < 3% of reported deforestation emissions during both reference and crediting period as long as the sum of excluded activities remains < 10% of reported deforestation emissions. The estimates used in this justification shall be updated at the beginning of each crediting period to demonstrate leakage is not occurring. If reported emissions indicate an increase in an activity that was excluded in the initial reference level, the activity must be added to the TREES Crediting Level at the next update as described in Section 5.3.”*. It would be good to provide flexibility and allow countries to use Tier 2 if available. There is a requirement to do this for the crediting period, this means that the country has to do ex-ante estimates, or it is for the previous crediting period.

4.5 SCOPE OF POOLS AND GASES

- *“when histosols – e.g., peat”*: In the IPCC we distinguish between mineral and organic soils. Organic soil is normally used, not histosol yet it is similar https://www.ipcc-nggip.iges.or.jp/public/wetlands/pdf/Wetlands_Supplement_Entire_Report.pdf#page=22
- *Soil organic matter (non-histosols) as secondary pool*:
 - I would refer to mineral soils, not non-histosols so as to be consistent with the IPCC.
 - Please note that in the case of Andosols (volcanic) the SOC ref and emissions can be extremely high, so if committed emissions are considered, we would be talking about a very large quantity. In Ethiopia (Oromia Region), where there is a prominence of Andosols the SOC can represent 35% of total committed emissions (in humid montane forest) and 72% in dry forest.
- *“If included, secondary pools/gases may be calculated using literature or IPCC Tier 1 calculation approaches, but the approach used may not be at a lower tier than that used in the national inventory”*. As explained in the previous point, SOC of mineral soils can

be very much significant. Hence, Tier 1 should not be used in these cases and there should be a provision.

5.1 CALCULATING A TREES CREDITING LEVEL

- *“The reference period for the initial Crediting Level under TREES shall be 10 years. A minimum of three data points must be included from the reference period (a minimum of two calculated periods of emissions)”*.
 - As indicated above, you should provide more guidance on the 10 years, also can we use some kind of interpolation based on data beyond the 10 year period.
 - Please note that to me is not clear why the three data points is required. This was common in VCS methodologies, but now the methods for estimation of activity data will provide directly estimates of change, so we are not dealing any longer with points but with sub-periods. Moreover, having two sub-periods is not really required for remote sensing...it is more important that guidance is provided to ensure that the remote sensing-based reference data for AD estimation is based on dense time series of imagery (see comments on the AD section), and that the logging statistics include at least two or three data points or sub-periods that cover the reference period. Moreover, reducing the size of the periods will increase uncertainty of the activity data...the lower the proportion of the estimate, the higher the proportion, the shorter the period the lower the proportion of the estimate. **Would suggest removing this requirement for remotely sensed activity data.**
- *“and it must be demonstrated that reference period data have not been excluded for the purpose of influencing the resulting Crediting Level.”*. Not sure where this comes from. Would be helpful to provide a footnote to clarify what we are talking about to avoid unambiguous application of the requirement.
- *“Following the initial crediting period, the TREES Crediting Level shall represent a 20% reduction below the Crediting Level from the prior crediting period.”*. I am sure there have been several comments on this...I believe that this is a policy target rather than a baseline and countries are sovereign to define their own targets (NDCs). This seems a bit of meddling in their attributions.
- Equation 3 – First equation: It should not be estimated per period n. It does not make sense as **UNCRE** is the calculated uncertainty for the reference period. In that equation you should consider a square root summation with each period n. In any case, as said before, I believe we should remove the sub-periods for remotely sensed data.
- Equation 3 – Second –
 - Align left the $UNC_{ref} = UNCRE - 15$
 - You should divide $(UNCRE-15)$ by 100 so that you can then use UNC_{ref} in equation 2.
- Equation 4:
 - “n” is used to denote period “n” during historical period, but it is used to denote a crediting period in this equation. Perhaps you should use a different notation.

- This equation seems not to be consistent with the equation and procedures set in 5.3. Apparently the reduction is not of 80% of the previous CL, but of 80% of the previous 10 years, which may include 2 crediting levels.

5.2 SUBNATIONAL ACCOUNTING AREA CREDITING LEVELS

- **Ratchettr:**
 - Unit should be in tCO₂/year.
 - I think that the calculation of **SCLtr-SCLh** would be different depending on whether prior to 2025 there is SCL2 (two periods) or SCL1.
 - **Two periods:** I think this is not OK. Imagine a program that has a SCL1 of 10 million tCO₂/year (uncertainty 14%), then the SCL2 would be 8 million tCO₂/year and 3 years before 31 December 2025. Since SCL2 is the CL at the time of the transition, then SCLtr would be 8 million and SCLh according to equation 5 would be 7.040 million tCO₂/year. In this case **SCLtr-SCLh** would be (8 million – 7.04 million) = **960,000 tCO₂/year**. Since the **Ratchettr** serves to correct the RPNat, which refers to the national historical emissions, not the first crediting period, to me the correction the way it is presented does not make sense. In CP1, RPNat includes all GHG emissions including the SCL1; in CP2, the SCL1 was reduced by 20%, meaning that it was reduced by 2 million tCO₂/year to 8 million tCO₂/year. Now, CP3 should have 2 years of SCL2 and 3 years of SCL3, so SCLh should be [100% - (5 – years until hypothetical SCL3)*20%]*SCL2. But then **Ratchettr** should be calculated as SCL1 – SCLh, not SCLtr (i.e. SCL2) – SCLh, i.e. 10 million – 7.040 million tCO₂/year. The solution would be to replace SCLtr by SCL1 and it would work for this case and the next case.
 - **One period:** This should be OK. Imagine a program that has a SCL1 of 10 million tCO₂/year (uncertainty 14) and it has begun 3 years before 31 December 2025. Since SCL1 is the CL at the time of the transition, then SCLtr would be 10 million and SCLh according to equation 5 would be 8.8 million tCO₂/year. In this case **SCLtr-SCLh** would be (10 million – 8.8 million) = **1.2 million tCO₂/year**. Since the **Ratchettr** serves to correct the RPNat, which refers to the national historical emissions. In CP1, RPNat includes all GHG emissions including the SCL1, but SCL1 has to be corrected after 2 years of the transition, then I would say that during CP2 SCLh should effectively be [100% - (5 – years until hypothetical SCL2)*20%]*SCL1. In this case, equation 5 gives the same results as this equation so the notation is correct.
- Equation 7: You should note that, RPNat is the Historical average of emissions at the national level during the reference period. Imagine the reference period of the SC is 2006-2015, and that the country's first crediting period is 2016-2020, and the second crediting period is 2021-2025. Then it would mean that the national reference period should be based on the 2006-2015. Does it makes sense to use such an old reference

period (more than 10 years old) for setting the reference level of the national level or the areas that didn't have a sub-national RL

5.3 UPDATING CREDITING LEVELS

- You should align equation 8 with equation 4 as they don't seem to be consistent in the notation.
- Apparently this is not optional for sub-national CLs, yet it could be possible that countries propose updates for these.
- *"Participants must calculate emissions over the prior ten years both WITH and WITHOUT an ad-dition in scope."*
 - I would suggest clarifying wo what it should be ten years prior? To the beginning of the crediting period?
 - Moreover, I am wondering whether it makes sense to include two crediting periods. Why not using 5 years.
 - Moreover, you will find difficulties with the Organic soils and the legacy issues in applying this...the longer the period the higher the emissions.
- Equation 9: I would suggest using 5 years instead of 1. The reason being is that one year might not be representative and one year might lead to very high uncertainties in activity data, and when handling variables of interest with high uncertainty there can be stochastic artifacts that may result. For instance, in a one year period uncertainty of activity data might be 60%, but as a result of implementing improvements uncertainty is reduced to 40%, however in this case 1YR WITH/1 YR WITHOUT would have huge uncertainties as a result. The actual ratio would not sufficiently pinned-down. When we go to larger periods such as 5 years, proportions are 5 times higher, and uncertainties could be 20 times lower, so the ratio would lower uncertainty. Perhaps one year makes sense for field data collection (logging statistics, etc.). For EFs it really doesn't matter if it is 1 or 5 years.

6.1 MONITORING PLAN

- *"All data reported must have been subjected to quality control checks. Internal data quality checks and other quality control measures shall be documented."* Following the IPCC nomenclature I would refer to quality control and quality control procedures.
- I am missing requirements in terms of consistency. This is a critical factor that should be taken into consideration. We are relying on data generated by humans, so SOPs must be clear and there is a chance that with time certain inconsistencies occur.

6.2 MONITORING AND REPORTING FREQUENCY

- *"Following successful validation and verification of the initial TREES Registration Document and TREES Monitoring Report, TREES Participants shall monitor and submit a TREES Monitoring Report following calendar years 1, 3, and 5 of the crediting period."* In many contexts it will be difficult to have a single year monitoring period. I would suggest that you give flexibility for year 1, whereby countries can estimate GHG emissions and

ERs for a longer period fully covering year 1 (and not overlapping with the reference period) and attribute to year 1 pro-rata.

7.1.1 Reversal Risk Assessment

- *“Additional guidance on the mitigating factors is provided in the document templates and the TREES Verification Standard.”* TREES validation and verification standard.
- *“MITIGATING FACTOR 2 (-10%): Demonstrated interannual variability of less than 15% in annual forest emissions over the prior 10 data points used in TREES Reporting”.*
 - Please define interannual variability. Is it the coefficient of variation of all data points?
 - I would try to differentiate between interannual variability and trends. Please note that 15% can be achieved just by having a downward trend of 4% annually (achieve a 20% decrease in emissions every 5 years). Hence, even if a country complies with the expected target of the CL, it will reach the 15%. I have checked with Brazil’s cerrado FREL and results, and due to the 80% decrease in deforestation the CF is around 35%. I think that the case that should worry us is the case where there are zig-zags, ups and downs, not where there are trends. There should be other ways to estimate this dispersion.

7.1.4 Buffer Pool Management

- *“the buffer contributions made to the buffer pool 10 years prior will be returned to the Participant to be used as the Participant chooses. This shall continue in each subsequent year if no reversals occur. If a Participant leaves ART at any time, all remaining buffer pool contributions are retired to compensate for any future reversals that may occur.”*
This is not clear, this means that after 10 years there will be no ERs allocated to the reversals buffer.
- It would be good to clarify if the Buffer is pooled across all ER Programs.

8 UNCERTAINTY

- *“The following components of uncertainty shall be estimated: ☐ Sampling errors ☐ Measurement errors ☐ Data entry errors ☐ Classification errors”.*
 - Please see previous comment on data entry errors. These are usually negligible.
 - Classification errors: If you refer to maps, this is not an issue as we use the reference data to make the statistical estimations. If you refer to the classification errors when assigning a label to the sampling unit, then this is within the realm of the measurement errors according to the IPCC.
- *“Model and allometric errors are excluded, as such errors are considered consistent between emissions in the crediting level and crediting periods, and thus the transaction cost and capacity building needed to include far outweigh any benefit in uncertainty determination”.*

- I agree we should simplify, but please note that in previous sections related to EFs you are leaving open the estimation of EFs, enabling the use of remote sensing such as biomass maps. In these cases, the estimates of biomass are based entirely on models (model based and hybrid inference) and their uncertainty is not negligible.
- Also, what about the default values or parameters. I understand that there is 100% correlation between reporting period and reference period, but the uncertainty is still there and in some cases it can be very high.
- Measurement errors in emission factors are also constant between the reporting period and the reference period if the same emission factor is used for both, which is expected in most of the cases. So for EFs, there is not much difference with errors due to allometric models. For AD is a different story as we have measurement errors for both periods and these are independent.
- Uncertainty of longer periods will be higher than the shorter periods. I would suggest to present a mechanism whereby after 5 years, the uncertainty of GHG emissions for the whole period is estimated, and if uncertainty is lower, then additional credits are generated as the discounts are lower. Something to think!

10 CALCULATION OF EMISSIONS REDUCTIONS

- You should provide guidance on what happens when the ERs are negative during the first reporting period of the first CL. In Year 1 it would be negative and in Year 3 it would be positive, but if the positive does not compensate the negative of Year 1 there should be no ERs I believe.
- I believe that in the end what it is important is the balance after 5 years.

11 VARIANCE

- I would strongly recommend changing the name of this action or process. Variance it reminds too much to statistics. Perhaps a deviation or a technical correction or similar would sound better and would be in line with other frameworks out there.
- I would strongly suggest that the process of reviewing does not rely on the Secretariat (it might be unclear that they have a wide range of views and the expertise to accept it...a standard variance is a big deal) and on a board that does not have technical expertise (in the end the Secretariat would decide). The Secretariat should rely on a group of experts that could provide specific expertise on the issue we are talking about...this will ensure that the variances are robust enough. I would suggest that you use a group of experts such as the GFOI MGD experts in order to resource the key expert in each area and have access to a wide range of opinions free of COI.

15.2 PUBLICLY AVAILABLE DOCUMENTATION

- I would suggest that the calculation spreadsheet and basic data is made available in the website. From experience in verifications and technical analysis, you need to have access to the previous spreadsheets to confirm that parameters, assumptions, etc. are consistent. Usually you have to rely on the participant to have access to this information but it is not always available, and you are not sure if these are the right versions. Having access to these data would enable the reconstruction of all the past data, etc.

-----No more comments in the meantime-----