Public Comments for the *Methodology for Improved Agricultural Land Management*

This methodology was open for public comment for the dates 5 June 2020 – 5 July 2020.

Comment 1

Submitted by: Stephen Wood

Organization: The Nature Conservancy

Country: USA

This comment was received via email to Verra.

Comment 1: *Provide guidance on how to implement the protocol*

Because of constant evolution in modeling capacity, we endorse the approach of providing general guidance not tied to one model such that there is opportunity for continued improvement. However, we feel that the level of detail of the protocol requires a level of pre-existing knowledge with biogeochemical models that will be a barrier to entry to all but the most technically sophisticated. We worry that this approach alleviates the main barrier to entry of prior protocols being financial cost of sampling and replaces it with a new barrier to entry of technical sophistication. To avoid this, we recommend that the protocol include examples and clear steps of how to implement this protocol for a set of commonly used models. Because of the international focus of this protocol, we believe it is especially important to demonstrate how to use this protocol for areas without much public data or coverage from scientific studies. We feel strongly that this is an essential piece for ensuring that the protocol is usable and not just a technical document.

Comment 2: *Appropriate threshold for bias needed*

This protocol makes the important point that the use of models should be unbiased, or conservatively biased. Practically, it remains unclear to us what is an acceptable level of bias. For instance, we are aware of work that has compared multiple biogeochemical models by calibrating and validating the models to long-term field data in a well-studied region[1]. Even with these long-term data, models were shown to have bias in predicting N_2O for high levels of N_2O. It is not clear to us whether the level of bias shown to already exist for the most common models is considered acceptable. And, related to our prior comment, what practical guidance can you offer about how a user could reasonably demonstrate minimum bias given that most places do not have the long-term data used for papers such as the one referenced above (and even that paper had demonstration of bias)?

Comment 3: *Clarify temporal scale of N_2O/CH_4 measurements, ideally for annual coverage*

At several points in the document, the protocol refers to the need to include "annual/seasonal measures of N_2O and CH_4". To us, annual versus seasonal sampling can show different impacts of management practices and it is important to specify which is preferred. For instance, it has been shown that seasonal sampling of N2O may lead one to conclude that tillage can increase N2O; however, year-round sampling demonstrates no net change[2]. Because of this apparent bias from seasonal sampling, we believe annual coverage should be required. However, we recognize that fewer studies in agricultural systems have full year-round coverage. Because of this there should be at minimum guidelines for how to avoid bias associated with only seasonal sampling.

Comment 4: *Clarify sources of error*

Section 8.6 seems to define how uncertainty is quantified. In this approach, error associated with field sampling is determined by a two-stage simple random sampling. From our reading, it seems to be assumed that this random sampling leads to unbiased estimates of true soil C stocks; however, this is not demonstrated, nor is it asked for land managers to demonstrate this. In our experience, determining adequate sample coverage for estimating "true" carbon stocks is a non-trivial problem and even the best-designed efforts have some error between the observed stock and the true, unobserved stock. To our understanding, the protocol does not consider this error between observed stocks and unobserved true stocks in overall calculations of uncertainty. Error in the protocol, to our understanding, is quantified for analytical measurement of the collected samples and model structural uncertainty. If our reading is correct, we recommend adding in this important element of uncertainty. If our reading is incorrect and that uncertainty is already incorporated, we recommend highlighting that further because it was not apparent to us.

Comment 5: *Clarify "statistical robustness"*

"Statistical robustness" in the methodology is used to describe minimum levels of rigor around "measurements of SOC change" (Box 4.1), "evaluation of multi-year impacts on SOC stock changes" (Box 4.1), and "sample designs" (Section 8.6). Measurements, evaluation, and sample designs are each distinct activities. We think it would improve the clarity of the methodology to explicitly define what is meant by "statistical robustness" in each of these instances.

Comment 2

Submitted by: Simon Bolis & Tanushree Bagh

Organization: South Pole

Country: Switzerland

This comment was received via email to Verra.

South Poles feedback on the Draft Methodology for Improved Land Management General comments: South Pole actively supports the ongoing developments of the methodology for Improved Land Management. We, in particular, acknowledge the significant improvements to the chapter on the management of uncertainty for the baseline setting compared to the existing ALM methodologies. In view of further improvements, we are delight to send you our comments and feedback to the document meanly regarding the applicability of the methodology and the quantification of the emission reduction.

South Pole's detailed feedback on document:

4. Applicability conditions:

"4.The project activity is not expected to result in a sustained reduction (i.e. over at least 10 consecutive years from the project start date, supported by peerreviewed and/or published studies) in productivity or sustained displacement of any pre-existing productive activity in the project area"

South Pole's comment: What is the expected supporting document or justification to prove that implementing activities such as the introducing trees, which can bring shade on grass or crop and/or switching from high N-content synthetic fertilizer to lower N-content organic fertilizer won't negatively impact productivity? While it appears to be a relevant condition for a sustainable agriculture project to be designed, we are concern it might be difficult to prove it when operating project, where high rate of chemical inputs are already used. Soil may be highly degraded, yet productivity may be maintained by the application of high rates of chemical inputs, for instance.

4. Applicability conditions: "Additional conditions where models are applied […] 4.Validated per datasets and procedures detailed in Box 4.1, with model structural uncertainty calculated using datasets as detailed in Box 4.1, using the same parameters or sets of parameters applied to estimate stock change/emissions in the project.".

South Pole's comment: 2 Do the authors provide a list of models already know to meet these requirements along with the methodology? Is the Roth-C model part of it?

Box 4.1. Model validation requirements: "if using Quantification Approach 1, flux change of N2O and CH4, when adopting eligible practices. Model validation steps are as follows:…"

South Pole's comment: Box 4.1. describes requirements for an empirical or process-based model to be created, used and validated for the purpose of project emission reduction accounting. It is unclear whether an existing peer reviewed SOC modelling tool can be used and what type requirements of Box 4.1 would apply in that case.

Step 3) Gather validation data that meet the following requirements Requirement 1: “Measured datasets must be drawn from peer-reviewed and published experimental datasets with measurements of SOC stock change (and annual/seasonal measures of N2O and CH4 change if applicable) using control plots to test the practice effect requiring evaluation [...] measurements of SOC stock changes must be statistically robust capture multi-year changes”

Requirement 2: “It is in a project’s interest to exceed these minimums and validate the model across more soil-climate zones, soil texture classes, and clay contents”

South Pole’s comment: While we observe the step 3 “gather validation data” helps building a robust SOC model we are concerned this type of data might not be available for sustainable agriculture project happening in developing countries. This condition might then reduce opportunities for projects to access voluntary carbon market where academics or research and development infrastructure are weak, which may be the case in developing countries. Whereas the US and European countries might be better equipped to provide improved land management project with robust datasets and studies. What is the position of this methodology regarding a SOC modelling approach as in VM0017? i.e. using an existing peer-reviewed tool (Roth-C or other) that is adapted to the bio-climatic conditions, with no validation dataset required. It was applied in Kenya and is being applied in India as per VCS database. Would this methodology allow for a similar approach? If not, do the authors consider the application of this methodology in developing countries feasible and cost-effective?

8.2 Baseline Emissions - Quantification Approach 1: “Where an applicable performance benchmark exists, the baseline is equal to the performance benchmark”

South Pole’s comment: How does the methodology define an applicable performance benchmark?

Equation 12 to 14: “Under approach 3 direct nitrous oxide emissions due to fertilizer use in the baseline scenario are quantified in Equations 12, 13, and 14.”

South Pole’s comment: Organic fertilizer emission and Synthetic fertilizer emission are accounted in the same way, in the same equation, yet synthetic fertilizer is imported from outside the project boundaries and organic fertilizer appears to be defined as vegetal and animal organic matter coming from inside the project boundaries. See appendix 1, “Organic fertilizer application (e.g., manure, compost)”. In that case the organic matter would be given a different end-use within the same farm boundaries, hence no emission generated (or emission from a decay process).

Table 8.3. “Soil organic carbon stock and bulk density Determined at project start (re- measured every 5 years or less)”

South Pole’s comment: The methodology does not describe how to proceed in the approach 1 case (soil sampling and modelling) where verification is performed against modelled SOC values, but SOC stock measurement must be reported every 5 years. For instance, a project is verified at t = 3 years against modelled SOC values; at t = 5 years the project proceeds to SOC measurements; then how are issued VERs from year 3 considered against direct measurement from year 5. An ER calculation based on year

5 measurement could result in more ERs or less ERs than verified in year 3. In the more ERs case next verification will account for it, in the less ERs case projects could end up next verification with negative ERs. How is this covered by the methodology? Equation 41. Uncertainty deduction South Pole's comment: The uncertainty deduction is based on the sum of uncertainties of the sub-activities included to the project. The methodology does not set any requirements related to individual uncertainties to sub-activities. Does this mean that for the SOC change value in soil carbon, even if the uncertainty is more than 100% , the value modeled is valid for use, as long as bias is reduced to a minimum (<=0)? What are the implications to farmers that have individual SOC model results with high uncertainties (for instance above 50%, 70% or 100%), which may be a common case for SOC modelling on small farm areas?

In addition, the uncertainty deduction equation seems to favor larger areas or group of farmers submitting their project together since they will most probably be able to account for soil variability with a relative lower sample size by stratifying and grouping their land profiles. Could the methodology also accommodate a benchmarking tool for individual farmers that allows to use of regional default data in addition to in-situ soil samples, thus the measured values can be adjusted and uncertainties lowered?

Box 9.1. Accounting for uncertainty associated to model input values

South Pole's comment: Regarding the data provided by farmers from invoices, management records, etc.: how does the ALM methodology suggest to estimate the uncertainty associated to the input data values?

Comment 3

Submitted by: Ken Newcombe

Organization: C-Quest Capital

Country: USA

This comment was received via email to Verra

Comment to Climate Action Reserve and Verra staff on the assessment of additionality for agricultural land management projects

Thank you for taking the time to consider this comment. Both of your organizations have put in important work for the development of innovative methodologies for connecting agricultural land management (ALM) activities with the carbon markets at scale. The National Academy of Sciences 2018 report supports us in the belief that restoration of agricultural soil carbon could simultaneously help resolve three global problems – food security, biodiversity, and climate change. When carbon is restored to agricultural soils by building soil organic matter, it generally makes the soils more fertile, better at retaining water and fertilizer, and more resilient to climate change. Thus, if done correctly, the restoration of soil carbon would result in a quadruple win: increased food production per acre, better livelihoods for farmers and their families, less pressure to convert remaining forests to agriculture, and a substantial carbon sink. During these development processes you have both come to the rational conclusion that traditional approaches to assessing additionality for carbon offsets, such as assessment of financial feasibility and practice-based assessments of activity penetration – or common practice – are not appropriate for ALM projects in their current forms. Both registries are proposing novel approaches that break out of the traditional mold applied by the carbon market, yet also maintain a rigorous, investable standard for additionality. This letter is intended as a show of support for your new approaches to assessing additionality in agricultural carbon projects. Because they are new and different, novel approaches may cause confusion and criticism from carbon market stakeholders, with some voicing strong opposition to these new policies. That is understandable, and public review and comment is crucial for credibility and market confidence. This letter is intended as a demonstration of support for the new approaches being proposed, and to provide an independent perspective on additionality in ALM projects, and why new approaches are needed.

Why not rely on a financial additionality test?

Research has demonstrated that increasing long-term financial returns of preferred practices is insufficient to change farmer behavior (Howley, Buckley, O'Donoghue, & Ryan, 2014). Growers do not act purely in pursuit of long-term profit maximization, even if that is how it appears. Growers also consider factors such as maximizing social value, adhering to in-group norms and values, and simplifying the decision-making process through heuristics.

Barriers faced by farmers that are ignored through simple financial additionality screens include:

1. **Widespread adoption of new ALM practices will require group collaboration to reach a critical mass of market demand for proper equipment, crop inputs, and services.** This market demand is needed to signal to farm equipment manufacturers and local equipment providers to commit resources to produce and service new equipment; other input providers to shift to meet demand for inputs unique to new agronomic practices (ranging from physical crop inputs to information and consultation services); local, group, and institutional knowledge to incorporate new information and overcome outdated heuristics; and commodity markets to develop infrastructure to offload commodities with unique, marketable characteristics.
2. **Farmers experience long delays between decisions and outcomes, preventing them from receiving immediate feedback to reshape future decisions. Making economically correct decisions requires strong understanding of the short and long-term economic impacts of various decisions.** Long delays between decisions and outcomes dilutes the connection between the two for the farmer.
3. **Farmers experience significantly more uncontrollable factors, particularly market prices for their products and weather patterns, that impact their overall productivity and profitability.** These heightened uncertainties lead growers to prioritize risk mitigation over long-term profit maximization. New practice changes are viewed as inherently risky, mostly due to lack of sufficient information for farmers.
4. **Farmers face systemic and structural barriers to widespread adoption of significant practice changes.** These barriers include lack of education on specific practice changes (both in universities as well as through generational knowledge transfer), lack of agronomic support through common channels (e.g., seed and equipment dealers, government agencies, university extension), and availability and proximity to markets which value crops produced with more sustainable methods.

These unique factors can slow or halt the adoption of new agricultural practices, ones beneficial to the planet through the reduction of GHG emissions and increases in soil carbon levels. Project financing from the sale of GHG credits is intended to address barriers related to practice change, primarily risk reduction, and should be communicated as such to farmers. Additionally, project financing is often coupled with other values designed to address barriers such as access to information and guidance to not only have success with new practices, but also to have confidence in implementation; this is a vital factor for encouraging behavior change. Rather than a subjective assessment of simple farm economics, the proposed methodologies rely on demonstration of widespread risk aversion and other barriers to change in the agricultural sector. Appendix A of the Reserve's Soil Enrichment Protocol (SEP) v1.0 includes an assessment of behavior in the agricultural sector that covers the list of barriers above in greater detail.

Why not conduct activity penetration assessments for each individual practice?

The typical approach to assessing common practice for carbon project methodologies is to consider any activity with an estimated or measured penetration level above 5% to be considered "common." This traditional approach has been suggested by at least one public comment to the Reserve's SEP v1.0. Assessing the penetration of individual ALM practices against a threshold of 5% is inappropriate for the following reasons:

1. **ALM projects are driving toward multiple practices, so a single practice assessment is not relevant. Over a project lifetime, ALM projects will only have a financially compelling GHG benefit if the farmer adopts multiple practices.** However, it's completely unreasonable to ask a farmer to adopt multiple practices in order to gain entry to the program. Sustainable ALM is a journey, and (as discussed above) farmers are risk averse, so practices are necessarily adopted one at a time. Although some individual practices may be adopted at rates greater than 5% in certain regions, it is exceedingly rare to find such high penetration of farmers adopting multiple practices simultaneously.
2. **Practices will not be static at the field level. Sustainable ALM is a journey involving experimentation and continuous assessment of performance that must be tailored to the individual field and farmer.** This means the farmer may try practices and abandon them later in favor of an alternative that works better for their farm. Thus, the focus should be on the act of behavior change and GHG performance, which are both incentivized by the proposed methodologies. Successful implementation will involve experimentation and stacking of practices.
3. **Whether a practice is "common" must be defined differently for agriculture.** A single practice with a 5% penetration rate is essentially a radical experiment in the eyes of the farmers. The 5% threshold for additionality may have been useful or appropriate in the context of renewable energy technologies, or industrial emission sources, but it is neither useful nor appropriate for ALM projects. As discussed above, farmers are often skeptical of practice changes until they are adopted very widely. While it is true that multiple practice adoption is rare, single practice adoption must be eligible to get those farmers in the door. The focus on crediting for performance ensures that the incentives are aligned for farmers to move to multiple practice adoption as quickly as possible to maximize carbon revenues.

4. **Different practices would need to be assessed at different scopes.** The relevant sphere of influence will be different for different practice changes depending on crop type, political boundaries, access to technology, water availability, soil type, geography, etc. For ALM projects – which involve multiple practice changes, crops, and geographies, grouped together into one project – any assessment conducted on individual practices would be impossible to standardize across the project. Any such assessment should cover the entire project region, focusing on overall practice change, rather than individual practices.
5. **Agricultural practice changes are not "one size fits all."** The actual nature of the practice change will vary not only between crops and regions, but also between farmers and time periods. The complexity of the changes and the diversity of practices makes it difficult to draw direct comparisons and clear assessments of what is "common" practice.

Conclusion

I, as well as the undersigned stakeholders, strongly support the work of the Climate Action Reserve and Verra to develop new approaches to assessing additionality for ALM projects. The opportunity to positively impact the climate is massive but will only become reality if we are able to take a global approach. We urge you to avoid reverting back to traditional approaches which are neither appropriate nor effective for ALM projects. We urgently need incentives to overcome cultural and economic barriers to change, and climate finance can provide this incentive. This feeds into the need for a sensible, pragmatic approach to additionality for new science-based soil organic carbon methodologies. **Successful ALM methodologies should define eligibility in relation to adoption of practice changes generally, and quantify crediting based on performance (in the form of GHG benefits). The practice changes are needed to get into the program, but the farmers must actually reduce their GHG emissions and/or increase their carbon sequestration in order to benefit from the project.**

Comment 4

Submitted by: Adam Davis

Organization: University of Illinois at Urbana-Champaign

Country: USA

This comment was received via email to Verra

To Whom It May Concern,

I'm writing to comment on the 'Methodology for Improved Agricultural Land Management' submitted by Indigo. Note that this message does not constitute an endorsement of the approach or any related products, but is simply a scientific comment. The rationale behind this approach is sound: in order to provide price signals to farmers to manage their lands for improved sequestration of GHGs, there needs to be a) a thriving GHG market and b) a robust way to quantify GHG capture. Regenerative Agriculture is a metric-based approach to agricultural land management that focuses on improvements in soil quality, on-farm biodiversity and agroecosystem resilience. The proposed method creates a means of estimating the ecosystem services being provided by varying ALM practices. The modeling approach appears to be a good first step in approximating GHG capture. It will be important to conduct subsequent verification studies to compare predictions to observations across the range of production environments included in the project.

Comment 5

Submitted by: Emmanuel D'Silva and Mohan Reddy

Organization: N/A

Country: India

This comment was received via email to Verra

1. We like this methodology and believe it is an improvement over several similar methodologies, including those used in the Clean Development Mechanism for over a decade. However, we also think this methodology is relevant primarily to the US, Canada and other industrial countries where data sets are more easily available. We can understand your focus in these areas because that's where you expect most of your projects to come from.

2. But we believe that you should not ignore the developing region—the other half—where landholdings are a few acres and data not easily available. Why not develop a more simplified methodology for these countries using the existing methodology as a starting point? This way you could also get projects from developing countries and a better geographical spread.

3. We do not see a need for baseline data for three years. A baseline before the start of a project, based on adequate soil samples showing soil organic carbon and other parameters, should be sufficient. The methodology would create a huge burden for small farmers. There are no performance benchmarks approved by Verra.

4. We question the need for "Additionality." If a farmer follows good agricultural practices (eg, conservation agriculture) GHG reductions would surely follow. At the Webinar on June 17, it was explained that this was a buyer's requirement. This is akin to a tail wagging the dog! To us the important issue is whether a farm reduces carbon emissions; a particular agricultural practice by a farmer matters less. Yes, one could give brownie points—pay a premium—for demonstrating reductions in chemical fertilizers, water use, etc. But by making Additionality a requirement you are setting up a needless barrier.

5. The compliance cost of this methodology is not clear. What are the transaction costs of monitoring, verification, validation, etc? How do these costs compare with benefits? It would help if you provide the costs and benefits on a per acre or per ton basis.

6. Finally, you could illustrate a typical project you envisage in the form of a Box item. It could provide project description, process protocols followed, amount of emissions reduction, transaction costs and payment on a unit basis (acre or tons of Co2), time line from project development to payment for emissions reduction.

Comment 6

Submitted by: Nicolas Martin and German

Organization: University of Illinois at Urbana-Champaign

Country: USA

This comment was received via email to Verra

Text

1. Box 4.1: aren't step 3 and 4 the same (page 13 in the pdf)?

General question

1. Some technologies could increase C sequestration but also increase N leaching. Since N Leaching is a primary concern in the type of agriculture described in the project, could it be included that the project has to show that is not increasing N leaching?

   Example: a farmer that goes from tiling the soils and not using N fertilizer, to no-till and, since mineralization is lower in no-till, use N fertilizer?

Additionality

1. Showing additionality is the key to make this helpful for decreasing GHG and not just allowing more emissions by industry, because they think that those emissions are being compensated when they are not.

   Practices and technologies in farming evolve, and there is an economic theory that explains how early adopters adopt the technology first and test it. Then, laggards or slow adopters start to select it, and if the technology increases production, the higher offer makes the price of grains decrease. The early adopters get the most benefit of a new practice, and the slow adopters are forced to adopt it to avoid being out of business (http://www.dartmouth.edu/~iispacs/Education/EARS18/Agriculture_2011/cochrane-agricultural-treadmill.html).

   The protocol could separate that natural change in practices that will slowly be adopted from practices that need the carbon selling push to be adopted. If it doesn't, the carbon selling will just give extra profits to the early adopters, which are also the ones that get the most benefits from the practice. That will increase inequality among farmers and also will not be "additional" since the method is changing naturally.

   One option for this is that the identification of the barriers stated in step 1 of additionality, ask to show why the new technology is not expected to be a "natural evolution or change in practices," that in a few years everyone will be using in the region. That is to ask the project to look at future scenarios besides present ones and ask for proof of why the barriers will hold during the time horizon of the project. For example, if a practice is profitable and the restriction is lack of machinery, it is just a matter of time until farmers will see the benefit and invest in machinery.

2. Another point is related to step 2 of additionality: “Demonstrate that the activity is not common practice.” Some practices are profitable per se and do not need C selling to be adopted, but other barriers restraint the adoption. In this case, a VCS project introduces the practice in a region, and then other farmers see the benefit and adopt it without the need to sell C. In this case, the C selling helped to break the barrier. Still, later the practice is naturally being adopted without being “additional” anymore. Protocols could state a regional threshold, and also state if the early adopters that brought the method to the region are going to lose their ability to sell C credits or not.

Comment 7

Submitted by: Jacob Penner

Organization: Native Energy

Country: USA

This comment was received via email to Verra

Equation 1 (Section 8.2.1) calculates soil organic carbon stocks as $tCO2e$/unit area, while Equation 4 (Section 8.2.4) calculates methane emissions from the soil organic carbon pool and then multiplies it by the area (A_i) of the sample unit. These calculations should be standardized so that they both refer to the same area when completed.

Why does Quantification Approach 1 (Measure and Model) employ a dynamic baseline approach to calculating GHG flux when the approach also requires measurement every 5 years to true up model estimates? This seems inconsistent with Quantification Approach 2 (Measure and Remeasure) which employs a fixed baseline approach. Under this inconsistency, the same measurement data from $t = 0$ and $t = 1$ would seemingly result in a different total credit yield depending on the approach.

I'm concerned that there aren't more rigorous requirements for soil sampling with regards to sample size and stratification. It appears that these decisions are left entirely up to the project developer. I'm concerned that a lack of guidelines will incentivize under sampling that will reduce confidence in claims of carbon sequestration while providing no guidance to a VVB on how to audit such a design.

Remeasurement of soil carbon stocks (under Approaches 1 and 2) should employ equivalent mass sampling procedures to correct for changes in bulk density that may occur in the project scenario. Failure to account for these changes would lead to erroneous conclusions on changes in SOC stocks that could exaggerate project benefits (see Wendt and Hauser 2013 for a great review of this).

Comment 8

Submitted by: Mateusz Ciasnocha

Organization: Farm-Co-op

Country: Poland

This comment was received via email to Verra

With this email, I would like to contribute to the public consultation on the Methodology for Improved Agricultural Land Management (https://verra.org/methodology/methodology-for-improved-agricultural-land-management/).

My name is Mateusz Ciasnocha and I represent a group of six farms owned and operated by the Ciasnocha Family in northern Poland. Together we farm over 1,800 acres of prime agricultural land in Poland, in a regenerative way. We are net negative emissions farm and we are very interested in monetizing our negative emissions through the carbon credit monetization mechanism.

With the above in mind, we are delighted to see the Methodology for Improved Agricultural Land Management being developed - it is wonderful this effort is being taken, as it goes a long way towards developing a market in which we do hope to participate in and benefit from.

Below is our feedback.

The list of our comments, points and open-ended questions, which we do hope will be addressed and incorporated in the final version of the Methodology:

- The benchmarking period for establishing a baseline should be longer than three years (ideally five years) in order to provide a more robust baseline.
- The Methodology should allow for the baseline to be developed without taking into account the current commodity production in the region. This is because some speciality crops may not be eligible for the Methodology if the regional production benchmark is required. Also, in numerous regions of the world, regional data is not available, dated, or unreliable. This will unnecessarily penalise future-oriented farms, which want to lower their environmental impacts.
    - In such cases, the field-specific benchmark should be required and used.
- We welcome the 5% threshold to demonstrate additionality.
- We welcome three approaches for calculating emissions. However, the Methodology should specifically require a Life Cycle Assessment (LCA) of each agricultural operation going through the assessment.
- Critically, it is necessary for the Methodology to cover land-use change driven emission changes.
    - Without including land-use changes the Methodology will have a tremendous accounting leakage potential and will not be valid.
    - Such land-use changes should include specifically: arable -> grassland, grassland -> agroforestry and arable -> agroforestry, but should not be limited to those three land-use change scenarios.
- As for applicability conditions:
    - We insist that the threshold in point 4.3 (page 8) be changed from 10 into 25 years.
    - Similarly, the numbers should be changed from 10 to 25 years in point 4.4 (page 8).
- As for points 1-4 on page 9:
    - Great publicly available data is required in order to fit into the Methodology.
    - On peer-review data, we recommend for this point to be clarified further by requiring at least one peer-reviewed scientific study from a region, where the assessment is taking part to be included in the model, so that localization of the models applied is achieved. This will ensure both more accurate measurements, as well as a quick uptake of the Methodology across the world.

    - It is necessary for the Methodology to specify further what exactly is being meant by "comparable to FAO". What is the decision-making framework for establishing whether a certain organization is "comparable to FAO" and who is responsible for evaluating whether this decision making framework has been followed?
- As for the approved peer-review journals (page 15) - it is necessary for a clear mechanism for adding new peer-review journals into this list to be specified together with specifying time intervals on which such expansions of the list will take place.
- It seems that Step 3 (pages 13-16) and Step 4 (pages 16-18) are repeating itself and are exactly the same steps - revision here is needed.
- It is necessary for the Methodology to specify what happens to the old measurements when the models are recalibrated (page 18).
- For table 5.2 (pages 20-21) including the introduction to the table on page 19 - life-cycle assessment of the farm should be required specifically by the Methodology.
- Table 6.1 (pages 21-22) seems to be missing incorporating the rest period for the pasture in calculating GHG emissions.
- As for Additionality (pages 23-24):
    - Step 1. It is almost impossible to well define "social pressure". This requirement should be completely re-thought and possibly voided in the final version of the Methodology.
    - Step 2. Both the "region", as well as what constitutes a "common practice" should be very clearly specified by the Methodology. With its current phrasing, the Methodology leaves out a significant room for subjective inclusion/exclusion of farms into the assessment. This cannot be the case in the final version of the Methodology.
    - Also, out of the three proposed forms of verification (Step 2, points 1-3 - page 24) at least one (peer-reviewed scientific literature) and in reality, all three are hard to access to an average farmer. This accessibility issue has to be seriously through about and addressed in the final Methodology.
- As for the Quantification of GHG Emission Reduction and Removals (pages 25-52):
    - It is critical to underline in the Methodology that Global Warming Potential of 100 years in being used.
    - As for Table 8.1 on pages 25-26 - each of the three quantification approaches should be allowed for calculating each emission source. Even if with the today's technology certain approaches are not yet ready to be used, the Methodology should allow for a situation in which technology and science develop, so that those approaches will be applicable in the future.
    - The Methodology should specify why "15%" is the threshold beyond which there is an uncertainty deduction (page 48). Why is this threshold not set at 5% or 25%?
- As for the Monitoring (pages 52-90):
    - As for the Box 9.1 (pages 52-53) - in point (b) the highest emissions in the baseline scenario should be applied and not the lowest. This should be revised in the final version of the Methodology.
- On page 77 there seems to be a small mistake with Var(a) and Var(b) - the equation uses "bsl" parameter for both values, when actually "wp" values should be used in those equations. Please correct this mistake.
- On page 88, when measuring annual dry matter of N-fixing species, not only-peer reviewed data, but also direct measurements should be allowed as a source of data.
- Critically, the Methodology should provide equivalent papers and regulations similar to those of the EPA, including specifically those of the European Union authorities, each time it makes a reference to the EPA. It is critical that the final version of the Methodology is not US-centric, but global in its structure. Inclusion of the European Union, and other key regional players, papers will go a long way towards implementing this objective in real life.
- Governance between Verra, TerraCarbon LLC and Indigo Ag Inc. now and the framework for managing it in the future should be clearly outlined and specified alongside the proposed Methodology.
- Similarly, the process of updating and revising the Methodology together with specific time intervals should be defined and presented alongside the Methodology.

Looking into my notes those seem to be all of my notes and points regarding the Methodology for the time being.

I would like to once again thank you for developing the Methodology as it goes a long way towards developing an agricultural carbon credits market and putting farmers in the centre of global climate change mitigation efforts.

In case of any questions, or clarifications needed - please let me know. I would be delighted to elaborate on my points above.

Similarly, if I can be of any further help in developing this Methodology, I am here for you.

Can you please confirm my feedback has been received?

Finally, please keep me updated on how this feedback provided gets incorporated, or not, into the final Methodology and if not, why so.

Comment 9

Submitted by: Martin Fraguio & Guillermo Peralta

Organization: Carbon Group

Country: Argentina

This comment was received via email to Verra

Dear Verra VCS Program authorities,

We would like to thank the opportunity to participate in this open consultation and congratulate the technical teams of Indigo AG and Verra for the preparation and presentation of the material. We find this methodology critical in the promotion of sustainable soil management practices. Wishing to make our contribution in this sense, we would like to make the following comments to the protocol:

1. applying a 3-year historic look-back period to produce an annual schedule of activities to determine baseline scenario (p.6):
    a. We think 3 years may not adequately represent baseline scenario conditions. A 3 year period may be much influenced by specific year to year weather conditions and their effects on crop yields, residue inputs, and management practice. We suggest a minimum of 5-6 years as a baseline period.
2. Any quantitative adjustment (e.g. decrease in fertilizer application rate) must exceed 5% of the pre-existing value to demonstrate additionality (p.6, p.23):
    a. This is clear for the case of fertilizer use. But for other practices such as no till… How is the 5% value assessed? (surface, residue inputs, projected yield increase, projected carbon stocks?). We think this section should be specified in order to numerically assess additionality prior the implementation the proposed practices.

3. Although the description on model validation requirements is extense (p.11- 18), procedures for model validation are not specified. Data availability required for model validation (e.g. measurements from chambers and/or eddy covariance flux towers) may restrict the use and applicability of the protocol.
4. Minimum specifications on agricultural management practices for the baseline scenario (p.22):
   a. We think other data requirements that are needed to define the baseline, as a minimum, include: crop yields and harvest indexes, fertilizer/product type, tillage type (no-till, reduced tillage, full tillage), •
5. Baseline period to determine SOC stocks (+/-5 years) should be consistent with baseline period to determine baseline scenarios (3 years)
6. Modeling procedures should clarify time-span to be modeled
7. A detailed soil sampling protocol should be included

Comment 10

Submitted by: Eleanor Milne

Organization: Colorado State University

Country: USA

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Page 9 point 3 – Additional Conditions where models are applied.

If Tier 2 factors from a measurement campaign in the project area itself are used in a model how should these be documented/referenced and what are the conditions they must meet before being used?

Box 4.1

Are green manures subject to the same 'Practice effect requiring evaluation' as 'Organic amendments application?'

Section 6. Baseline Scenario

If the baseline scenario is more complex than continuation of pre-project agricultural management can the methodology still be used? For example if the baseline is a growing trend to the introduction of another crop and the project scenario is the introduction of CA, can the methodology still be used?

Section 7 Additionality

Can a DPSIR analysis be used to identify and articulate barriers to uptake? DPSIR is in line with UNCCD methods.

Comment 11

Submitted by: Susan Martins

Organization: Climate Smart Group - Brazil

Country: Brazil

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1- The methodology says that where soil models are not yet parameterized to use the second approach - benchmarking. Let's assume there is a region where there are a) published articles demonstrating a positive performance of the model and b) a good SOC flow benchmark. The question is, what approach should be selected?

2- The methodology considers a historical period of 3 years to determine current practices. The question is: Is it possible to include a minimum historical period of 3 years for the baseline scenario? Or more years?

3- What is the status of the development of the performance indicators that will be approved by Verra (indicators for the benchmark)?

4- Considering approach 2: Is it possible to include the analysis of soil organic matter (SOM) as an indirect measure of soil carbon? Considering: i) that in Brazil it is the most conventional analysis and would not require farmers to do an additional more costly and complex soil analysis; and ii) carbon can be estimated from SOM.

The question is: can we allow the determination of carbon in the soil from conventional soil analyses that are already routinely done by the producer?

5- Is retroactive crediting possible? Considering farms with good soil management and annual SOM analyzes? See that paragraph on page 8: "Project activities must be implemented on land that is either cropland or grassland at the project start date (i.e., land use change is not eligible), and remains in agricultural production throughout the project crediting period."

6- Is it possible to increase the distance from the weather stations monitored continuously? The methodology speaks of 50 km distant from the project's accounting area, but in Brazil, especially in regions such as the North of the Amazon or the Central Cerrado region, the weather stations are often located at distances greater than 50 km.

7- According to the methodology, in approach 1 the direct measurements of C in the soil to feed the model must be done every 5 years or less. It also says that this direct measure can be replaced by emerging technologies. Considering this item, is it possible to replace the standard direct measurement of carbon and density with the use of Pedotransfer function (PTF)? Or Determination of soil Carbon by spectroscopic methods?