# EXPERT ASSESSMENT REPORT: IMPROVED MANAGEMENT IN PADDY RICE PRODUCTION SYSTEMS

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| Methodology Title | Improved Management in Paddy Rice Production Systems |
| Version | 1.0 |
| Sectoral Scope(s) | Sectoral scope(s) applicable to this methodology |
| Document Reviewed | VM00xx Improved Management in Paddy Rice Production Systems_OC_06Jun2024 |
| Date of Issue | 11-December-2025 |
| Expert Assessor | Prof. Dr. Andrew McDonald<br>Cornell University |
| Contact | 118 Glenside Road Ithaca, NY 14850 |

# 1 INTRODUCTION

Verra is funding and managing the development of a new VCS Methodology for Improved Management in Paddy Rice Production Systems (ID#M0253). Per section 2.1.2 of the *Methodology Development and Review Process, v4.4*, this methodology is being developed through an alternative process that has been deemed more efficient and equally robust. The alternative process included:

- Replacement of Section 3.5 Step 5: Validation/verification body assessment of methodology with review by a group of independent experts.
- Conducting the review by a group of independent experts in parallel to the public consultation

Based on their experience in the measurement and monitoring of GHG emissions in rice systems and project development for the carbon market, Verra hired Dr. Andrew McDonald (expert assessor) to provide an expert assessment of the proposed methodology. The expert assessor's assessment focused on:

1) Scientific rigor: Assessment of whether the methodology reflects the most recent scientific knowledge of GHG emissions measurement in rice production systems.
2) GHG quantification: Assessment of whether the approach for identifying GHG emissions sources, measuring and/or estimating emissions, and calculating emissions reductions is appropriate, adequate, and conservative.
3) MRV approaches: Assessment of whether the allowable MRV approaches reflect the most recent scientific understanding of best practices for monitoring, reporting and verifying GHG outcomes from improved paddy rice management practices.
4) Gap analysis: Assessment of potential gaps (e.g. lack of scientific consensus or technology readiness) that could jeopardize the methodology integrity and quality of the carbon credits.

# 2 ASSESSMENT APPROACH & FINDINGS

The expert assessor reviewed the draft methodology[1] that was published for the public consultation and provided feedback to Verra. Verra worked with the consultant hired to draft the methodology, ATOA Carbon, to prepare responses to the expert assessor findings and update the methodology accordingly. The expert assessor reviewed the responses and provided confirmation that the planned updates would address the findings. See Appendix 1 for the detailed list of expert assessment feedback received, Verra's responses and proposed updates.

[1] Draft methodology from June 11, 2024, available here: https://verra.org/wp-content/uploads/2024/06/VM00XX-Improved-Management-in-Paddy-Rice-Production-Systems_PC_06Jun2024.pdf

# 3 ASSESSMENT CONCLUSION

The expert assessor has completed the expert assessment of the draft *VM00xx Improved Management in Paddy Rice Production Systems*[2] and confirms the draft methodology, and proposed updates adhere to the criteria established.

# 4 EXPERT QUALIFICATIONS

Dr. Andrew McDonald is an Associate Professor of Global Cropping Systems in the School of Integrative Plant Science at Cornell University in Ithaca, NY, USA. He has authored or co-authored > 100 peer-reviewed scientific publications. Details of Dr. McDonald's employment and educational background is available from ORCID: https://orcid.org/0000-0002-2660-3470. His record of publications is available from Google Scholar:  https://scholar.google.com/citations?user=uRTXuCcAAAAJ&hl=en&oi=ao

# 5 SIGNATURE

Signed for and on behalf of:

Name of entity: ___Independent Consultancy________

Signature: ________________________________

Name of signatory: __Andrew McDonald_______________

Date: ___December 16, 2024_____________

[2] Draft methodology from June 11, 2024, available here: https://verra.org/wp-content/uploads/2024/06/VM00XX-Improved-Management-in-Paddy-Rice-Production-Systems_PC_06Jun2024.pdf

# APPENDIX 1 – EXPERT FEEDBACK

| Section 2 – Summary Description of the Methodology | | | |
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| # | Paragraph from Draft Methodology | Comment | Developer's Response and/or Update |
| 1 | The methodology is compatible with sustainable agriculture and has a particular focus on reducing methane (CH4) emissions from the cultivation of paddy rice. Practices that are expected to result in material declines in soil organic carbon (SOC) are not eligible under this methodology. Projects that seek credits for SOC stock increases, or that employ practices that result in material declines in SOC should use VM0042. | Is this methodology commensurately robust for estimating the impact of SOC change on methane emissions? Or is there a gap here with no appropriate standard for SOC change / organic matter management in rice? | Thank you for your comment.<br><br>This methodology adopts multiple layers to address SOC flux.<br><br>First, within the Section 4 Applicability Condition 8, we make it clear that specific practices are ineligible, as we have directional certainty that such changes could materially reduce SOC stocks. Those specifically include increased rice straw removal, decreased application of manure or compost, and introduction of new cultivars known to have a materially smaller root system than the cultivar(s) used in the baseline. This in effect creates an ex-ante requirement to ensure no such practices will be present in the project.<br><br>Second, we are developing new guidance that makes it clear that projects must monitor in an ex-post manner, any instances of such activities that took place in the project. Projects must also make an assessment of the materiality of any reduction in SOC stocks, relative to emission reductions from their project.<br><br>The specific guidance on materiality in this methodology is as follows: "Specific carbon pools and GHG sources may be deemed de minimis and need not be accounted for (i.e., value set to zero) where together the omitted decrease in carbon stocks (in carbon pools) and increase in GHG emissions (from GHG sources) amounts to less than 5% of the total GHG benefit generated by the project."<br><br>So each project will need to consult peer reviewed literature to understand potential SOC stock declines associated with the |

| Section 2 – Summary Description of the Methodology | | | |
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| | | | practices they have implemented. The projects will then need to undertake the above materiality assessment, and compare any SOC stock declines (using emission factors/data from peer reviewed literature) to the emission reductions from their project. Having conducted an extensive review of available literature, we are confident that provided the above activities are not implemented (i.e. reductions in biomass to soils) there is low risk that any short-term SOC stock reductions will be equal or greater than 5% of the significant methane (and minor additional N2O and CO2 fossil fuel) reductions generated by the project.<br><br>Following the ex-post assessment, if the project detects any instances of the prohibited activities outlined in Section 4 Applicability Condition 8, those fields will need to be removed from the project, or put through VM0042. If the assessment of SOC materiality is also not conclusive, the project will need to move to VM0042.<br><br>We feel these several layers provide a robust framework to ensure short-term reductions in SOC stocks are unlikely to occur, or would be de-minimis (within the methodology rules) or the project would move to VM0042 which has robust means to account for SOC stock changes. |
| 2 | The crediting baseline and additionality are determined via a project method. The baseline scenario assumes continuously flooded rice paddies and the continuation of historical rice cultivation practices. The management practices in the baseline scenario are determined by applying a historical look-back period to produce an annual schedule of activities (i.e., irrigation, planting, fertilization, and harvest | Is this statement discordant with the 'look back' period methodology which does not presuppose full flooding? | Thank you for your comment. The guidance in the methodology has been updated to make it clear that the historical lookback period needs to be at least 3 years of flooded rice cultivation, and thus capturing any interim periods of crop rotations. For this entire period all management data for the flooded rice cultivation seasons needs to be captured. For any intervening periods of crop rotations the only data that needs to be captured is data pertaining to pre-season water management activities, in particular the pre-season irrigation practices (as set out in the stratification guidance and IPCC emission factor for SFbsl,p. as used in Equation 18), and rice |

| Section 2 – Summary Description of the Methodology | | | |
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| | events) for each quantification unit within the project area (e.g., for each field). Each project must include activities that materially reduce soil methanogenesis (reducing CH4 emissions) and may optionally include additional practice changes that influence emissions beyond soil methanogenesis including avoided biomass burning (reducing CH4 and N2O emissions), more efficient nitrogen fertilizer usage (reducing N2O emissions), and more efficient fossil fuel usage (reducing CO2 emissions). Under this methodology, any adjustments to these optional practices (e.g., decrease in fertilizer application rate and/or fossil fuel use) must exceed 5% of the pre-existing value to qualify as a practice change. | | straw management activities (in particular the 'straw off-season' stratification criteria). |
| 3 | The crediting baseline and additionality are determined via a project method. The baseline scenario assumes continuously flooded rice paddies and the continuation of historical rice cultivation practices. The management practices in the baseline scenario are determined by applying a historical look-back period to produce an annual schedule of activities (i.e., irrigation, planting, fertilization, and harvest events) for each quantification unit within the project area (e.g., for each field). Each project must include activities that materially reduce soil | Representing an 'average' over the look-back period? | Thank you for your comment. For the quantitatively defined parameters it will be an average that is used, derived from data from at least 3 baseline historical years. For the qualitatively defined parameters, such as irrigation practices used, the project must use the most conservative of the 3 baseline years. |

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| | methanogenesis (reducing CH4 emissions) and may optionally include additional practice changes that influence emissions beyond soil methanogenesis including avoided biomass burning (reducing CH4 and N2O emissions), more efficient nitrogen fertilizer usage (reducing N2O emissions), and more efficient fossil fuel usage (reducing CO2 emissions). Under this methodology, any adjustments to these optional practices (e.g., decrease in fertilizer application rate and/or fossil fuel use) must exceed 5% of the pre-existing value to qualify as a practice change. | | |
| 4 | The crediting baseline and additionality are determined via a project method. The baseline scenario assumes continuously flooded rice paddies and the continuation of historical rice cultivation practices. The management practices in the baseline scenario are determined by applying a historical look-back period to produce an annual schedule of activities (i.e., irrigation, planting, fertilization, and harvest events) for each quantification unit within the project area (e.g., for each field). Each project must include activities that materially reduce soil methanogenesis (reducing CH4 emissions) and may optionally include additional practice changes that influence emissions beyond soil | Ensure that what constitutes a quantification unit is adequately described. | Thank you for your comment. The existing definition is consistent with the flexible guidance in VM0042. The intent is to allow the project proponent to themselves determine their most effective stratification option, including whether they adopt single stage or two stage stratification. Therefore the definition of quantification unit could be at the field level, or sample point level, or potentially at an aggregated (i.e. stratum) level. |

| Section 2 – Summary Description of the Methodology | | | |
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| | methanogenesis including avoided biomass burning (reducing CH4 and N2O emissions), more efficient nitrogen fertilizer usage (reducing N2O emissions), and more efficient fossil fuel usage (reducing CO2 emissions). Under this methodology, any adjustments to these optional practices (e.g., decrease in fertilizer application rate and/or fossil fuel use) must exceed 5% of the pre-existing value to qualify as a practice change. | | |
| 5 | The crediting baseline and additionality are determined via a project method. The baseline scenario assumes continuously flooded rice paddies and the continuation of historical rice cultivation practices. The management practices in the baseline scenario are determined by applying a historical look-back period to produce an annual schedule of activities (i.e., irrigation, planting, fertilization, and harvest events) for each quantification unit within the project area (e.g., for each field). Each project must include activities that materially reduce soil methanogenesis (reducing CH4 emissions) and may optionally include additional practice changes that influence emissions beyond soil methanogenesis including avoided biomass burning (reducing CH4 and N2O emissions), more efficient nitrogen fertilizer usage (reducing N2O | "To use this methodology…." | Thank you for your comment. The guidance has been updated to include the additional language you suggest, i.e. [T]o use this methodology, each.." |

| Section 2 – Summary Description of the Methodology | | | |
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| | emissions), and more efficient fossil fuel usage (reducing CO2 emissions). Under this methodology, any adjustments to these optional practices (e.g., decrease in fertilizer application rate and/or fossil fuel use) must exceed 5% of the pre-existing value to qualify as a practice change. | | |
| 6 | The crediting baseline and additionality are determined via a project method. The baseline scenario assumes continuously flooded rice paddies and the continuation of historical rice cultivation practices. The management practices in the baseline scenario are determined by applying a historical look-back period to produce an annual schedule of activities (i.e., irrigation, planting, fertilization, and harvest events) for each quantification unit within the project area (e.g., for each field). Each project must include activities that materially reduce soil methanogenesis (reducing CH4 emissions) and may optionally include additional practice changes that influence emissions beyond soil methanogenesis including avoided biomass burning (reducing CH4 and N2O emissions), more efficient nitrogen fertilizer usage (reducing N2O emissions), and more efficient fossil fuel usage (reducing CO2 emissions). Under this methodology, any adjustments to these optional | Not clear: pre-existing emissions level associated with the practice? | Thank you for your comment. No this specific guidance is referring to the rate/level of the given activity. Other parts of the methodology specifically refers to a 5% materiality threshold with respect to emissions. When referring to the later, the following definition is given in the methodology: "Specific carbon pools and GHG sources may be deemed de minimis and need not be accounted for (i.e., value set to zero) where together the omitted decrease in carbon stocks (in carbon pools) and increase in GHG emissions (from GHG sources) amounts to less than 5% of the total GHG benefit generated by the project." We've made updates throughout the methodology to more clearly refer to this quantitative de minimis materiality definition. With respect to a change in activity level, as opposed to emissions associated with a pool, a useful example is total nitrogen applied. If the project field applied total nitrogen at 100kg/hectare in the baseline, and wanted to be credited for a reduction in total nitrogen applied, the field would have to reduce the total nitrogen applied by at least 5kg/ha. |

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| | practices (e.g., decrease in fertilizer application rate and/or fossil fuel use) must exceed 5% of the pre-existing value to qualify as a practice change. | | |
| 7 | Reductions are quantified using multiple optional approaches, including the use of biogeochemical modeling, direct measurements of CH4 emissions, and empirical emission factors. These options differ depending on the GHG pool or source being assessed and the scale of the project. See Table 4 for a summary of allowable quantification options and section 8.1 for the details of each approach. | "Greenhouse gas emission reductions…." | Thank you for your comment. Please note that this is the terminology used by the VCS standard. The Verra editorial team/guidance indicates the use of "Reductions", short of "Greenhouse gas emission reductions. "Thanks. |
| 8 | Reductions are quantified using multiple optional approaches, including the use of biogeochemical modeling, direct measurements of CH4 emissions, and empirical emission factors. These options differ depending on the GHG pool or source being assessed and the scale of the project. See Table 4 for a summary of allowable quantification options and section 8.1 for the details of each approach. | "….using a range of acceptable approaches….." | Thank you for your comment. We edited that section to read as follows: "one or more of three eligible Quantification Approaches". |
| 9 | Reductions are quantified using multiple optional approaches, including the use of biogeochemical modeling, direct measurements of CH4 emissions, and empirical emission | "…type of GHG emissions…" | Thank you for your comment. This is standard VCS language, so will be left as is. |

| Section 2 – Summary Description of the Methodology | | | |
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| | factors. These options differ depending on the GHG pool or source being assessed and the scale of the project. See Table 4 for a summary of allowable quantification options and section 8.1 for the details of each approach. | | |

| Section 3 - Definitions | | | |
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| 10 | A system of cultivating irrigated lowland rice using controlled and intermittent irrigation cycles (i.e., single or multiple drainage events during the cultivation period). This water management technique uses much less water than the usual system of maintaining continuous standing water in the crop field (i.e., continuous flooding). A periodic drainage and re-flooding irrigation schedule is followed, and the water level must recede below -15 cm below the soil surface during the entire drainage period. | Continuous flooding is not a universal practice for lowland rice cultivation. | Thank you for your comment. The guidance in the methodology has been updated to make it clear that the historical lookback period needs to be at least 3 years of flooded rice cultivation, and thus capturing any interim periods of crop rotations. For this entire period all management data for the flooded rice cultivation seasons needs to be captured. For any intervening periods of crop rotations the only data that needs to be captured is data pertaining to pre-season water management activities, in particular the pre-season irrigation practices (as set out in the stratification guidance and IPCC emission factor for SFbsl,p. as used in Equation 18), and rice straw management activities (in particular the 'straw off-season' stratification criteria. |
| 11 | A system of cultivating irrigated lowland rice using controlled and intermittent irrigation cycles (i.e., single or multiple drainage events during the | Unclear | Thank you for your comment. The guidance with respect to defining AWD, and the depth and duration of drainage events has been replaced with the following: Each project must use persons with suitable qualifications and/or agronomic |

| Section 3 - Definitions | | | |
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| | cultivation period). This water management technique uses much less water than the usual system of maintaining continuous standing water in the crop field (i.e., continuous flooding). A periodic drainage and re-flooding irrigation schedule is followed, and the water level must recede below -15 cm below the soil surface during the entire drainage period. | | experience to develop criteria specific to each stratum and/or rice variety, with respect to the recommended depth and duration for AWD drainage events. In developing guidance for the project farmers, the given expert must take into account the critical goal of ensuring yield does not decline by more than 5% as a result of implementing the AWD activities. Where it is recommended by the given expert that a region of the project should employ AWD to a depth of less than 10cm below the soil level, the project must use Quantification Approach 2 for any such areas of the project. Note, where Quantification Approach 2 is applied, it is still necessary to ensure all project farmers are following the agronomic guidance provided by the project proponent with respect to the appropriate depth and duration of drainage specific to their stratum. With respect to timing of when AWD events are to occur, it is recommended, but not required, that farmers undertake their first AWD drainage event at least 21 days after the initial flood, to ensure the pre-flood N application has time to be absorbed and is not washed away.<br><br>Demonstrating that farmers have been provided training and agronomic guidance in the appropriate depth and duration for AWD for their given area is required. Training alone is not sufficient to demonstrate AWD was actually employed in a given project. It will be the responsibility of each project proponent to determine what data is sufficient to meet the Monitoring, Reporting and Verification requirements of the methodology, following the guidance throughout the methodology, including Box 1. It will then be the role of the VVB to determine if such MRV efforts are reasonable and sufficient to meet methodology requirements, in the given circumstances. |
| 12 | Avoided burning | Presupposes additionality? | Thank you for your comment. This section provides definitions and has no bearing on additionality. Please see the detailed guidance in Section 4 on applicability conditions, which |

| Section 3 - Definitions | | | |
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| | | | stipulates exactly which practices are eligible and which are not. Please also note that the guidance regarding additionality will be updated to reflect requirements in the new Verra Additionality Tool. |
| 13 | A type of water management in the water regime (i.e., amount and timing of water application) is fully controlled. | Important, perhaps, to distinguish between controlled irrigation and that fact that water regime is a function of several factors, not simply irrigation. | Thank you for your comment. The guidance in this section has been updated as follows: "A type of water management where the project has systems in place that allow for the project to control aspects of water regime to ensure sufficient drying periods to qualify (i.e. the project farmer is able to control the water flow, rate, duration etc.)." |
| 14 | Defined area within the project for which GHG emission reductions are estimated using the selected quantification approach. The entire project area is divided into multiple quantification units that must be demonstrated to be homogenous for the purposes of estimating reductions (i.e., similar management activities, soil type, climate). Estimates of reductions for each quantification unit within the project area are then aggregated to produce an estimate for the entire project area. Quantification units must be clearly defined in the description of the sampling design provided in the project description. | Methods for identifying homogenous units need further articulation | Thank you for your comment. Please see the guidance in Table 3 and surrounding guidance preceding and after Table 3 in Section 6, regarding stratification. |
| 15 | A type of water regime in which fields are flooded for a significant period of time and irrigation depends solely on precipitation, there is no controlled irrigation systems. | Water inputs | Thank you for your comment. For the quantitatively defined parameters it will be an average that is used, derived from data from at least 3 baseline historical years. For the qualitatively defined parameters, such as irrigation practices used, the project must use the most conservative of the 3 baseline years. |

| Section 3 - Definitions | | | |
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| 16 | Schedule of activities | Estimated for each quantification unit as an area-wide (and multi-year) average? | Thank you for your comment. The guidance in Section 6 preceding Table 3 makes it clear that the most conservative values of any given year in the 3 years of historical period must be used for the mandatory stratification criteria in Table 3. |
| 17 | A combination of rice ecosystem type (e.g., irrigated, rainfed, deep water) and flooding pattern (e.g., continuously flooded, intermittently flooded). | I would define this as a concept that characterizes the dynamics of flooding and saturated soil conditions in a rice field. | Thank you for your comment. The definition of 'water regime' has been changed to the following: "The system used to provide water inputs to the given farm." |

| Section 4 – Applicability Conditions | | | |
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| 18 | This methodology applies to improved rice cultivation practices that decrease net emissions of CH4, N2O, and/or CO2. The methodology is globally applicable. | Earlier in the document, it is stated that the baseline for fields using this methodology is "continuous flooding". Is that the case and is that the most important exclusion criteria? | Thank you for your comment. This section provides definitions and has no bearing on additionality. Please see the detailed guidance in Section 4 on applicability conditions, which stipulates exactly which practices are eligible and which are not. Please also note that the guidance regarding additionality will be updated to reflect requirements in the new Verra Additionality Tool. |
| 19 | Use of direct seeded rice (DSR) | These aren't technically irrigation management practices, but rather production strategies that *may* shift the field water regime | Thank you for your comment. If the water regime is not shifted then the project would not get any credits. In other words, our understanding is that a shift in field water regime (in the project scenario) is understood to be driven by changes in "controlled" irrigation management practices. |
| 20 | Furrow irrigation or cultivation of row rice2 | Belongs in category 1? Footnote added in error | Thank you for your comment. Please note that furrow irrigated / row rice has been removed as an eligible practice from the list in Section 4. |

| Section 4 – Applicability Conditions | | | |
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| 21 | Shortening of cultivation periods (e.g., via introduction of new cultivars) | Are yield-scaled reductions also considered in this methodology? | Thank you for your comment. Please note that Section 8.4.2 of the methodology contains extensive guidance for assessing yield declines. Essentially the section directs that the project must confirm assess any yield declines, and if such declines are present, there are options to account for associated leakage, including options to normalize such declines against regional data, to ensure the declines are specific to/caused by the project and not declines experienced by the region as a whole. |
| 22 | Avoided burning of rice residues | Residue retention can increase CH4 from soil emissions | Thank you for your comment. Yes, and biomass to soils must be accounted for accordingly, in terms of both nitrogen inputs (see Sections 8.2.4, equations 15 and 16 in particular) and CH4 impacts (see Section 8.2.5, equation 19 in particular). |
| 23 | Improvements in fossil fuel use efficiency | Reduction in fossil fuel use? | Thank you for your comment. Yes, we have made the suggested edit. |
| 24 | Improvements in nitrogen management (i.e., reduction in N-application rate and/or the use of nitrification inhibitors or slow-release N-fertilizers) | Goal should be the reduction in N surplus rather than the rate per se. | Thank you for your comment. The cited guidance has been updated to refer to 'total Nitrogen applied', as opposed to rate (as that was the intent). Please also note that in the context of avoided burning, impacts to biomass to soils must be accounted for accordingly, in terms of both nitrogen inputs (see Sections 8.2.4, equations 15 and 16 in particular) and CH4 impacts (see Section 8.2.5, equation 19 in particular). |
| 25 | Projects that introduce or implement quantitative adjustments (e.g., decrease in fertilizer application rate, decreased burning of rice straw residues, or use of fossil fuels) must exceed five percent of the pre-existing value of annual emission reductions of all fields under the project area. This emission reduction is calculated as the average value over the historical look-back period, developed for the | "...optional mitigation practices beyond water management..." | Thank you for your comment. |

| Section 4 – Applicability Conditions | | | |
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| | baseline schedule of activities (see Section 6). | | |
| 26 | Projects that introduce or implement quantitative adjustments (e.g., decrease in fertilizer application rate, decreased burning of rice straw residues, or use of fossil fuels) must exceed five percent of the pre-existing value of annual emission reductions of all fields under the project area. This emission reduction is calculated as the average value over the historical look-back period, developed for the baseline schedule of activities (see Section 6). | Sentence not clear. Must exceed 5% of existing net emissions? Or 5% of the emission reduction planned through water management? | Thank you for your comment. When referring to 'de minimis' emissions, the following definition is given in the methodology: "Specific carbon pools and GHG sources may be deemed de minimis and need not be accounted for (i.e., value set to zero) where together the omitted decrease in carbon stocks (in carbon pools) and increase in GHG emissions (from GHG sources) amounts to less than 5% of the total GHG benefit generated by the project." We've made updates throughout the methodology to more clearly refer to this quantitative de minimis materiality definition. |
| 27 | Projects that introduce or implement quantitative adjustments (e.g., decrease in fertilizer application rate, decreased burning of rice straw residues, or use of fossil fuels) must exceed five percent of the pre-existing value of annual emission reductions of all fields under the project area. This emission reduction is calculated as the average value over the historical look-back period, developed for the baseline schedule of activities (see Section 6). | Simplified language suggestion: "historical baseline." | Thank you for your comment. The language currently used is common across multiple methodologies. |
| 28 | The project rice fields are equipped with controlled irrigation and drainage facilities such that appropriate dry/flooded conditions can be established during both dry and wet | Alternative phrasing: Equipped with adequate water control so that the desired water regime for planned emissions reductions can be achieved in a targeted production field | Thank you for your comment. The guidance in the methodology has been updated as suggested, as follows: "4) The project rice fields are equipped with adequate water controls so that the desired water regime for planned emissions reductions can be achieved in a targeted |

| Section 4 – Applicability Conditions | | | |
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| | seasons (unless the practice employed to reduce CH4 emissions does not require irrigation changes (i.e., through the use of methanotrophs). | | production field dry/flooded conditions can be established during the targeted season (unless the practice employed to reduce CH4 emissions does not require irrigation changes (i.e., through the use of methanotrophs))." |
| 29 | The project rice fields are equipped with controlled irrigation and drainage facilities such that appropriate dry/flooded conditions can be established during both dry and wet seasons (unless the practice employed to reduce CH4 emissions does not require irrigation changes (i.e., through the use of methanotrophs). | Why both seasons? Better articulated as the season for which projects are targeted? | Thank you for your comment. The guidance in the methodology has been updated as suggested, as follows: "4) The project rice fields are equipped with adequate water controls so that the desired water regime for planned emissions reductions can be achieved in a targeted production field dry/flooded conditions can be established during the targeted season (unless the practice employed to reduce CH4 emissions does not require irrigation changes (i.e., through the use of methanotrophs))." |
| 30 | Project activities do not represent a change in land use. | More clearly stated as targeted fields have been in rice cultivation for at least X years? | Thank you for your comment. The guidance has been updated to encompass your suggestion, in particular to state the following "(rice must have been grown for at least one of the 3 years in the historical baseline period)". Please also note that VCS Methodology Requirements, Appendix 1, A1.2 provides further guidance regarding "land use". |
| 31 | Project activities do not represent a change in land use. | Can merge #6 and #7 into a single criteria (i.e., x years in rice)? | Thank you for your comment. This criteria is a little more onerous, in that projects must ensure show the requirement is met for at least the 10 years preceding when project activities are implemented, whereas the methodology stipulates a shorter period with respect to land use change. |
| 32 | Practices that result in material declines in SOC or the carbon input rate to soils. For example, increased rice straw removal, decreased application of manure or compost, and introduction of new cultivars known to have a materially smaller root system | Why is this excluded from the methodology? This may be the most powerful near-term method for reducing methane in many production environments where water control is minimal. | Thank you for your comment. The methodology excludes any practices that materially reduce SOC and does not provide for crediting for SOC gains. The methodology directs projects that desire to be credited for SOC gains to instead use VM0042. This methodology does not provide adequate means to sufficiently account for SOC gains, and to do so would significantly increase the complexity of the methodology, and thus projects are advised to use VM0042 for such purposes. Please note that any changes in management practices that |

| Section 4 – Applicability Conditions | | | |
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| | than the cultivar(s) used in the baseline. | | result in CH4 increases or N2O increases will be accounted for under this methodology. |
| 33 | Rice is grown under upland, rainfed, or deep-water rice production techniques. | These are fuzzy concepts. I think it's clear enough to focus, as above, on practice changes that will materially shift the field water balance and reduce emissions over the historical baseline. | Thank you for your comment. Emissions from such practices can't be effectively estimated, and for some of the cited techniques there are unlikely to be material changes in emissions resulting from the implementation of irrigation changes, therefore the practices are excluded. |
| 34 | Projects change off-season (i.e., outside of the cultivation period) management practices (e.g., crop rotations, crop types, and/or livestock management must not deviate from historical off-season management practices).3 | What is the justification? Such changes may be beneficial and would be reflected in the monitoring of contemporary baseline conditions, right? | Thank you for your comment. Fields/farms that significantly change their non-rice season practices in ways that are reasonably expected to alter the GHG flux during the rice season, will not be eligible under this methodology. Such fields could be included in a project utilizing VM0042. The rationale for excluding such scenarios, is that the methodology has been simplified such that it does not account for GHG flux associated with such practices. |

| Section 5 – Project Boundary | | | |
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| 35 | Carbon pools included in the project boundary in the baseline and monitoring periods are listed in . | Incomplete sentence | Thank you for your comment. That content has been updated to reference Table 1. |
| 36 | Aboveground and belowground non-woody biomass | Meaning that crop productivity and feedbacks to SOC are considered? | Thank you for your comment. As stated above, SOC must be modelled outside of this methodology where material declines are expected, and crop productivity is taken into consideration via Section 8.4.2. |

| Section 5 – Project Boundary | | | |
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| 37 | Practices that are expected to result in material declines in SOC are not eligible under this methodology.3 | This needs clarification. If the drainage status of the soil significantly changes away from continuous flooding, mineralization rates of SOC will increase. How are 'material declines' defined / estimated? What is the benchmark? Should the important screening concept be significant net reductions in CO2-eq emissions for project eligibility?<br><br>OK - I see the screening criteria below. **I would add this to the box in short form for clarity.** | Thank you for your comment.<br><br>This methodology adopts multiple layers to address SOC flux.<br><br>First, within the Section 4 Applicability Condition 8, we make it clear that specific practices are ineligible, as we have directional certainty that such changes could materially reduce SOC stocks. Those specifically include increased rice straw removal, decreased application of manure or compost, and introduction of new cultivars known to have a materially smaller root system than the cultivar(s) used in the baseline. This in effect creates an ex-ante requirement to ensure no such practices will be present in the project.<br><br>Second, we are developing new guidance that makes it clear that projects must monitor in an ex-post manner, any instances of such activities that took place in the project. Projects must also make an assessment of the materiality of any reduction in SOC stocks, relative to emission reductions from their project.<br><br>The specific guidance on materiality in this methodology is as follows: "Specific carbon pools and GHG sources may be deemed de minimis and need not be accounted for (i.e., value set to zero) where together the omitted decrease in carbon stocks (in carbon pools) and increase in GHG emissions (from GHG sources) amounts to less than 5% of the total GHG benefit generated by the project."<br><br>So each project will need to consult peer reviewed literature to understand potential SOC stock declines associated with the practices they have implemented. The projects will then need to undertake the above materiality assessment, and compare any SOC stock declines (using emission factors/data from peer reviewed literature) to the emission reductions from their |

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| | | | project. Having conducted an extensive review of available literature, we are confident that provided the above activities are not implemented (i.e. reductions in biomass to soils) there is low risk that any short-term SOC stock reductions will be equal or greater than 5% of the significant methane (and minor additional N2O and CO2 fossil fuel) reductions generated by the project.<br><br>Following the ex-post assessment, if the project detects any instances of the prohibited activities outlined in Section 4 Applicability Condition 8, those fields will need to be removed from the project, or put through VM0042. If the assessment of SOC materiality is also not conclusive, the project will need to move to VM0042.<br><br>We feel these several layers provide a robust framework to ensure short-term reductions in SOC stocks are unlikely to occur, or would be de-minimis (within the methodology rules) or the project would move to VM0042 which has robust means to account for SOC stock changes. |
| 39 | GHG sources included in the project boundary in the baseline and monitoring periods are listed in Table 2 below. Specific carbon pools and GHG sources may be deemed de minimis and need not be accounted for (i.e., value set to zero) where together the omitted decrease in carbon stocks (in carbon pools) and the associated increase in GHG emissions amounts to less than 5% of the total GHG benefit generated by the project. This includes sources and pools that cause project and leakage emissions. This and all subsequent references to de minimis | Reduction? | Thank you for your comment. The suggested edit has been made, as highlighted by the underlined word in this copy/pasted updated guidance: "GHG sources included in the project boundary in the baseline and monitoring periods are listed in Table 2 below. Specific carbon pools and GHG sources may be deemed de minimis and need not be accounted for (i.e., value set to zero) where together the omitted decrease in carbon stocks (in carbon pools) and increase in GHG emissions (from GHG sources) amounts to less than 5% of the total GHG reduction generated by the project. This includes sources and pools that cause project and leakage emissions. This and all subsequent references to de minimis demonstration are conducted via application of the |

| Section 5 – Project Boundary | | | |
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| | increases in emissions are determined via application of the most recent version of the CDM Tool for testing significance of GHG emissions in A/R CDM project activities. | | most recent version of the CDM Tool for testing significance of GHG emissions in A/R CDM project activities. " |
| 40 | GHG sources included in the project boundary in the baseline and monitoring periods are listed in Table 2 below. Specific carbon pools and GHG sources may be deemed de minimis and need not be accounted for (i.e., value set to zero) where together the omitted decrease in carbon stocks (in carbon pools) and the associated increase in GHG emissions amounts to less than 5% of the total GHG benefit generated by the project. This includes sources and pools that cause project and leakage emissions. This and all subsequent references to de minimis increases in emissions are determined via application of the most recent version of the CDM Tool for testing significance of GHG emissions in A/R CDM project activities. | Sentence not clear | Thank you for your comment. The sentence uses standard terminology for VCS projects, so the sentence will be well understand for proponents using the methodology. The term "leakage" refers to instances where changes in the project management activities may cause changes outside of the project. For example a reduction in yield within the project may cause the given cultivation activity to shift outside of the project, i.e. if less rice is grown in the project, then more rice may be assumed to be grown elsewhere to make up the shortly in supply. |
| 41 | GHG sources included in the project boundary in the baseline and monitoring periods are listed in Table 2 below. Specific carbon pools and GHG sources may be deemed de minimis and need not be accounted for (i.e., value set to zero) where together the omitted decrease in carbon stocks (in carbon pools) and the associated | Include link here | Thank you for your comment. Please note the additionality requirements have been updated to align with the new VCS additionality tool. |

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| | increase in GHG emissions amounts to less than 5% of the total GHG benefit generated by the project. This includes sources and pools that cause project and leakage emissions. This and all subsequent references to de minimis increases in emissions are determined via application of the most recent version of the CDM Tool for testing significance of GHG emissions in A/R CDM project activities. | | |
| 42 | S* | S* is defined as? | Thank you for your comment. Please see the definition below Table 2, repeated here "S* – Must be included where the project activity significantly increases emissions (i.e., by more than 5%) compared to the baseline scenario and may be included where the project activity reduces emissions compared to the baseline scenario. The 5% increase or reduction in GHG emissions must be calculated based on the total GHG benefit generated by the project." |
| 43 | Manure deposition | What about projects that do not change livestock management, but rather change manure management practices etc.? | Thank you for your comment. Fields/farms that significantly change their non-rice season practices in ways that are reasonably expected to alter the GHG flux during the rice season, will not be eligible under this methodology. Such fields could be included in a project utilizing VM0042. The rationale for excluding such scenarios, is that the methodology has been simplified such that it does not account for GHG flux associated with such practices. |
| 44 | Where nitrogen fertilization and/or the volume of rice straw incorporated into soils is greater in the monitoring period relative to the baseline scenario, N2O emissions must be included in the project boundary. In all projects N2O | ALT: The nitrogen returned to the soil from crop residues.... | Thank you for your comment. We have made the suggested edit. |

| Section 5 – Project Boundary | | | |
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| | attributed to changes in irrigation must be included. | | |

| Section 6 – Baseline Scenario | | | |
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| 45 | The baseline scenario is the continuation of conventional flooded rice paddy cultivation practices. For each quantification unit (e.g., for each field), baseline scenario practices are set to match the practices implemented in the historical look-back period, creating a schedule of activities. The historical look-back period must be at least three years in duration. This same schedule of activities is then used to establish project emission reductions during each monitoring period. | The "creating a schedule of activities' concept is a bit obtuse. Clearer language might be: historical management practices as defined by "look back" surveys? | Thank you for your comment. Please see Box 1 for details regarding guidance on sourcing project data - which will be repeated here in its entirely for your reference: "Box 1: Sources of qualitative and quantitative data<br><br>Sources of information for all activity/management-related variables, and parameters – relevant to the baseline – must follow the requirements detailed below.<br><br>All qualitative information on ALM practices must be determined via consultation with the farmer or landowner of the sample field during that period. Where the farmer or landowner is not able to provide qualitative information (e.g., a sample field is newly leased), the project proponent must follow the quantitative information hierarchy outlined below. The following list specifies the allowable sources of quantitative information on ALM practices in descending order of preference, as available:<br>1) Historical management records supported by one or more forms of documented evidence pertaining to the selected sample field and period $t = -1$ to $t = -3$ (e.g., management logs, receipts or invoices, farm equipment specifications, logs or files containing machine and/or sensor data) or remote sensing (e.g., satellite imagery, manned aerial vehicle footage, drone imagery), where requisite information on ALM practices can be reliably determined with these methods (e.g., irrigation |

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| | | | patterns before and during the cultivation period, the type and amount of synthetic N fertilizers and organic amendments, and the duration of the cultivation season).<br>2) Historical management plans supported by one or more forms of documented evidence pertaining to the selected sample field and period t = −1 to t = −3 (e.g., management plan, recommendations in writing solicited by the farmer or landowner from an agronomist). Where more than one value is documented in historical management plans (e.g., where a range of application rates are prescribed in written recommendations), the principle of conservativeness must be applied and the value that results in the lowest expected emissions in the baseline scenario must be selected.<br>3) A signed attestation from the farmer or landowner of the field during that period – where the attested value does not deviate significantly from other evidence-supported values for similar fields (e.g., fertilizer data from adjacent fields with the same crop, adjacent years of the same field, government data on application rates in that area, or statement from a local extension agent regarding local application rates). Digital technologies may be used to generate farmer attestations. For example, where an application is used to present information to a farmer and digitally record their acceptance of the information as accurately reflecting their cultivation practices, such a digital record is considered a farmer attestation. The validation/verification body (VVB) must determine whether the data are sufficient. In circumstances where this requirement is not met, Option 4 must be followed.<br>4) Regional (sub-national) average values derived from agricultural census data or other sources from within the 20-year period preceding the project start date or the 10 most recent iterations of the dataset, whichever is more recent. Where estimates have been disaggregated by ownership classes, those should be used. The estimates must be substantiated with a signed attestation from the farmer or |

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| | | | landowner of the sample field during that period. Examples include the USDA National Agricultural Statistics Service Quick Stats database and USDA Agricultural Resource Management Survey. This hierarchy applies to any additional quantitative inputs required by the model (Quantification Approaches 1 and 2) or default factor (Quantification Approach 3) selected. The principle of conservativeness must be applied in all cases." |
| 46 | The baseline scenario is the continuation of conventional flooded rice paddy cultivation practices. For each quantification unit (e.g., for each field), baseline scenario practices are set to match the practices implemented in the historical look-back period, creating a schedule of activities. The historical look-back period must be at least three years in duration. This same schedule of activities is then used to establish project emission reductions during each monitoring period. | This is confusing; baseline is 'flooded' but then also defined by a 'look back' which includes factors like irrigation practices. What is the objective standards for conducting the look back and deeming a project region compliant with the expected baseline standard of continuous flooding? | Thank you for your comment. Please note we have updated the guidance in Section 2 to state that although the assumption is that baseline fields employ continuously flooded fields, the guidance in Section 6 for setting baselines makes it clear that actual historical irrigation conditions must be used to set field specific baselines (including management data), as well as inform stratification for both baseline and project scenarios. |
| 47 | The baseline scenario is the continuation of conventional flooded rice paddy cultivation practices. For each quantification unit (e.g., for each field), baseline scenario practices are set to match the practices implemented in the historical look-back period, creating a schedule of activities. The historical look-back period must be at least three years in duration. This same schedule of activities is then used to establish | Is it more realistic to compare project fields against non-project fields through observational studies rather than trying to re-create the historical schedule?<br><br>In my view, the historical baseline establishes the potential emission reductions for different project interventions and proves eligibility under this standard. But every production year is different and farmers respond according. The simplest and most accurate way to assess the | Thank you for your comment. The approach taken is standard in carbon offset methodologies, and thus represents industry best practice. Please also note however, that for QA2, the practice of comparing project fields against non-project fields is employed as you describe. |

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| | project emission reductions during each monitoring period. | value of the project is against contemporary 'conventional' practices in each strata. | |
| 48 | The schedules of activities for the baseline and monitoring period must contain information on dynamic conditions, including irrigation patterns before and during the cultivation period, the type and amount of synthetic N fertilizers and organic amendments, and the duration of the cultivation season. All the data from these dynamic activities are critical and mandatory for the stratification of project areas into homogenous quantification units | Irrigation patterns or hydro-period (i.e., persistence of flooding)? | Thank you for your comment. The guidance you site has been updated as follows (see underlined section): "The schedules of activities for the baseline and monitoring period must contain information on dynamic conditions, including water regime (i.e. flooded vs drainage irrigation management practices) before and during the cultivation period, the type and amount of synthetic N fertilizers and organic amendments, and the duration of the cultivation season. All the data from these dynamic activities are critical and mandatory for the stratification of project areas into homogenous quantification units. |
| 49 | The schedules of activities for the baseline and monitoring period must contain information on dynamic conditions, including irrigation patterns before and during the cultivation period, the type and amount of synthetic N fertilizers and organic amendments, and the duration of the cultivation season. All the data from these dynamic activities are critical and mandatory for the stratification of project areas into homogenous quantification units | Need a sharp description and the methods and standards to developing 'homogenous' units? This can be very data heavy as well as subjective. Not all these factors to be considered in the look back surveys are commensurately important for emissions or mitigation strategies. | Thank you for your comment. The intent is to provide a robust, simple (cost-effective), and standardized stratification approach, and it will be the role of the independent expert verifier to determine if the given approach is reasonable in the given conditions. |
| 50 | The schedules of activities for the baseline and monitoring period must contain information on dynamic conditions, including irrigation patterns before and during the cultivation | In most settings the most important factor segregating emissions from different production fields will be differences in hydro-period (e.g., the continuity and persistence of | Thank you for your comment. Please note we have updated the guidance in Section 2 to state that although the assumption is that baseline fields employ continuously flooded fields, the guidance in Section 6 for setting baselines |

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| | period, the type and amount of synthetic N fertilizers and organic amendments, and the duration of the cultivation season. All the data from these dynamic activities are critical and mandatory for the stratification of project areas into homogenous quantification units | flooding). You seem to want to capture that here, but irrigation is not always a proxy for hydro-period. Further, the first sentence in this section suggests that the 'baseline' is full flooding. Why is 'irrigation pattern' important if full flooding is the assumption? | makes it clear that actual historical irrigation conditions must be used to set field specific baselines. |
| 51 | Static conditions (e.g., soil type and climatic zone) are required when modeling under Quantification Approach 1 and may optionally be used for stratification when using Quantification Approach 2. | Meaning of sentence is not clear. | Thank you for your comment. The guidance has been updated as follows: "For parameters listed as 'static' in Table 3, data must be provided for such parameters when using Quantification Approach 1. When using Quantification Approach 2, parameters listed as 'static' are not required, but may optionally be used to stratify the project area. " |
| 52 | Where baseline practices change materially during the historical look-back period with respect to the mandatory criteria, a separate schedule of activities must be developed for each year in the historical look-back period. In this case, project proponents must select the most conservative (lowest emissions) of the three schedules and use that for the baseline schedule of activities for the duration of the crediting period. | Historical look-backs can be very data heavy and also imprecise. Practically speaking, what are the standards for this? Including minimum number of fields as a function of total project area? | Thank you for your comment. When using QA1 or QA3 baseline data is required for every field. When using QA2, a sample based approach is prescribed. See Box 1 for guidance on sourcing project data for QA1 and QA3. See Section 9 for extensive guidance on data requirements when using QA2. |
| 53 | Where baseline practices change materially during the historical look-back period with respect to the mandatory criteria, a separate schedule of activities must be developed for each year in the | Defined what is meant by 'schedule' | Thank you for your comment. The "schedule" is defined in Table 3 which was contained in the original draft methodology you reviewed. |

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| | historical look-back period. In this case, project proponents must select the most conservative (lowest emissions) of the three schedules and use that for the baseline schedule of activities for the duration of the crediting period. | | |
| 54 | Table 3: Schedule of activities and stratification guidance | For stratification, projects must consider a full factorial combination of all the parameters marked as mandatory? | Thank you for your comment. Yes. So projects that only employ AWD, could have as few as a single stratum, but likely would have multiple due to the differing implementation of the other mandatory factors. Projects that employ both AWD and DSR would have at least 2 stratum, and likely many more, based on the mandatory criteria not pertaining to water regime. |
| 55 | Water regime – on-season | Is this used as the first screening criteria for inclusion or exclusion of different strata in the project? i.e., single or multiple drainages as baseline do not apply? It would be good to be clear on an order of operations so that project teams do not expend energy on baselining strata that cannot be included in a project. | Thank you for your comment. Please note we have updated the guidance in Section 2 to state that although the assumption is that baseline fields employ continuously flooded fields, the guidance in Section 6 for setting baselines makes it clear that actual historical irrigation conditions must be used to set field specific baselines. |
| 56 | Long drainage (>180 days) | Criteria not entirely clear. 180 with complete absence of standing water? How does this influence project activities and mitigation opportunities in the main season? | Thank you for your comment. These irrigation criteria are adapted from Table 5.12 (Updated) in Chapter 5 of the 2019 Refinement to the 2006 IPCC Guidelines for National Greenhouse Gas Inventories, and are ascribed different emission factors, indicating significantly different CH4 profiles apply to each. Whilst the IPCC does not provide an explanation of whether an absence of standing water is required, we consider that to be a reasonable interpretation of the IPCC guidance. |
| 57 | Low, medium, high organic amendment | How are these rates defined? | Thank you for your comment. Please note we have made several amendments to the guidance in this section. With respect to the categories of organic amendment, we have determined it reasonable to conflate the compost and |

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| | | | farmyard manure categories together. This decision was taken based on the associated emission factors for the two categories provided in Table 5.14 (Updated) in the 2019 Refinement to the 2006 IPCC Guidelines for National Greenhouse Gas Inventories. The farmyard manure emission factor and error range lies entirely within the error range of the compost emission factor. With respect to volumes of organic amendment, we have provided additional guidance as follows: 'No organic amendment' should be applied when there's only low volumes of rice stubble left after harvesting or burning the straw. The 'low' category should be used when high stubble is left after harvesting or some portion of straw is left after burning at the site. The 'high' category should be used when almost all straw has been left at the site (i.e. neither rice straw harvesting or burning has taken place). Further guidance is also given as follows: "If the project site is classified into two or more strata based on a type of organic amendment and/or application rates for straw amendment, the most conservative stratum (the least organic amendment rate) may be selected for all classified strata instead of setting multiple strata. However, the conservativeness of different types of organic amendments cannot be compared." Please note, we have not found any suitable source literature to define volume categories for other organic amendments. If you care to provide your guidance on the same, that would be most helpful. Please note, all of this new guidance, aside from the conflation of compost/farmyard manure, is sourced from the draft methodology developed by the Japanese Government and industry experts, entitled 'Joint Crediting Mechanism Proposed Methodology PH_PM0XX "Methane Emission Reduction by Water Management in Rice Paddy Fields"". |
| 58 | The practices assumed in the baseline scenario must be re-assessed in accordance with the requirements of | Meaning that more weight be given to current rather than 'historical' practices to ensure gains over a legitimate baseline? Here you also | Thank you for your comment. The guidance here is indicating that periodically the project must re-assess it's baseline conditions (per VCS program rules) to ensure the baseline assumptions are still valid. These requirements are set at the |

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| | the most recent version of the VCS Standard and revised, where necessary, to reflect current cultivation practices in the region. | suggest 'regional' versus field-specific values - is this a contradiction? | program level, and are thus outside of the scope for change. Please also note that we will be updating the guidance pertaining to additionality, to ensure the methodology conforms with the new VCS Additionality Tool. |

| Section 7 - Additionality | | | |
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| 59 | Identify barriers that would prevent implementation of a change in pre-existing rice cultivation practices; and | I don't see this is as an additionality concept… This may prevent project implementation due to exclusion criteria? Or require a different financing level? But if practices are not implemented, then that emerges in the monitoring period, right? And the credits would be reduced or eliminated for those fields. | Thank you for your comment. Please note the additionality requirements have been updated to reference and align with the new VCS additionality tool. This particular language will be removed as it is included in the VCS additionally tool. |
| 60 | Projects must take into account existing and forthcoming government policies or legal requirements that directly impact rice paddy production, such as restrictions on water usage or burning biomass, when analyzing regulatory surplus. | How? Meaning that if forthcoming policy changes will result in practice changes…. This is a very subjective exercise! | Thank you for your comment. Please note the additionality requirements have been updated to reference and align with the new VCS additionality tool. This particular language will be removed as it is included in the VCS additionally tool. |
| 61 | Projects must take into account existing and forthcoming government policies or legal requirements that directly impact rice paddy production, such as restrictions on water usage or burning biomass, when analyzing regulatory surplus. | Regulations are often not enforced… (e.g., biomass burning) | Thank you for your comment. Please note the additionality requirements have been updated to align with the new VCS additionality tool. This particular language will be removed as it is included in the VCS additionally tool. |

| Section 7 - Additionality | | | |
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| 62 | Step 2: Identify barriers that would prevent implementation of a change in pre-existing rice cultivation practices | This is confusing; overcoming barriers with carbon financing is clear, but points 1 and 3 appear to be functionally equivalent. Also as noted above, it's not clear to me how 'barriers' inform a discussion of additionally. And if any barriers cannot be overcome, won't this be captured in the project monitoring period viz. hectares and practices implemented? | Thank you for your comment. Please note the additionality requirements have been updated to align with the new VCS additionality tool. This particular language will be removed as it is included in the VCS additionally tool. |
| 63 | The project proponent must determine whether the proposed project activity(s) is common practice in each region included within the project spatial boundary. Evidence must be provided in the form of publicly available information contained in: | Doesn't this functionally emerge in the baseline 'look back'? | Thank you for your comment. Please note the additionality requirements have been updated to align with the new VCS additionality tool, and the reassessment of the baseline follows the guidance of the newest version of VCS Standard. |
| 64 | To demonstrate common practice, the project area must be stratified to the state or provincial level (or equivalent second-order jurisdiction) in the countries where the project is being developed. Where supporting evidence is unavailable at the state/provincial level (e.g., in developing countries), aggregated data or evidence at a national or regional level may be used with justification. Where stratification based on geopolitical boundaries is impractical (e.g., due to lack of data), other forms of stratification, such as major soil types or cropping zones, may be used with justification. The same stratification approach and data sources must be applied across the entire project to maintain the integrity | This is confusing; Table 3 lists parameters that are mandatory to consider for stratification whereas here the stratification is based on geographic boundaries. There can be a huge amount of variability within political boundaries. A representative 'site' may not exist, necessitating representative distributions of field conditions | Thank you for your comment. Please note additionality and baseline setting serve different functions. Additionality serves as an eligibility criteria, whereas baseline requirements help quantify emissions. Please note the additionality requirements have been updated to align with the new VCS additionality tool. This particular language will be removed as it is included in the VCS additionally tool. |

| Section 7 - Additionality | | | |
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| | of the common practice demonstration. Where a data source is unavailable for a subset of the project region, justification must be provided for use of a different data source. | | |
| 65 | The project proponent must also assess whether a single or suite of optional project activity(s) is common practice. For this assessment, the project proponent must show that the weighted mean adoption rate of the two (or more) optional project activities within the project spatial boundary is below 20% (see Equation (1)). Therefore, an individual activity with an existing adoption rate in the relevant region less than or equal to 20% is always considered additional. Where the adoption rate of one activity (e.g., furrow irrigation) is greater than 20%, the project must include a proportionally higher ratio of other activities with lower adoption rates (e.g., avoided burning of residues or fossil fuel use) to bring the weighted average of proposed project activities below 20%. An individual activity with an existing adoption rate greater than 20% may only be considered additional through the assessment of the weighted mean adoption rate for all project lands within that region. | When practiced by newly-adopting farmers? (e.g., not rewarding past practices) | Thank you for your comment. Yes, if an activity is deemed common practice in a given region, the project cannot be credited for any farmer that newly implements such activities in the given region. The 20% threshold is widely used within carbon offset methodologies and tools and is used in both the CDM and new VCS Additionality tools, the later of which will now be incorporated by reference within the revised additionality requirements. |

| Section 8 – Quantification of Estimated GHG Emission Reductions | | | |
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| 66 | This methodology provides a flexible approach to quantifying GHG emission reductions and carbon dioxide removals from the adoption of improved management practices in paddy rice production in the project compared to the baseline scenario. Baseline and project emissions are defined in terms of flux of CH4, N2O, and CO2 in tonnes of CO2e per unit area per monitoring period. Within each quantification unit, stock changes in each included pool and source are treated on a per unit basis. Where a monitoring period spans multiple calendar years, the equations quantify reductions by year to appropriately define vintage periods. | Obtuse language | Thank you for your comment. Please note the highlighted phrase uses language, in particular 'vintage period', common in the industry and enshrined throughout the VCS program, and therefore no changes will be made. |
| 67 | The approaches for quantifying CO2, CH4, and N2O emissions are listed in Table 4. Where more than one quantification approach is allowable for a given GHG and emission source, more than one approach may be used provided that the same approach is used for both the project and baseline scenarios. | "…any of the approved methods can be used provided…" | Thank you for your comment. The guidance was updated as follows: "any one or more of the approved methods can be used provided a given quantification unit in both the project and baseline scenarios". |
| 68 | Sub-national | Guidance on what constitutes sub-national? | Thank you for your comment. Anything disaggregated to a level below a national-level emission factor will be considered sub-national. The guidance to derive Tier 2 emission factors in the 2019 Refinement to the 2006 IPCC Guidelines for National Greenhouse Gas Inventories. |

| Section 8 – Quantification of Estimated GHG Emission Reductions | | | |
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| 69 | An acceptable model is used to estimate GHG flux based on soil characteristics, implemented rice production practices, initial SOC stocks, and climatic conditions in homogenous quantification units. All modeling must be undertaken in accordance with the requirements and procedures in VM0042 (refer to Table 8, Section 8.3) and VMD0053. Where the project involves the introduction of a new cultivar with a materially different root biomass to the cultivar(s) used in the baseline, it must be demonstrated that the model domain sufficiently covers such changes. It must also be demonstrated that the model domain sufficiently covers any potential changes in N2O flux associated with the implementation of project activities including changes in irrigation, fertilization events, and changes in biomass to soils. Projects using QA1 must take initial measures of SOC at the project start for use within the model. | What are the standards and protocols for modeling water management, under both baseline and 'new' practices? More guidance here is needed unless it is explicitly given in VM0042 etc. | Thank you for your comment. Extensive guidance is given in VM0042 and VMD0053 with respect to ensuring the model domain includes the specific activities being implemented. Ie in particular an Independent Model Expert needs to confirm the given model is able to model the specific practices being employed. In the context of the rice methodology, these specific practices would include the changes from historical flooding to drainage. |
| 70 | An acceptable model is used to estimate GHG flux based on soil characteristics, implemented rice production practices, initial SOC stocks, and climatic conditions in homogenous quantification units. All modeling must be undertaken in accordance with the requirements and procedures in VM0042 (refer to Table | Operationally, still not clear how this is identified. | Thank you for your comment. Each project has the discretion to set their own Quantification Units, and may use single or two stage stratification methods. By way of example a quantification unit may be set at the field level. In such a scenario, not all quantification units would need to be sampled. |

| Section 8 – Quantification of Estimated GHG Emission Reductions | | | |
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| | 8, Section 8.3) and VMD0053. Where the project involves the introduction of a new cultivar with a materially different root biomass to the cultivar(s) used in the baseline, it must be demonstrated that the model domain sufficiently covers such changes. It must also be demonstrated that the model domain sufficiently covers any potential changes in N2O flux associated with the implementation of project activities including changes in irrigation, fertilization events, and changes in biomass to soils. Projects using QA1 must take initial measures of SOC at the project start for use within the model. | | |
| 71 | An acceptable model is used to estimate GHG flux based on soil characteristics, implemented rice production practices, initial SOC stocks, and climatic conditions in homogenous quantification units. All modeling must be undertaken in accordance with the requirements and procedures in VM0042 (refer to Table 8, Section 8.3) and VMD0053. Where the project involves the introduction of a new cultivar with a materially different root biomass to the cultivar(s) used in the baseline, it must be demonstrated that the model domain sufficiently covers such changes. It must also be demonstrated that the model domain sufficiently covers any | 1-D water balance modeling is problematic in many rice production environments....<br><br>Reconstructed water balances can be used to constrain model performance? | Thank you for your comment. Extensive guidance is given in VM0042 and VMD0053 with respect to ensuring the model domain includes the specific activities being implemented. Ie in particular an Independent Model Expert needs to confirm the given model is able to model the specific practices being employed. In the context of the rice methodology, these specific practices would include the changes from historical flooding to drainage. |

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| | potential changes in N2O flux associated with the implementation of project activities including changes in irrigation, fertilization events, and changes in biomass to soils. Projects using QA1 must take initial measures of SOC at the project start for use within the model. | | |
| 72 | An acceptable model is used to estimate GHG flux based on soil characteristics, implemented rice production practices, initial SOC stocks, and climatic conditions in homogenous quantification units. All modeling must be undertaken in accordance with the requirements and procedures in VM0042 (refer to Table 8, Section 8.3) and VMD0053. Where the project involves the introduction of a new cultivar with a materially different root biomass to the cultivar(s) used in the baseline, it must be demonstrated that the model domain sufficiently covers such changes. It must also be demonstrated that the model domain sufficiently covers any potential changes in N2O flux associated with the implementation of project activities including changes in irrigation, fertilization events, and changes in biomass to soils. Projects using QA1 must take initial measures of SOC at the project start for use within the model. | This is would be very difficult to quantify and, further, there are important interactions with the water environment that are difficult to generalize as a fixed cultivar trait. | Thank you for your comment. It's quite common for project proponents to measure root mass, as a means to demonstrate changes to farmers. Details regarding root ball establishment may also be forthcoming from the seed provider. |

| Section 8 – Quantification of Estimated GHG Emission Reductions | | | |
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| 73 | Simplified global and national emission factors for CH4 from soils may only be used by small-scale projects. Sub-national emission factors for CH4 from soils, N2O, and CO2 from energy usage may be used by projects of any size. | Given that quantification approach 3 is likely to be most attractive and cost effective for projects to implement, this seems like loose guidance. What constitutes an acceptable level of sub-national geographic disaggregation? For example, are two sets of emission factors sufficient countries like India or China? | Thank you for your comment. Anything disaggregated to a level below a national-level emission factor will be considered sub-national. The guidance to derive Tier 2 emission factors in the 2019 Refinement to the 2006 IPCC Guidelines for National Greenhouse Gas Inventories. |
| 74 | Simplified global and national emission factors for CH4 from soils may only be used by small-scale projects. Sub-national emission factors for CH4 from soils, N2O, and CO2 from energy usage may be used by projects of any size. | This there any standard for evaluating the quality of exiting sub-national emission factors and if they are both robust and responsive to practice changes implemented by projects? | Thank you for your comment. Anything disaggregated to a level below a national-level emission factor will be considered sub-national. The guidance to derive Tier 2 emission factors in the 2019 Refinement to the 2006 IPCC Guidelines for National Greenhouse Gas Inventories. |
| 75 | Where the project involves the introduction of a new cultivar with a materially different root biomass to the cultivar(s) used in the baseline, the project must account for the changes in biomass to soil (via changes to the ROA parameter in Equation (). | ? | Thank you for your comment. The text has been updated to refer to Equation (19). |
| 76 | Under Quantification Approach 1, an acceptable model is used to estimate GHG flux based on soil characteristics, implemented rice production practices, initial SOC stocks, and climatic conditions in homogenous quantification units. All modeling must be undertaken in accordance with the requirements in VM0042 (refer to Table 8, Section 8.3) and VMD0053. | Reference these requirements | Thank you for your comment. The requirements in VM0042 are extensive, and therefore the preferred approach is to simply reference those 2 key external documents, namely VM0042 and VMD0053. |

| Section 8 – Quantification of Estimated GHG Emission Reductions | | | |
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| 77 | Project proponents should ensure their model is appropriately calibrated and validated for their given project domain, including any new cultivars, changes in N2O flux and activities such as methanotrophs and nitrification inhibitors. | What is the standard here for 'appropriately calibrated and validated'? | Thank you for your comment. Please see VMD0053 that provides guidance regarding requirements for model calibration and validation. |
| 78 | Under Quantification Approach 2, direct measurement is used to quantify flux in CH4 emissions for both baseline and project conditions. Projects must use baseline control sites linked to one or more quantification units to derive requisite data. Requirements for stratification for baseline control sites are available in Section 6, and guidance on directly measuring CH4 are outlined in Section 9.1. Flux in all other trace GHGs (such as N2O from soils, CO2 from energy usage, and combustion emissions related to avoided biomass burning) must be accounted for using the default emission factor approach. | I would think measurements would have to be taken in all quantification units? | Thank you for your comment. Each project has the discretion to set their own Quantification Units, and may use single or two stage stratification methods. By way of example a quantification unit may be set at the field level. In such a scenario, not all quantification units would need to be sampled. |
| 79 | In Quantification Approach 1, direct and indirect N2O emissions due to nitrogen inputs to soils (nitrogen fertilizers) in the baseline scenario are quantified as: | In Quantification approach #1, N2O emission from all soil processes are estimated, not just those from 'inputs'? | Thank you for your comment. Yes, VM0042 and VMD0053 requirements ensure the given model is sufficiently able to cover the given practices, including N2O emissions flux from all soil processes and not just from inputs. |
| 80 | Modeled nitrous oxide emissions from soil in the baseline scenario for quantification unit i in year t, calculated by modeling soil fluxes of | What is the guidance for accounting for variations in SOC, organic matter management, and fertilizer practices within each quantification unit? This speaks more broadly | Thank you for your comment. Please note that VM0042 and VMD0053 requirements ensure the given model is sufficiently able to cover the given practices, including N2O and CH4 emissions flux from all soil processes and not just from inputs. |

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| | nitrogen forms over the course of the preceding year (t N2O/ha) | to the methodology for delineation of these units. | Please note that the guidance in various sections ensures QA2 adequately accounts for all CH4 flux. Please note impacts to biomass to soils must be accounted for accordingly, in terms of both nitrogen inputs (see Sections 8.2.4, equations 15 and 16 in particular) and CH4 impacts (see Section 8.2.5, equation 19 in particular). |
| 81 | In Quantification Approach 3, N2O emissions due to nitrogen inputs to soils in the baseline scenario are estimated by applying Equations (8) Error! Reference source not found.–(14). | ? | Thank you for your comment. All instances of missing cross-references have been updated. |
| 82 | Where N2O emissions due to fertilizer use are included in the project boundary per Table 2, they are quantified in the baseline scenario using Equations 8)–(14). | Duplicative sentence with the previous? | Thank you for your comment. The duplicative sentence has been removed. |
| 83 | Direct N2O emissions due to fertilizer use in the baseline scenario are quantified in Equations ()–(. | Missing text | Thank you for your comment. All instances of missing cross-references have been updated. |
| 84 | N content of synthetic fertilizer type SF (t N/t fertilizer) | N content (t) per ton of fertilizer | Thank you for your comment. No changes have been made as we believe the guidance is sufficiently clear as-is. This is the standard format for such equation guidance, and has been through Verra editorial team review. |
| 85 | Mass of N-containing organic fertilizer type OF applied to quantification unit i in year t in the baseline scenario (t fertilizer) | Organic.... | Thank you for your comment. No changes have been made as we believe the guidance is sufficiently clear as-is. This is the standard format for such equation guidance, and has been through Verra editorial team review. |
| 86 | N content of organic fertilizer type OF (t N/t fertilizer) | Organic | Thank you for your comment. No changes have been made as we believe the guidance is sufficiently clear as-is. This is the |

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| | | | standard format for such equation guidance, and has been through Verra editorial team review. |
| 87 | Indirect nitrous oxide emissions produced from leaching and runoff of N, in regions where leaching and runoff occurs, due to fertilizer use in the baseline scenario in quantification unit i in year t (t CO2e) | There is not a lot of good data on indirect emission factors that are tied to different landscape contexts. Do these needs to be defined at the sub-national level? | Thank you for your comment. Either the IPCC national level emission factors can be used, or subnational emission factors developed per IPCC guidance. |
| 88 | Amount of N in rice straw (above- and belowground) returned to soils in the baseline scenario for quantification unit i in year t (t N) | What about N2O from non-rice crops? In many cropping systems (i.e., rice - wheat), the non-rice crop may generate more emissions when residues are carried forward into rice. | Thank you for your comment. As such off-season practices must remain constant, such N is not taken into account. |
| 89 | Modeled methane emissions from soil in the baseline scenario for quantification unit i in year t, calculated by modeling soil methane fluxes over the course of the preceding year (t CO2e/ha) | Make sure language and concepts are consistent. Should the relevant unit be the mean annual CH4 flux from rice, averaged over the 'look back' period? | Thank you for your comment. The guidance has been updated to refer to "in year t" for consistency. |
| 90 | Modeled methane emissions from soil in the baseline scenario for quantification unit i in year t, calculated by modeling soil methane fluxes over the course of the preceding year (t CO2e/ha) | Modelling emissions from non-rice crops in the annual rotation is beyond the scope of this standard? | Thank you for your comment. Modeling must follow the guidance in VM0042 and VMD0053, and this methodology prohibits material changes in off-season practices, therefore we confirm modeling emissions from non-rice crops is outside the scope of this methodology. |
| 91 | For projects using Quantification Approach 3, the values in Equation (17 for<br><br>$CH4\_soil$<br>$bsl,i,t$ | Sentence incomplete | Thank you for your comment. All instances of missing cross-references have been updated. |

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| | must be set using Section be calculated using Equations (18)–(. | | |
| 92 | Where amendments that reduce CH4 emissions from soils are used, project proponents may use a peer-reviewed emission factor to estimate CH4 emissions, pursuant to the guidance in Section 8.3 for Quantification Approach 3. | Emission factors from peer reviewed literature | Thank you for your comment. The suggested update has been made, namely 'a peer-reviewed emission factor' has been replaced with 'emission factors from peer reviewed literature'. |
| 93 | Once an average emission rate has been calculated for each chamber measurement, a seasonal emission factor must be calculated. The seasonal emission rate is calculated by multiplying the average emission rate for each chamber measurement with the number of hours in the measurement interval (e.g., one week = 168 hours) and accumulating the results of every measurement interval over the season. Convert from mg/m2 to kg/ha by multiplying by 0.01. A separate seasonal emission factor must be calculated for each distinct season in a double cropping system. Project proponents may optionally calculate an annual emission factor across both seasons in a double cropping system, provided the same approach is used for both seasons. Where using a single season emission factor in double cropping systems, the emission factor must only be used for the corresponding season (e.g., the | Even when second crop is not rice? | Thank you for your comment. No. This guidance has been updated to refer to a second rice season. |

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| | first season emission factor must not be used for second season rice cultivation). | | |
| 94 | Emissions resulting from monitoring period rice cultivation activities are calculated or modeled based on monitored inputs. Emissions of CO2, CH4, and N2O during the monitoring period must be quantified following the approaches found in Table 4 and using the equations provided in Section Error! Reference source not found.. For all equations, the subscript bsl must be substituted with mp to indicate that the relevant values are being calculated for the monitoring period. | Fix sentence | Thank you for your comment. All instances of missing cross-references have been updated. |
| 95 | Emissions resulting from monitoring period rice cultivation activities are calculated or modeled based on monitored inputs. Emissions of CO2, CH4, and N2O during the monitoring period must be quantified following the approaches found in Table 4 and using the equations provided in Section Error! Reference source not found.. For all equations, the subscript bsl must be substituted with mp to indicate that the relevant values are being calculated for the monitoring period. | This abbreviation ('mp') is not intuitive since both baseline and 'project' (intervention) emissions will be assessed during the monitoring period. | Thank you for your comment. No changes have been made as we believe the guidance is sufficiently clear as-is. This is the standard format for such equation guidance, and has been through Verra editorial team review. |
| 96 | Where available, a project-specific emission factor from a peer-reviewed scientific publication | Implying research within the project's area of interest? | Thank you for your comment. The methodology does not prescribe how closely the peer reviewed literature must align with the given project area. It will be left to the VVB and Verra discretion to determine how reasonable the given literature is. |

| Section 8 – Quantification of Estimated GHG Emission Reductions | | | |
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| 97 | Project Emissions from Diverting Rice Straw to Alternative End-Uses | And what about when residues are returned to the soil system? This is fully captured elsewhere in the methodology? | Thank you for your comment. This section deals with rice straw that is sent off-farm only. Rice straw returned to project soils are dealt with elsewhere, in terms of both nitrogen inputs and CH4 impacts. Please note impacts to biomass to soils must be accounted for accordingly, in terms of both nitrogen inputs (see Sections 8.2.4, equations 15 and 16 in particular) and CH4 impacts (see Section 8.2.5, equation 19 in particular). |
| 98 | Project Emissions from Diverting Rice Straw to Alternative End-Uses | To uses beyond the soil-crop system? | Thank you for your comment. Yes. Such alternative end-uses could include diverting rice straw to energy usage, to animal feed, to the manufacture of building products etc. |
| 99 | All fields that employ changes in irrigation must account for N2O emissions associated with such changes by applying an N2O correction factor, regardless of whether there are any changes in the volume of nitrogen applied. | Rate | Thank you for your comment. The suggested edit was made. |
| 100 | CFN2O | Using a single correction factor without specifically accounting for changes in the field water regime seems problematic. A single drying event will have a much different effect on N2O emission than AWD implemented across the season. | Thank you for your comment. This guidance references the relevant underlying IPCC guidance. We believe this represents best available information at present. We are most interested in your recommendations for alternatives. Thank you. |
| 101 | Where new manure, compost, or biosolids are applied in the project that were not applied in the historical look-back period, there is a risk of activity-shifting leakage. To account for this type of leakage, a deduction must be used unless any of the following apply: | Language not clear | Thank you for your comment. This is common language in offset methodologies, so we decline to make a change in this instance. The term refers to instances were changes in the project result in changes outside the project area. In particular, where rice production drops more than 5%, this is deemed to cause rice production to increase outside of the project area, and projects must account for the emissions associated with such assumed increased production outside |

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| | | | of the project area, following the guidance in Section 8.4.2. Thank you. |
| 102 | The manure, compost, or biosolids are documented to not have been used as a soil amendment. | Not clear | Thank you for your comment. This language was taken directly from VM0042, and we consider it sufficiently clear. The intent is that the given amendment was not already being used as an amendment already somewhere else. In that way the project ensures they are not simply diverting a manure supply from someone else's farm, which implied that farm would then have to source manure from elsewhere, causing leakage. |
| 103 | The deduction represents the portion of manure, compost, or biosolids carbon that remains in the project area without degrading and which would have otherwise been applied to agricultural land outside of the project area. | Not clear | Thank you for your comment. We have changed the guidance to the following: "The deduction represents the portion of manure, compost, or biosolids that were applied to soils in the project area, and which would have otherwise been applied to agricultural land outside of the project area." |
| 104 | Equation ( estimates the leakage from imported manure, compost, or biosolids that are diverted from other applications and could have led to an increase in SOC outside the project boundary in the absence of the project activity. The total amount of carbon applied is reduced to 12% based on the global manure C retention coefficient from Maillard and Angers (2014). This value reflects the fraction of manure carbon expected to remain in project area soils. While derived for manure, the equation is also conservatively applied to compost and biosolids in this methodology. | Fix sentence | Thank you for your comment. All instances of missing cross-references have been updated. |

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| 105 | Equation ( estimates the leakage from imported manure, compost, or biosolids that are diverted from other applications and could have led to an increase in SOC outside the project boundary in the absence of the project activity. The total amount of carbon applied is reduced to 12% based on the global manure C retention coefficient from Maillard and Angers (2014). This value reflects the fraction of manure carbon expected to remain in project area soils. While derived for manure, the equation is also conservatively applied to compost and biosolids in this methodology. | What if it causes a commensurate increase in SOC within the project area, negating any deleterious effect on emissions? | Thank you for your comment. The methodology prohibits material declines in SOC, but not increase. Increases in SOC are not creditable under this methodology, but are under VM0042. |
| 106 | Market leakage (LEyield) is likely to be negligible because the land remains in rice production in the monitoring period. Further, producers are unlikely to implement and maintain rice production practices that result in productivity declines, since their livelihoods depend on rice yield as a source of income. Nevertheless, to ensure leakage is not occurring, the following steps must be completed during the first monitoring period. Where material leakage is detected, the steps must be repeated each season of the project until no material yield decrease is detected. Where no material decrease in yield is detected, these steps need not be repeated until | At what scale or with what sampling strategy? | Thank you for your comment. The following guidance has been added to that section: "This analysis must be undertaken for all project fields. The sampling strategy is not prescribed." |

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| | the first monitoring period of the subsequent crediting period. | | |
| 107 | Comparing average monitoring period rice yield (excluding years with extreme weather events) during the project period to average baseline rice yield during the historical look-back period, using Equation (29). Where yield has improved, stayed constant, or declined by less than 5%, no further action is needed and LEyield, should be set to 0. Where a reduction in yield of greater than 5% is observed, complete Step 2. | A better standard would be to compare project field yields against non-project fields ('control sites') during the monitoring period. | Thank you for your comment. The approach taken is standard in carbon offset methodologies, and thus represents industry best practice. Please also note however, that for QA2, the practice of comparing project fields against non-project fields is employed as you describe. |
| 108 | For new rice paddy production techniques introduced as part of the project (e.g., DSR, nitrification inhibitors, reduced rice straw burning) that are not present in the historical look-back period, projects should use regional data sources instead of project-specific data sources, to determine historical rice yield and set Pbsl equal to RPbsl. | Why is this better than using a field or AOI-specific approach? | Thank you for your comment. Please note this guidance was sourced from VM0042 without change. We are also unclear as to why it was deemed preferable to use regional historical data, instead of project-specific historical data. Please note that VM0042 has been through multiple rounds of development and review, so we determine it best to leave the guidance as-is. We have flagged this issue for Verra's consideration and they will determine if it's best to update this guidance both within this rice methodology and VM0042. |
| 109 | Model prediction error resulting from uncertainty in model parameters or model structural errors (i.e., inaccurate representation of actual biogeochemical processes). Model prediction error is calculated using independent statistical validation datasets per the processes outlined in VMD0053. Alternatively, project proponents may account for model | Presupposes that the errors emerge from parameter rather than process uncertainty | Thank you for your comment. For all modeling guidance please see VM0042 and VMD0053 and please note that Verra is working on the improvements / refinement of such guidance, in a VM0042 v3 update. |

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| | prediction error by calibrating models to include parameter uncertainty (e.g., a Bayesian implementation of the model) and using the Monte Carlo simulation or error propagation approach detailed below. | | |
| 110 | Sampling error resulting from measuring/modeling only a portion of the project area. Estimates of sampling error are contingent on the sampling design employed by the project proponent. | What is the guidance / standards for sampling? | Thank you for your comment. For all modeling guidance please see VM0042 and VMD0053 and please note that Verra is working on the improvements / refinement of such guidance, in a VM0042 v3 update. |
| 111 | Project proponents using sub-national emission factors for projects with reductions and removals above 60 000 t CO2e per year must calculate the uncertainty associated with the given emission factors. Project proponents may derive sub-national emission factors using literature, following the guidance to derive Tier 2 emission factors in the 2019 Refinement to the 2006 IPCC Guidelines for National Greenhouse Gas Inventories. Uncertainty estimates must be derived from the source literature, or otherwise calculated in accordance with the guidance in Section 8.5. | This guidance is not clear; what is the correct 'source literature' if multiple studies on sub-national emission factors haven't been published? This is section 8.5. Which guidance is being referred to? | Thank you for your comment. The guidance in in the 2019 Refinement to the 2006 IPCC Guidelines for National Greenhouse Gas Inventories must be followed, drawing from data provided in the literature used to derive the subnational emission factor. |
| 112 | The method for calculating net reductions and removals differs depending on which quantification approaches are chosen for the project. | Easiest to refer to changes in net emissions? | Thank you for your comment. The reference to removals has been retained, as this text was confirmed as preferable by Verra, following VCS terminology/Editorial review. |

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| 113 | $\Delta CH4\_soil_{t} = \sum_{i=1}^{n} \left( CH4\_soil_{bsl,i,t} - CH4\_soil_{mp,i,t} \right) \times A_{i}$ | For the 'baseline' emissions, these are estimated from controlled sites that are observed during the monitoring period, correct? | Thank you for your comment. No. Control sites are only used for very limited purposes, including Quantification Approach 2, and when seeking an exception to requirements for cultivation season duration. |
| 114 | $\Delta CH4\_soil_{t} = \sum_{i=1}^{n} CH4\_soil_{bsl,i,t}$ | For every equation, make sure to define all variables - baseline emissions aren't here | Thank you for your comment. It is Verra standard practice to not repeat definitions in subsequent equations. |

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| | $-$ $CH4\_soil_{mp,i,t}$ $\times A_i$ | | |
| 115 | Methane reductions from avoided or reduced biomass burning are quantified as: | Potential increase in methane production when biomass is returned to the soil system is not estimated? | Thank you for your comment. Yes, it is. Please see Equation 19 for QA3. QA2 measures such emissions using chamber measurements. Such emissions are measured in QA1 following the guidance in VM0042. |

| Section 9 - Monitoring | | | |
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| 116 | Project activities are implemented during the rice cultivation season, and all monitoring parameters must be monitored during the whole year, including pre- and post rice cultivation season. | What exactly should be monitored during non-rice (or fallow) phase? Give an example. | Thank you for your comment. For any non-rice or fallow years, the only data that needs to be captured is data pertaining to pre-season water management activities, in particular the pre-season irrigation practices (as set out in the stratification guidance and IPCC emission factor for SFbsl,p. as used in Equation 18), and rice straw management activities (in particular the 'straw off-season' stratification criteria. |
| 117 | All qualitative information on ALM practices must be determined via consultation with, and substantiated | Define ALM | Thank you for your comment. ALM is defined when first used, on page 4. |

| Section 9 - Monitoring | | | |
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| | with a signed attestation from, the farmer or landowner of the sample field during that period. Where the farmer or landowner is not able to provide qualitative information (e.g., a sample field is newly leased), the project proponent must follow the quantitative information hierarchy outlined below. | | |
| 118 | Once direct measurements for CH4 are undertaken for one full season, they may be used for that same season for the duration of a 7-year crediting period, or for the first 5 years of a single 10-year crediting period. Undertaking direct measurements over multiple seasons is likely to decrease uncertainty. Whilst direct measurement data may be aggregated across an entire year to create an annual average emission factor, a seasonal emission factor from one season must not be used as the seasonal emission factor for any other season (i.e., in a rice double cropping system, direct measurements must be taken for both seasons). | Meaning of "for that same season…." Is not clear | Thank you for your comment. Note, the language has been removed. |
| 119 | Data and Parameters Available at Validation | 'Available at validation' is not clear | Thank you for your comment. This is standard VCS/industry language, so will be left as is. This text essentially is referring to data that is available at the validation stage, which is a stage that typically comes before project activities are actually implemented. |

| Section 9 - Monitoring | | | |
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| 120 | Parameters | Equation numbers are missing for most parameters | Thank you for your comment. All instances of missing cross-references have been updated. |
| 121 | Delineation of the quantification unit area may be determined using a combination of GIS coverages, ground survey data, remote imagery (satellite or aerial photographs), and other appropriate data. Any imagery or GIS datasets used must be geo-registered referencing corner points, landmarks, or other intersection points. | Area of the quantification unit (that is monitored….) or the total area that the unit represents across the project domain? | Thank you for your comment. Please see our responses to your several comments regarding quantification units. |
| 122 | The main objective of monitoring is to quantify emissions of CO2, CH4, and N2O resulting from the monitoring period during the verification period. | Typo? Practice changes? | Thank you for your comment. This is standard VCS language, so will be left as is. |
| 123 | The main objective of monitoring is to quantify emissions of CO2, CH4, and N2O resulting from the monitoring period during the verification period. | "….during the verification period when project and non-project ('control') fields are monitored." | Thank you for your comment. This is standard VCS language, so will be left as is. |

| Appendix 1 – Guidance for Digital Monitoring, Reporting and Verification | | | |
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| # | Paragraph from Draft Methodology | Comment | Developer's Response and/or Update |
| 124 | Only use publicly available RS datasets or ensure all proprietary RS data is made available to the VVB to enable them to validate/verify work undertaken. | Define WB | Thank you for your comment. This is standard VCS/industry language, so will be left as is. Please note VVB stands for Validation and Verification Body, which are the third-party independent experts used in the VCS program to undertake third-party validation and verification of projects. |