

Outcomes: BOG Emissions from Soil

IPCC Expert meeting for Technical Assessment of IPCC Inventory Guidelines:
follow-up on specified issues from the 2015 expert meetings
25-26 April 2016
Wollongong, Australia

Discussion Issues

- Mineral soils under Cropland: Carbon stock change factors
- Mineral soils under Grassland: Carbon stock change factors
- Direct N₂O Emissions from Managed Soils: Evaluation of EF₁ and options for stratification

Presentations

- Cropland and Grassland carbon stock change estimation: Experience and lesson learnt in Japan (Atsushi Sato, Japan)
- Alternative methods to estimate C balance in soils of Croplands and Grasslands (Anna Romanovskaya, Russia)
- Estimation of C stock change in mineral soils under Cropland and/or Grassland in the Tropics (Fahmuddin Agus, Indonesia)
- Tier 1b Mineral Soil C Method (Stephen Michael Ogle, USA)
- Disaggregated Direct Soil N₂O Emission Factors (Stephen Michael Ogle, USA)

Expected Outcomes

- Assessment of feasibility of other potential simpler methodology for Cropland
- Consideration of implications in all land-use categories if there is a methodology change for Cropland, and applicability of the method in other land-use categories
- Consideration of data availability to update default C stock change factors for mineral soils under Cropland and Grassland
- Evaluation of EF_1 and options for disaggregation (e.g. climate zone)

Participants

- Total 16 experts
- Co-facilitators: Fahmuddin Agus (Indonesia) and Maria Jose Sanz Sanchez (Spain)
- Rapporteur: Douglas MacDonald (Canada)

Issues	BOG conclusions	Does the issue need to be addressed in a new Methodology Report(s) to refine the 2006 IPCC Guidelines? [Yes/No]	If YES, what kind of refinements are recommended? [e.g. update or addition of defaults; elaboration of existing guidance; development of new guidance] What are available sources of data/information?
<p>Mineral soils under Cropland: Carbon stock change factors</p>	<p>Assessment of feasibility of other potential simpler methodology</p> <p>Alternative methodologies were presented and considered. Modified gains-loss or hybrid gains-loss approach. They were not more simple or less data intensive. However, they may fit better with certain national data availability and circumstances.</p> <p>This would only be considered if default factors can be developed, activity data is available and the method is verified.</p> <p>The current methodology would be retained and be an option for countries to use if it is more appropriate for their national circumstances.</p>	<p>Yes, alternative methodologies should be explored in a methodology report.</p>	<p>-This requires the development of new guidance. Development would be based on methods currently being used by countries or developed in the scientific literature.</p> <p>-Authors should consider the comparability of the existing Tier 1 method with any alternative Tier 1 methodology.</p>
	<p>Consideration of implications in all land-use categories if there is a methodology change, and applicability of the method in other land-use categories</p> <p>Changes to carbon stock change factors will have implications on land-use change categories and also other land-use categories. Elaboration on the use of higher Tier methods is required and the application of different higher Tier methods among different land-use categories.</p>	<p>Yes, these changes will have implications for other land-use categories.</p>	<p>Updates and addition of default factors is required. Factors that require exploration are the time of transition for carbon following land-use change in different ecosystems. The use of a two stage transition, as applied in the wetland supplement was discussed, and the use of different transition periods for different climates and different management practices. Special emphasis should be placed on integrating information about tropical land-use changes. Guidance should be developed to provide approaches to develop carbon stock change estimates for land-use transitions when using different Tier 1 or higher Tier methodologies for different land-use categories.</p>

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<p>Consideration of data availability to update default C stock change factors for mineral soils</p> <p>Mineral soils under Cropland: Carbon stock change factors</p>	<p>Currently the current methodology is not being used widely due to the complexity of the current guidance. It is necessary to revise this guidance.</p>	<p>Yes, there is adequate evidence to take this to a methodology report</p>	<p>There is evidence that default factors in the current guidance could be updated. In particular new defaults for tropical regions and tropical land-use change can be developed based on recent research. Other factors such as the tillage stock change factor also requires revision based on recent research.. Other factors within the current guidance should be reviewed in light of new research.</p> <p>The elaboration required to applying the present guidance would require clear instructions on applying increasing amounts of information (activity data) on soil carbon management in the present method. A guide to continuous improvement of the application of the Tier 1 methodology (prioritization of application of management factors). For example the compiler should use at least the land-use change effects, followed by addressing management and input factors.</p> <p>This should include clear guidance, as well, on how and why it is important to move to higher Tier methods.</p> <p>Links should be made between spatial representation approaches and the collection of information on soil management through mechanisms such as expert information sureys.</p>

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Mineral soils under Grassland: Carbon stock change factors	Assessment of feasibility of other potential simpler methodology	The same approach as proposed for cropland should be explored for grasslands.	Yes, this subject should be addressed in a methodology report	This requires the development of new guidance. Development would be based on methods currently being used by countries or developed in the scientific literature.
	Consideration of implications in all land-use categories if there is a methodology change, and applicability of the method in other land-use categories	The same considerations would be considered for grassland as cropland	see cropland above	see cropland above
	Consideration of data availability to update default C stock change factors for mineral soils	Grassland methodology requires the same elaboration of guidance in its application as cropland C. The majority of evidence of changes in C stock changes factors is in the cropland category, but new research should be reviewed to evaluate if similar changes could be made to grassland factors.	Yes, there is adequate evidence to take this to a methodology report	Elaborate on guidance, a step-by-step guide to continuous improvement of methodology. Review C-stock change factors, in light of recent research.

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Direct N2O Emissions from Managed Soils: Evaluation of EF1 and options for stratification	Evaluation of EF1 and options for disaggregation (e.g. climate zone)	Evidence is solid that there can be further disaggregation of these emission factors. At this point it is not possible to evaluate how far we can go in disaggregation and what factors could be considered.	Yes, there is adequate evidence to take this to a methodology report	The refinements recommended include the update of defaults with new data, and the elaboration of existing guidance, based on further disaggregation, specifically for climate factors. It is important to note that the current default non-disaggregated method would be retained. Further guidance and case examples could be included for movement to higher Tiers.

Thank you