PROJECT DEVELOPER FORUM

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To	Gajanana Hedge
From	Sven Kolmetz; Hilda Galt
Date	26 September 2018
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Subject	**Fraction of non-renewable biomass (fNRB) TOOL30**

Dear Members of the Executive Board,

The Project Developer Forum (PD Forum) is a collaborative association and collective voice of companies and practitioners that are developing and financing greenhouse gas emission reduction projects worldwide. Our members work on a global scale and evaluate opportunities to deploy climate financing and carbon market instruments to accelerate investments for greenhouse gas mitigation and sustainable development.

On 1 November 2017 the CDM Executive Board (EB) approved a new methodological tool for the 'Calculation of the fraction of non-renewable biomass' (fNRB) (Version 01.0, TOOL30). This tool proposes a new approach to calculating fNRB, and is to be used by any project that applies AMS-II.G (version 10.0) and AMS-I.E (version 10.0), including registered projects that will shortly renew their crediting period. The tool proposes a default fNRB value of 30%, far below the current list of default fNRB values approved by host country Designated National Authorities (DNAs), which range from 70 – 100%.[1] These higher default values will, however, expire latest December 2020 with many no longer valid already. If project developers choose not to apply the new default fNRB value of 30%, the alternative is to re-calculate the fNRB value for a respective project. This is a costly and time-consuming exercise requiring expertise that many project developers do not have.

Following an initial submission made to the CDM's Executive Board regarding the AMS-II.G (version 10.0) methodology, the CDM Methodologies Panel approached the PD Forum to request inputs for further simplification of the fNRB TOOL30. In this submission, we propose options to reduce uncertainty for projects seeking to apply the tool, with the aim of reducing the burden on project developers whilst maintaining environmental integrity. This is intended to provide input to the Methodologies Panel, which was requested by the CDM EB to "revise the tool to simplify its application with regard to collection of data on biomass, taking into account feedback by users (i.e. the DNAs and project participants)." The Board also noted that it "does not envisage further work on the default emission factor for non-renewable biomass that has been developed taking into account relevant guidance from the CMP."

PD Forum members strongly support the establishment of region or country-specific default fNRB values, and encourage DNAs to establish these as per paragraph 3(a) of TOOL30 or for the Methodologies Panel to do so within the tool itself. Country-specific default values help to encourage the development of CDM and voluntary carbon projects seeking to address pressure on forests through biomass use for cooking, and to significantly reduce the time, effort and costs that project developers incur in establishing and renewing these projects. Further, default values help to reduce the risk that a proposed fNRB value is not accepted and that the associated emission reductions are lower than expected at the time of making the investment decision to pursue carbon

[1] Available at https://cdm.unfccc.int/DNA/fNRB/index.html

credit certification. Removing this risk helps project developers – and their investors – to make better decisions.

We would like to stress the need for country-specific values that are in line with the methodological approach of TOOL30. The tool quotes a default fNRB value of 0.3, which we understand is derived from Bailis *et al.* (2015) *The carbon footprint of traditional woodfuels,* published in Nature Climate Change. The Bailis *et al.* (2015) study also presents country-specific fNRB values, but the methodological approach differs markedly from TOOL30 and is constrained by the need for a global study, which was therefore not able to consider all country specific data points that impact fNRB outcomes.[2] In particular, the applicability of the study is constrained by:

- The charcoal to wood conversion factor: the study assumes that 4.24 kg of wood are needed to produce 1 kg of charcoal.[3] This is much lower than the default value of 6 kg of firewood per kg of charcoal presented in TOOL30. The firewood-to-charcoal conversion efficiency in many African nations is much lower still, with as much as 8 – 10 kg of firewood needed to produce a single kg of charcoal.[4] The higher conversion efficiency assumed in the Bailis et al. (2015) paper means that the impact of using charcoal for cooking on woodfuel demand and forests is underestimated, especially in those countries that use a high portion of charcoal for cooking such as many of those on the African continent.
- The methodology used to define accessibility, both legal and physical:
    - For legal accessibility the approach assumes that all woody biomass is legally accessible apart from biomass in protected areas.[5] The authors acknowledge that this approach has only been taken because a global assessment would be too complex to consider country-specific social and political factors that affect access to resources (see footnote 2 below).
    - For physical accessibility the calculations assume that only after 24 hours of off-road travel (i.e. distance taken to travel from the nearest roads, navigable rivers, railways or settlements) is a forested area considered to be non-accessible.[6] Given that the fNRB value relates to access to fuels used for *household* cooking, it is unrealistic to assume that householders will travel anywhere close to 24 hours to collect fuelwood. Even charcoal producers will typically harvest from areas that are close to an access point, rather than travel off-road for 24 hours.
- The assumption that "woodfuel consumers manage their resources sustainably to the greatest extent possible…".[7] This does not reflect the reality of firewood gathering households, who tend to harvest the most accessible wood first without considerations of long-term forest management.
- The assumption "… that unsustainable harvesting occurs only after the sustainable supply

[2] The paper's authors, for example, acknowledge that "… there are many social and political factors [that] affect access to resources. However, these factors are highly dependent on local circumstances and cannot be included in a pan-tropical assessment of this magnitude. Thus, for a global assessment, we assume all woody biomass is legally accessible with the exception of resources found within protected areas". Source: Bailis et al. (2015) Supplementary information: The carbon footprint of traditional woodfuels. Pg 25

[3] Bailis, R.; Drigo, R.; Ghilardi, A. and Masera, O. (2015) Supplementary information: The carbon footprint of traditional woodfuels.

[4] United Nations World Food Programme (2010) Safe Access to Firewood and Alternative Energy in Kenya: An Appraisal Report (pg 22); World Bank and Africa Renewable Energy Access Program (AFREA) (2011) Wood-Based Biomass Energy Development for Sub-Saharan Africa (Section 3.2.2, pg 21); Njenga, M. et al. (2014) Additional cooking fuel supply and reduced global warming potential from recycling charcoal dust into charcoal briquette in Kenya, Journal of Cleaner Production (pg 81, pg 82); and FPAN (2011) Protecting and restoring forest carbon in tropical Africa, Chapter 6: Woodfuels and forests in tropical Africa, pg 208.

[5] Bailis, R.; Drigo, R.; Ghilardi, A. and Masera, O. (2015) Supplementary information: The carbon footprint of traditional woodfuels. Pg 25

[6] Bailis, R.; Drigo, R.; Ghilardi, A. and Masera, O. (2015) Supplementary information: The carbon footprint of traditional woodfuels. Pg 29 - 31

[7] Bailis, R.; Drigo, R.; Ghilardi, A. and Masera, O. (2015) The carbon footprint of traditional woodfuels. Nature Climate Change

in a given location has been fully exploited". [8] This is not consistent with the approach in TOOL30, which assumes that woodfuel users collect an average mix of sustainable and unsustainable biomass, making the Bailis (2015) fNRB estimates non-compatible with TOOL30.

- The assumption that there is no increase in forest biomass if harvest falls below regrowth rates. While this is true for forests in ecological equilibrium, biomass stocks increase if harvest levels drop in degraded forest areas.
- The assumption that firewood is always a by-product of agricultural land cover change, and never the other way around. This assumes that the value of biomass fuels does not influence land-use change decisions, which may be true in some locations but does not generally hold across the tropics. The opportunity for immediate revenue from biomass sales can be a major factor in land-use change decisions.

In addition to the above, the PD Forum members recommend to:

- Provide further guidance for how to determine $TI_{region/project}$ (wood consumption for non-domestic use and for non-energy applications). An option could include permitting the consideration of forest land conversion due to agriculture to contribute towards $TI_{region/project.}$ The tool includes only the extraction of wood for construction or furniture as example uses for non-energy applications, but does not provide clarity on whether agricultural forest land conversion may also be considered.
- Confirm that calculation of $MAI_{forest,i}$ and $MAI_{forest,other}$ (Mean Annual Increment of woody biomass growth) may consider forests that are both above and below 20 years of age. For example, confirming that a weighted average value for the MAI may be derived based on FAO data on Global Forest Resource Assessment and the 2006 IPCC Guidelines for National Greenhouse Gas Inventories (Chapter 4, Table 4.9). The latter includes rates of above-ground biomass growth for both age categories (i.e. above and below 20 years).
- Provide guidance for how to determine P_{forest} and P_{other} (hectares of non-accessible area within forests and other wooded land areas). Options could include:
    - Using accessibility to define 'geographically remote areas' via proximity to roads as a benchmark, such as determining that forests/other wooded lands that are beyond 2.5 km of a road can be considered non-accessible.[9] The distance could either be fixed based on the average distance travelled to collect firewood, or determined at the country level via national data and peer-reviewed studies.
    - Including a reference to define the extent of 'protected areas' in a country (e.g. https://protectedplanet.net or government publications). The Global Forest Resources Assessment (2015) quoted in paragraph 18(a) does not include data on protected areas.
- Provide other sources for determining F_{forest} (extent of forest), such as permitting the use of country's REDD+ forest reference levels submitted to the UNFCCC via https://redd.unfccc.int/submissions.html. Allowing the use of other academic studies and country data would also be welcomed.
- Defining a threshold for data vintage, which could include:
    - Allowing for the consideration of population growth to determine the number of households consuming woodfuel for thermal applications (N_{region}), recognizing that many countries have outdated population data publicly available. This would involve permitting the projection of country data to the date of establishing the

[8] Bailis, R.; Drigo, R.; Ghilardi, A. and Masera, O. (2015) The carbon footprint of traditional woodfuels. Nature Climate Change

[9] Woody biomass density increases significantly as a function of distance from the edge of a settled area (Banks et al. 1996; Heltberg et al. 2000). An example for Malawi: Jumbe & Angelsen (2011) found that distance to the source is one of the most significant determinants of fuelwood harvesting, with a mean harvesting distance of 0.85 km. The average one-way walk duration to a fuelwood source in Malawi has been found to be 0.6 hours (Bandyopadhyay et al. 2011). Assuming an average walking speed of 4 km/hr over uneven terrain, the average one-way walk distance to fuelwood source is less than 2.5 km. Forested areas beyond the harvestable distance of 2.5 km can therefore be determined to be geographically remote.

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fNRB value by considering historical population growth rates.
- Confirming the date from which country data can be considered valid for applicability to fNRB calculations. Many countries do not publish up-to-date figures, especially for data points regarding biomass and land use. Defining an 'acceptability' date helps to reduce uncertainty about the acceptability of data points. The Global Forest Resource Assessment referenced in paragraph 19(a) of the tool has a publication date of 2000, which could be used as the cut-off date for country data.

In addition – whilst not directly related to TOOL30, but certainly relevant to those CDM methodologies that apply it – PD Forum members recommend to allow for the application of the true emissions factor for woodfuel (112 tCO_2e/TJ). This is due to the fact that:

- The value of 112 tCO_2e/TJ is the internationally accepted correct emissions factor for woodfuel, as approved by the Intergovernmental Panel on Climate Change. The current value of 63.7 tCO_2e/TJ adopted in AMS-II.G (version 10.0) is reportedly "based on the global average ratio of cooking fuels (the normalized ratio of kerosene and liquified petroleum gas (LPG) excluding coal".[10] However, these two fossil fuels have no relationship to woodfuel, and in many countries – especially on the African continent where most registered cookstove CDM PoAs are located – firewood and charcoal are primarily used for cooking in the baseline, not kerosene and LPG.
- Any reduction in demand is a permanent reduction (as opposed to reforestation that can be considered temporary).
- This emission factor is already accepted by other carbon standards, including the Gold Standard and Verra's Verified Carbon Standard.

Last but certainly not the least, the fNRB value as well as the fuelwood emission factor are key elements in all methodologies that concern household energy demand (heat consumption). They have a direct impact on the emission reductions outcome of such project activities, most of which are located in less developed countries serving remote communities and households. The adoption of new conservative rules on fNRB and the fuelwood emission factor together can cut emission reduction yields by up to 70%. Considering the past and current state of the market, as well as uncertainties we see in such a market getting closer to 2020, it is crucial to realise that such overly-conservative, generic, and non-region/country specific representative values will cause financial burdens on project owners and will most likely lead to discontinuation of the project activities. This will not only reduce global efforts to mitigate climate change, but also impact the lives of hundreds of thousands of families who could gain access to better technologies through such carbon programmes.

We wish to thank the Methodologies Panel for the opportunity to provide our inputs, and hope that these are of value to future discussions.

Kind regards,

Dr. Sven Kolmetz
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Hilda Galt
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[10] AMS-II.G (version 10.0), footnote 8.