Request for revisions regarding an approved CDM methodology

We are interested in using **Methodology AMS 1.E., Version 03 – "Switch from Non-Renewable Biomass for Thermal Applications by User"** – for the following project:

- AFOVERT Energy is a small-scale project in a semi-arid, degraded district of Mali that aims to produce two types of green domestic fuel – green charcoal and compressed biomass – from a combination of rice husk and invasive aquatic *typha* weed. These fuels provide direct substitutes to the two dominant domestic fuels in the zone, namely fuelwood and charcoal. The project developer is the Malian rural energy company Katene Kadji.

While AMS.1.E., Version 03 fits the project well in most ways, there are two ways in which a methodology revision will be required for this methodology to be used as the basis for registering AFOVERT Energy as an ACR project.

Issue 1: Can the use of new fuels – compressed biomass and green charcoal, in the case of AFOVERT Energy – be considered "renewable end-user technologies"?

Text of methodology

- *"1. This category comprises activities to displace the use of non-renewable biomass by introducing renewable energy technologies. Examples of these technologies include but are not limited to biogas stoves, solar cookers, passive solar homes, renewable energy based drinking water treatment technologies (e.g. sand filters followed by solar water disinfection; water boiling using renewable biomass)."*

Requested revision of text

- Include switching to new renewable fuels such as green charcoal in existing stoves as one option under "introducing renewable enduser technologies"?

Justification for this interpretation

- While the CDM's SSC WG tentatively ruled against this interpretation of AMS-1E in September 2009 ("Clarification on the definition of "appliances" in AMS-I.E"), this ruling is problematic, as the SSC WG itself admits in their statement.
- This methodology has been used in numerous VCS registered projects that involve replacing non-renewable biomass with renewable biomass in ceramics production factories[1]. Yet these projects also involve adapting existing machinery to cope with these new fuels. These projects thus involve both new fuels and new equipment.
- By contrast, the AFOVERT Energy project uses new fuels in existing stoves. It does however involve new equipment to produce the renewable biomass fuels.
- The above is the only line of the methodology affected by the question, since the issue concerns the definition of the phrase "introducing renewable energy technologies".

Issue 2: Can the term for the "quantity of woody biomass that is substituted or displaced in Tonnes", B_y, be calculated in the following alternative manner?

Text of methodology

- *"B_y is determined by using one of the following options.*
  (a) Calculated as the product of the number of appliances multiplied by the estimate of average annual consumption of woody biomass per appliance (tonnes/year); This can be derived from historical data or estimated using survey methods; or…"

Requested revision of text

- *"B_y is determined by using one of the following options.*
  (a1) Where the project involves introducing new fuel combustion technologies, B_y will be calculated as the product of the number of appliances multiplied by the estimate of average annual consumption of woody biomass per appliance (tonnes/year); This can be derived from historical data or estimated using survey methods; or…"
  (a2) Where the project involves introducing new renewable fuels instead of new fuel combustion technologies, B_y will be calculated as a fixed percentage of the total volume (tonnes/year) of new biomass fuels sold using formula (2).

$$B_y = (\text{quantity of renewable fuel sold}) * (0.95) * (NCV_{renewable} / NCV_{conventional}) \quad \textbf{(2)}$$

Justification for this interpretation

- In the existing methodology, B_y is determined by using one of three options. Strategy A involves estimating the quantity of biomass fuel substituted, strategy B involves estimating the calorific value of this fuel, while strategy C

[1] E.g., Réunidas switching non-renewable biomass project" in Brazil (VCS registry).

is specific to the case of renewable energy-based water treatment technologies. The proposed revision would add a second option under Strategy A, one that corresponds to projects that involve using new renewable fuels rather than new fuel combustion infrastructure.

- The methodology does not provide an equation for strategy A, but recommends deriving this value from historical data or estimating it using survey methods. This approach would make sense if the project involved replacing biomass combustion technologies, but does not make sense where it involves introducing new renewable fuels.
- Fortunately, there is a simple alternative that addresses the needs of projects where the 'renewable energy technology' introduced is a renewable fuel rather than renewable combustion infrastructure. This alternative calculates the quantity of conventional biomass fuel displaced based on the quantity of renewable fuel sold, coupled with two adjustment factors. These calculations must be done separately for each different renewable fuel produced, in cases where projects produce multiple distinct renewable fuels.
- Estimating B_y based on total renewable fuels sold makes sense for two reasons.
    1. It builds on the observation that renewable fuel projects involve replacing a conventional fuel with a renewable fuel. In districts where fuel is scarce, fuels are both precious and expensive. Households are therefore highly unlikely to waste fuels, making an assumption of direct substitution plausible. In order for the assumption of high use rates to hold, several criteria must be met: the target communities must be both fuel scarce and poor, and fuels must have good performance characteristics and no clear alternative uses.
    2. It avoids what would otherwise be unmanageable data demands, if the project had no option but to directly estimate B_y. Most households in target communities will continue using non-renewable biomass fuels, since the supply of renewable fuels produced by the project will typically only partly meet local demand. Directly estimating B_y would thus require distinguishing the proportion of each household's fuel use that is met by conventional biomass from the proportion met by new renewable fuels, a value that will vary from household to household. A second reason direct estimation would impose unmanageable data demands is that households will use different stoves or combinations of stoves with different efficiency rates when consuming fuels.
- While B_y may be estimated based on the volume of renewable biomass fuels sold, such estimates must include two adjustment factors.
    - One involves assuming that some small percentage of the renewable fuels produced by the project does not in fact replace conventional biomass fuels, as a means to ensure that estimates of B_y are conservative. In contexts where the fuel scarcity criteria cited in point 1 above hold, it is conservative to assume that 95% of renewable fuels will displace non-renewable biomass fuels.
    - The other adjustment factor accounts for the difference in net calorific value between the new renewable fuels and the conventional fuels being replaced. Such adjustments are needed to raise the displacement rates of very efficient renewable fuels and to lower the replacement rates of less efficient fuels.