AMERICAN CARBON REGISTRY

AFOLU TECHNICAL COMMITTEE RECOMMENDATION

Issue Under Review:	Modifications to CDM AMS I.E, version 03, for AFOVERT Energy project in Mali
Issue Number:	2011-002
Entity Requesting Review:	Katene Kadji
Date Presented to Committee:	March 9, 2011
Date Decision Returned to ACR:	April 12, 2011
Committee Members Reviewing:	Neil Sampson (Chair), Steven De Gryze, Deborah Lawrence
Earlier Actions (if applicable):	Committee provided an initial review on March 25, 2011, approving the modification in principle but requesting certain methodology edits

Summary of Issue under Review

Katene Kadji, a Malian business with experience in the rural energy field, is implementing a project for registration on ACR called "AFOVERT Energy: Producing Renewable Household Fuels from Abundant Biomass Waste to Substitute for Non-renewable Fuels in Niono District, Mali." Katene Kadji wishes to apply CDM methodology AMS I.E, "Switch from non-renewable biomass for thermal applications by the user." ACR generally approves the use of CDM methodologies. In this case however, Katene Kadji is requesting two modifications to the methodology as indicated below. Such modifications require independent review by the AFOLU Technical Committee.

Current methodology

In its current form as approved by CDM (AMS I.E, Version 03), the methodology is essentially for a technology shift: installation of "renewable energy technologies", including but not limited to biogas stoves, solar cookers, passive solar homes, and renewable energy based drinking water treatment technologies, that reduce the consumption of non-renewable biomass. Emission reductions are calculated as:

$$ER_y = B_y * f_{NRB,y} * NCV_{biomass} * EF_{projected\_fossilfuel}$$

Where B_y is the quantity of woody biomass that is substituted or displaced (i.e. not used due to installation of the new technology); f_{NRB} is the fraction of that biomass used in the absence of the project activity that is determined to be non-renewable biomass; $NCV_{biomass}$ is a factor for the calorific value of non-renewable woody biomass; and $EF_{projected\_fossilfuel}$ is an emission factor for fossil fuels that would have to be used in lieu of non-renewable biomass to deliver the same services in the absence of the project activity (based, presumably, on the assumption that eventually non-renewable biomass will be depleted and users will have to switch to fossil fuels). The methodology provides methods for determining B_y and differentiating between renewable and non-renewable woody biomass in order to determine f_{NRB}.

Proposed modifications

Katene Kadji is requesting two modifications:

1. In lieu of a technology shift to "renewable energy technologies" such as biogas stoves, solar cookers etc., the AFOVERT project represents a fuel switch. The project will produce two types of green domestic fuel – green charcoal *briquettes* and compressed biomass *buchettes* – made from a combination of rice husk and invasive aquatic Typha weed. These are the "renewable fuels" that will substitute for the two dominant domestic fuels in the project area, fuelwood and charcoal. So rather than replace existing stoves with new and/or more efficient technologies, and reduce woody biomass consumption in that way, the project will replace non-renewable fuels (fuelwood and charcoal) with green charcoal and compressed biomass. Katene Kadji argues that the methodology is applicable to introducing new renewable fuels rather than introducing renewable energy technologies, since it would calculate emission reductions in the same way (i.e. emission reductions result from displacing the non-renewable component of woody biomass).

2. If the Committee agrees that the methodology can be applied to introducing new renewable fuels, then Katene Kadji proposes a new formula for how B_y, the quantity of woody biomass substituted or displaced, would be calculated. This formula is based simply on the quantity of the new renewable fuels sold (which Katene Kadji points out will be much easier to obtain than measuring B_y directly), with adjustments to make sure this calculation is conservative and accounts for the difference in net calorific value between the new renewable fuels and the conventional fuels being replaced.

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

Katene Kadji provides additional justification for both proposed modifications in the attached document.

First Review - Summary of Committee Review and Discussion

Issue #1 – There is no objection to the concept of using renewable fuels to replace non-renewable fuels. We think this is a reasonable modification of Methodology AMS 1.E., Version 03. It does, however, raise the issue of creating a different monitoring system, since the quantification methods will need to be different. The traditional stove-survey approach will need to be replaced with some kind of independently verifiable estimate of consumption. Even if a local scarcity of fuels is documented as part of the project's applicability requirements, there should be some monitoring to assure that the switch is actually working as proposed. (It should be noted that if there becomes a situation where more than one source of renewable fuels becomes locally available, a new quantification system would need to assure that the renewable sold by one supplier are not replacing renewables available elsewhere.

Issue #2 – The quantification formula seems reasonable with a couple of caveats:

a) The efficiency factor proposed (0.95) suggests that virtually all of the renewable fuels are used to replace traditional wood/charcoal. One reviewer feels this could be high, which suggests that the methodology needs to provide some way of testing/validating this assumption. Sale records may be inadequate as the only source of verification. The proposed project site may indeed have fuel conditions where scarcity makes substitution almost certain, but this methodology could be applied in other projects where that situation was not so clear, and where another factor might be needed. Could the proponent suggest something that might help the revised methodology be more universally applicable?

b) Does the net caloric value of the new fuel capture the energy inputs that go into its production? We are not aware of the technical details involved in creating the new fuels, but are there gathering/drying/compacting/heating/transporting processes that use energy and create emissions that would be additional to what are created in traditional fuel production and

processing? If so, or if there are different technical processes for producing renewable fuels themselves, those should be part of the calculation of net caloric values. It is not clear that the proponent has considered these. Perhaps they can clarify that.

First Review - Committee Decision and Recommendation

In general, the Technical Committee believes that the Katene Kadji proposal is reasonable, but we would recommend that they consider the issues above and help reassure ACR that these quantification issues have been fully addressed.

Second Review – Methodology Edits Requested by Committee

In response to the Committee's recommendation above, Katene Kadji made edits to AMS I.E, Version 03 as follows:

1. Added "switching to renewable fuels (e.g., compressed biomass, green charcoal) in existing stoves" as an eligible Technology/measure.
2. Incorporated a new equation (3) to calculate B_y in cases where the project involves introducing new renewable fuels instead of new appliances:

   B_y = (Quantity of renewable fuel sold) * (discount factor) * ($NCV_{renewable}$ / $NCV_{conventional}$)

3. Rather than simply specifying 0.95 as the discount factor in this equation, the methodology now requires the project proponent to justify in the PDD the selection of a discount factor. Sales records, fuel scarcity data, fuel consumption data etc. must be presented to demonstrate that virtually all of the new renewable fuel sold ends up replacing traditional biomass fuels. The maximum allowable discount factor is 0.95, and where the above conditions do not hold, a lower value must be selected that can be demonstrated to be conservative. (Committee Issue 2a.)
4. Incorporated a requirement that the term $NCV_{renewable}$ in equation (3) capture the energy inputs embodied in the production process, such as transporting feedstocks, drying, compacting, heating, and transporting final products. In cases where energy inputs can be demonstrated to be insignificant, these may be ignored. (Committee Issue 2b).
5. Added a requirement to monitor the use of renewable fuels in place of non-renewable biomass by households in the project area. Monitoring shall consist of an annual check of a representative sample of customer households in the project area. If one or more renewable fuels are already available in the area, then monitoring of fuel use must also ensure that the renewable fuels introduced by the proposed project are not replacing existing renewable fuels. (Committee Issue 1.)

Second Review - Committee Decision and Recommendation

The Technical Committee believes that the sponsor has made appropriate changes to the methodology in response to the first review comments, and we recommend that the methodology, as revised, be approved by ACR.