CDM: Response form for Request for revision of approved methodologies (version 01.1)

Date of Meth Panel meeting:	03 - 07 November 2008
Title and number of Request for revision	Request for revision of ACM0006 v6. AM_REV_0120

Summary of the query:

Please use the space below to summarize the request for revision on the related approved methodologies.

ACM0006 "Consolidated methodology for electricity generation from biomass residues" is applicable to electricity generation project activities (cogeneration or not) using biomass residues, including greenfield power plants, power capacity expansion projects, energy efficiency improvement projects and fuel switch projects. The methodology is currently applicable to 20 different scenarios.

The request for revision seeks to include a new scenario (scenario 21) to expand the applicability of the methodology to project activities that implement a new biomass residue fired cogeneration plant at a site where prior to the implementation of the project activity an existing captive cogeneration plant has been operated in the baseline case co-firing fossil fuels and biomass residues. The power generated by the project activity plant would in the absence of the project activity be generated partly in the existing captive cogeneration plant, and the balance would be purchased from the grid. The heat generated by the project activity plant would in the absence of the project activity be generated in the existing captive cogeneration plant co-firing biomass residues and fossil fuels. The biomass residues would in the absence of the project activity (a) be partly used in the cogeneration plant co-firing fossil fuels and biomass residues, (b) be partly dumped, left to decay or burnt in an uncontrolled manner, and (c) be used in other industrial processes.

The underlying project activity is the installation of a new cogeneration plant using biomass residues at an industrial facility where currently a biomass residues/fossil fuels cogeneration system operates. The project activity substitutes grid electricity currently used to meet the industrial facility demand, prevents the use of fossil fuels in the existing cogeneration plant and may displace additional grid electricity if electricity surpluses are produced and exported to the grid.

Recommendation by the Meth Panel:

(a) Please use the space below to provide amendments /changes (in your expert view, if necessary).

Not applicable.

(b) Please use the space below for providing guidance, as per Para 93 of EB25 Report, on what type of projects need to revise the PDD as a consequence of the suggested revision, if the recommendation is to revise the methodology.

Not applicable.

Answer to authors of the request for revision by the Meth Panel :

Please use the space below to provide an answer to the authors of the above query

The recommendation is not to approve the request for revision.

Calculation of emissions reductions

The procedure to calculate emissions reductions from electricity production has to be revised. The equations proposed (equations 13, 14 and 15) do not work for the general case described in scenario 21. Their rationale should be clarified.

For instance, the following numeric example can be considered:

- Biomass historically used in the existing cogeneration plant = 150,000 tonnes of bagasse @ 7.23 GJ/tonne = 1,084,500 GJ bagasse;
- Fossil fuel historically used = 30,000 tonnes of fuel oil @ 42.65 GJ/tonne = 1,279,500 GJ fuel oil;
- Historical average electrical efficiency of the existing cogeneration plant = 30%;
- Emission factor of fuel oil = 0.076 tCO2/GJ;
- Emission factor of the grid = 0.570 tCO2/MWh.

Applying those numbers, the following intermediary results are obtained:

- Historical average of electricity generation in the existing cogeneration plant = (1,084,500+1,279,500) x 30% / 3.6 = 197,000 MWh;
- Historical average emission factor of the existing cogeneration plant = (0.076 x 1,279,500)/197,000 = 0.494 tCO2/MWh.

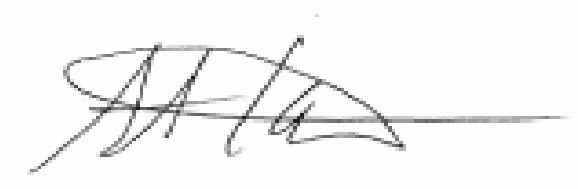
Let us consider the following cases:

- CASE 1 - $EG_{project\ plant,y}$ = 197,000 MWh and $EG_{CP,y}$ = 0 MWh, i.e. the existing cogeneration plant stops operation and the new cogeneration plant produces exactly the same electricity as the average historical production. The final emission factor (equation 13), after calculating alpha 1 and alpha 2 as per equations 14 and 15, results: $EF_{electricity,y}$ = 0.005 tCO2/MWh, and emissions reductions (using equation 8) result: $ER_{electricity,y}$ = 197,000 x 0.005 = 1,118 tCO2. This seems unreasonable as the project is fully displacing the existing cogeneration plant (197,000 x 0.494 = 97,318 tCO2);
- CASE 2 - $EG_{project\ plant,y}$ = 250,000 MWh and $EG_{CP,y}$ = 0 MWh, i.e. the existing cogeneration plant stops operation and the new cogeneration plant produces more electricity than the average historical production, exporting electricity to the grid. The final emission factor (equation 13), after calculating alpha 1 and alpha 2 as per equations 14 and 15, results: $EF_{electricity,y}$ = 0.125 tCO2/MWh, and emissions reductions (using equation 8) result: $ER_{electricity,y}$ = 250,000 x 0.125 = 31,328 tCO2. This seems unreasonable as the project is clearly displacing the existing cogeneration plant (197,000 x 0.494 = 97,318 tCO2), plus some electricity produced in the grid (0.570 x (250,000 - 197,000) = 30,210 tCO2), totalling more than 120,000 tCO2;
- CASE 3 (assuming that the existing plant can continue to operate after the implementation of the project activity, which is not clear from the request for revision) - $EG_{project\ plant,y}$ = 200,000 MWh and $EG_{CP,y}$ = 197,000 MWh, i.e. the existing cogeneration plant remains operating at the same level it used to do (and for simplification assume fossil fuels continue to be used at the same levels) and the new cogeneration plant produces electricity surplus fully exported to the grid. The final emission factor (equation 13), after calculating alpha 1 and alpha 2 as per equations 14 and 15, results: $EF_{electricity,y}$ = 0.089 tCO2/MWh, and emissions reductions (using equation 8) result: $ER_{electricity,y}$ = 200,000 x 0.089 = 17,876 tCO2. Again, a result that seems unreasonable as the project is clearly displacing grid electricity and the emissions factor of the grid is 0.570 tCO2/MWh, therefore, emissions reductions should be = 200,000 x 0.570 = 114,000 tCO2.

In any of them, the emissions reductions calculated as per the proposal seem to be unreasonable. Given the figures above, project proponents should revise their proposal.

Leakage

If leakage from diversion of biomass from other industrial uses cannot be ruled out, the request proposes to use the same leakage penalty as in the existing version of ACM0006, i.e. to apply the emission factor of the most carbon intensive fossil fuel used in the country to the amount of biomass for which leakage cannot be ruled out. It is not clear how this approach is related to, or can conservatively estimate, the leakage that results from the diversion of the biomass residues from industrial uses. The current leakage penalty in ACM0006 is only suitable to energy uses of the biomass residues, not to industrial uses.



Signature of Meth Panel Chair ……..
Date: 07/11/2008 *(Akihiro Kuroki)*

Signature of Meth Panel Vice-Chair ……..
Date: 07/11/2008 *(Philip Gwage)*

Information to be completed by the secretariat	
F-CDM-AM	AM_REV_0120
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