CDM – SSC WG

Twenty-second meeting
Report
Annex 2
III.AG./Version 01
Sectoral Scope: 01
EB 50

Indicative simplified baseline and monitoring methodologies
for selected small-scale CDM project activity categories

TYPE III - OTHER PROJECT ACTIVITIES

Project participants shall take into account the general guidance to the methodologies, information on additionality, abbreviations and general guidance on leakage provided at: <http://cdm.unfccc.int/methodologies/SSCmethodologies/approved.html>.

III.AG. Switching from high carbon intensive grid electricity to low carbon intensive fossil fuel

Technology/measure

1.   This methodology comprises switch from a carbon intensive energy source (or mix of energy sources) to a single low carbon intensive energy source in existing industrial, residential, commercial, and institutional or electricity generation applications. This methodology is applicable only if the sole energy source or one of the energy sources in the baseline is high carbon intensive grid electricity (e.g., switch from a diesel based captive electricity generation complemented by a grid electricity import to a natural gas based captive electricity generation)[1].

2.   Energy source switch may be in a single element process or may include several element processes within the facility[2]. Multiple fossil fuels switching in an element process is not covered under this methodology; however project proponents may explore applying AMS-III.AH.

3.   This methodology is applicable for retrofit or replacement of existing installations. Cases involving Greenfield projects and capacity additions[3] are not eligible under this methodology.

4.   Switching of energy sources may also result in energy efficiency improvements of the facility, thus both the project activities with or without energy efficiency improvements are eligible under this category. Project activities for implementation of energy efficiency measures not-related to the switch of energy sources shall apply Type II SSC methodologies.

5.   This methodology is not applicable to project activities that propose switch from fossil fuel use in the baseline to renewable biomass, biofuel or renewable energy in the project scenario. This methodology is not applicable to project activities utilising waste gas or energy; these project activities may consider applying AMS-III.Q.

6.   This category is applicable to project activities where it is possible to directly measure and record the energy use/output (e.g., electricity or heat) and consumption (e.g., fossil fuel) within the project boundary.

7.   Electricity or heat produced under the project activity shall be for on-site captive use and/or export to other facilities included in the project boundary. In case energy produced by the

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[1] Cases involving shift to low intensive grid electricity may be submitted through the request for revision process.

[2] An "*element process*" is defined as fuel combustion, energy conversion or energy use in single equipment. Each element process generates a single output (such as steam or electricity) by using a single energy source. This methodology covers switch of energy sources in several element processes, i.e., project participants may submit one CDM-PDD for fuel switch in several element processes within a facility.

[3] i.e., the project capacity is within +10 % and -10% of the baseline installed capacity.

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III.AG./Version 01
Sectoral Scope: 01
EB 50

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III.AG. Switching from high carbon intensive grid electricity to low carbon intensive fossil fuel (cont)

project activity is delivered to another facility, or facilities, within the project boundary, a contract between the supplier and consumer(s) of the energy will have to be entered into specifying that only the facility generating the energy can claim emission reductions from the energy displacement.

8.   Export of electricity to a grid is not eligible under this category. That is, the project activity may physically connect to a grid but emission reduction can not be claimed by exporting electricity to the grid.

9.   Measures are limited to those that result in emission reductions of less than or equal to 60 kt CO_2 equivalent annually.

10.   The project activity does not result in integrated process change. The purpose is to exclude measures that affect other characteristics of the process besides switch of energy sources e.g., operational conditions, type of raw material processed, use of non-energy additives, change in type or quality of products manufactured etc.

Boundary

11.   The project boundary is the physical, geographical site where the fossil fuel switching takes place, and all installations affected by the switching.

12.   All power plants connected physically to the baseline grid as defined in "Tool to calculate emission factor for an electricity system" shall be included in the project boundary.

Baseline

13.   Historical information (detailed records) on the use of energy sources (e.g., electricity, fossil fuel) and the plant output (e.g., steam or electricity) in the baseline captive energy generation plant from at least 3 years prior to project implementation shall be used in the baseline calculations, e.g., information on coal use and heat output by a district heating plant, liquid fuel oil use and electricity generated by a generating unit (records of fuel used and output can be used *in lieu* of actual collecting baseline validation data[4]). For facilities that are less than 3 years old, all historical data shall be available (a minimum of one year data would be required). In case of project activity exporting to other facilities included in the project boundary, the above historical information from the recipient plants are required.

14.   Baseline emissions shall be determined as follows:

$$BE_y = EF_{BL} * Q_{PJ,y} \tag{1}$$

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[4] In the case of coal, the emission coefficient shall be based on test results for periodic samples of the coal purchased if such tests are part of the normal practice for coal purchases.

CDM – SSC WG   Twenty-second meeting
                                                                              Report
                                                                             Annex 2
                                                                    III.AG./Version 01
                                                                    Sectoral Scope: 01
                                                                                 EB 50

Indicative simplified baseline and monitoring methodologies
for selected small-scale CDM project activity categories

III.AG. Switching from high carbon intensive grid electricity to low carbon intensive fossil fuel (cont)

Where:

BE_y Baseline emissions in the project activity in year y (tCO$_2$)

EF_{BL} Emission factor for the baseline situation (e.g., tCO$_2$/MWh)

$Q_{PJ,y}$ Net energy output in the project activity in year y (e.g., MWh)

15.   The emission factor in the baseline situation for captive plants ($EF_{BL,captive}$) is the coefficient for the fossil fuel used in the baseline expressed as emissions per unit of output (e.g., t CO$_2$e/MWh).

$$EF_{BL,catpive} = \frac{(FC_{BL,captive} * NCV_{FF} * EF_{FF,CO2})}{Q_{BL,catpive}} \qquad \textbf{(2)}$$

Where:

$FC_{BL,captive}$ Amount of fuel consumed for captive energy generation in the baseline situation in accordance with paragraph 13 (mass or volume unit) (mass or volume unit)

$EF_{FF,CO2}$ CO$_2$ emission factor for the baseline fossil fuel[5] (tCO$_2$/TJ)

NCV_{FF} Net calorific value for the baseline fossil fuel (TJ/ mass or volume unit)[5]

$Q_{BL,catpive}$ Net energy output in the baseline situation during the corresponding period of time for which the total fuel consumption was taken, in accordance with paragraph 13 (MWh)

16.   In case of project activities displacing grid electricity, the minimum of the emission factors for the sources of electricity used in the baseline situation (captive and grid) shall be used:

$$EF_{BL} = Min\,(EF_{BL,captive}, EF_{BL,grid}) \qquad \textbf{(3)}$$

Where:

$EF_{BL,captive}$ Emission factor for electricity generation in captive power plants in the baseline situation (tCO$_2$/MWh)

$EF_{BL,grid}$ Emission factor for grid electricity in the baseline situation (tCO$_2$/MWh)

17.   Emission factor for captive electricity generation (EF$_{BL,captive}$) can be calculated as per the procedures described in the latest version of "Tool to calculate baseline, project and/or leakage emissions from electricity consumption".

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[5] Reliable local or national data for the emission factor and NCV shall be used; IPCC default values should be used only when country or project specific data are not available or difficult to obtain.

CDM – SSC WG

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III.AG./Version 01
Sectoral Scope: 01
EB 50

Indicative simplified baseline and monitoring methodologies
for selected small-scale CDM project activity categories

*III.AG. Switching from high carbon intensive grid electricity to low carbon intensive fossil fuel
(cont)*

18. The baseline grid emission factor ($EF_{BL,grid}$) shall be estimated based on the procedures described under AMS-I.D. This determination will be made once at the validation stage based on an *ex ante* assessment, once again at the start of each subsequent crediting period (if applicable). BM and CM will be estimated *ex post*, as described in "Tool to calculate emission factor for an electricity system".

Project Activity Emissions

19. Project activity emissions consist of those emissions related with the use of fossil fuel after the fuel switch. Project emissions are determined as follows:

$$PE_y = FC_{PJ,y} * EF_{FF,CO2} * NCV_{FF}$$ **(4)**

Where:

PE_y	Project emissions in the project activity in year y (tCO$_2$e)
$FC_{PJ,y}$	Amount of fossil fuel consumed for captive energy generation in the project activity in year y (mass or volume unit)
$EF_{FF,CO2}$	CO$_2$ emission factor for fossil fuel (tCO$_2$/TJ)[5]
NCV_{FF}	Net calorific value for the fossil fuel (TJ/mass or volume unit)[5]

Leakage

20. If the energy generating equipment is transferred from another activity, leakage is to be considered.

Emission Reductions

21. The emission reduction achieved by the project activity will be calculated as the difference between the baseline emissions and the project emissions.

$$ER_y = BE_y - PE_y - LE_y$$ **(5)**

Where:

ER_y Emission reductions in the year y (tCO$_2$e)

22. For the determination of the emission factor net calorific value of fossil fuel, guidance by the most recent version of IPCC Guidelines for National Greenhouse Gas Inventories shall be followed where appropriate. Project participants may either conduct measurements or they may use accurate and reliable local or national data where available. In the case of coal, the data shall be based on test results for periodic samples of the coal purchased if such tests are part of the normal practice for coal purchases. Where such data is not available, IPCC default emission factors (country-specific, if available) may be used if they are deemed to reasonably represent local

CDM – SSC WG

Twenty-second meeting
Report
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III.AG./Version 01
Sectoral Scope: 01
EB 50

Indicative simplified baseline and monitoring methodologies
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III.AG. Switching from high carbon intensive grid electricity to low carbon intensive fossil fuel (cont)

circumstances. All values shall be chosen in a conservative manner (i.e., lower values should be chosen within a plausible range) and the choice shall be justified and documented in the SSC-CDM-PDD. Where measurements are undertaken, project participants shall document the measurement results and the calculated average values of the emission factor or the net calorific value for the baseline fuel *ex ante* in the SSC-CDM-PDD.

Monitoring

23.　　Monitoring shall include:

(a)　　Monitoring of the fossil fuel use (FC_y) and output after the project activity has been implemented ($Q_{PJ,y}$) - e.g., gas use and heat output by a district heating plant, gas use and electricity generated by a generating unit[6];

(b)　　Monitoring related to the determination of grid emission factor shall take place as per the "Tool to calculate emission factor for an electricity system";

(c)　　For electricity or steam energy exported to other facilities, monitoring of the use of electricity and thermal energy shall be undertaken in the recipient end.

(d)　　In the case of steam energy, direct measurement of flow, temperature, pressure is required to determine enthalpy of the steam.

Project activity under a programme of activities

The following conditions apply for use of this methodology in a project activity under a programme of activities:

24.　　Leakage emissions resulting from fuel extraction, processing, liquefaction, transportation, re-gasification and distribution of fossil fuels outside of the project boundary shall be considered, as per the guidance provided in the leakage section of ACM0009. In case leakage emissions in the baseline situation are higher than leakage emissions in the project situation, leakage emissions will be set to zero.

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History of the document

Version	Date	Nature of revision
01	EB 50, Annex # 16 October 2009	To be considered at EB 50.
Decision Class: Regulatory **Document Type**: Standard **Business Function**: Methodology		

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[6] The necessary data are probably readily available, but may need to be organized into appropriate records and be supported by receipts for fuel purchases.