



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.B. Switching fossil fuels

Technology/measure

1. This methodology comprises fossil fuel switching in industrial, residential, commercial, institutional or electricity generation applications¹ (e.g., fuel switch from fuel oil to natural gas in an existing captive electricity generation or replacement of a fuel oil boiler by a natural gas boiler).

2. Fuel switch may be in a single element process or may include several element processes² within the facility³. Multiple fossil fuel switching in an element process however is not covered under this methodology.

3. ~~Retrofit or replacement of existing installations are eligible under this methodology.~~ This methodology is applicable for new facilities as well as for retrofit or replacement of existing installations.

4. Fuel switching may also result in energy efficiency improvements. If the project activity primarily aims at reducing emissions through fuel switching, it falls into this methodology. If fuel switching is part of a project activity focussed primarily on energy efficiency, the project activity falls under a Type II methodology ~~AMS-II.D or II.E.~~

5. ~~New facilities (Greenfield projects) and project activities involving capacity additions compared to the baseline scenario are only eligible to apply this methodology if they comply with the requirements in the General Guidance for SSC methodologies⁴ concerning these topics. In addition the requirements for demonstration of the remaining lifetime of the equipment replaced as described in the general guidance shall be followed.~~ New facilities (Greenfield projects) and project activities involving capacity additions compared to the baseline scenario are only eligible if they comply with the related and relevant requirements in the General Guidance for SSC methodologies⁵. The requirements concerning demonstration of the remaining lifetime of the replaced equipment shall be met as described in the General Guidance for SSC methodologies. If

¹ Fuel switch in transportation technologies is not eligible under this methodology.

² An “*element process*” is defined as fuel combustion, energy conversion or energy use in a single equipment. Each element process generates a single output (such as electricity, steam, hot air) 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 For example Fuel oil was used in one boiler and Coal in another boiler in the baseline. The project plant used only natural gas in the boilers i.e., the project plant does not use more than one fuel in one equipment.

⁴ Refer to: “General guidance to Indicative simplified baseline and monitoring methodologies for selected small-scale CDM project activity categories”.

⁵ Refer to: “General guidance to Indicative simplified baseline and monitoring methodologies for selected small-scale CDM project activity categories”.



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III.B. Switching fossil fuels (cont)

the remaining lifetime of the affected systems increases due to the project activity, the crediting period shall be limited to the estimated remaining lifetime, i.e. the time when the affected systems would have been replaced in the absence of the project activity

6. 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. A relevant Type I methodology shall be used for such project activities that generate renewable energy displacing fossil fuel use. This methodology is also not applicable to project activities involving the use of waste gas; these project activities might be eligible under AMS-III.Q.

7. The facility may involve grid connected elemental processes however this methodology does not cover emission reductions on account of shift from use of grid electricity.

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

9. Heat or electricity 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 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.

10. Regulations do not constrain the facility from using the energy sources cited in paragraph 1 before or after the fuel switch. Regulations do not require the use of low carbon energy source (e.g., natural gas or any other fuel) in the element processes.

11. 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.

12. Measures are limited to those that result in emission reductions of less than or equal to 60 kt CO₂ equivalent annually.

Boundary

13. The project boundary is the physical, geographical site where the fossil-fuel-switching of energy source takes place and. It includes all installations, processes or equipment affected by the switching. The boundary also extends to the industrial, commercial or residential facilities consuming energy generated by the system.

Baseline

14. In case of existing facilities historical information (detailed records) on the use of fossil fuels and the plant output (e.g., heat or electricity) in the baseline captive energy generation plant



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III.B. Switching fossil fuels (cont)

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 data⁶). For facilities that are less than 3 years old, all historical data shall be available (a minimum of one year data would be required).

15. The emission baseline is the current emissions of the facility expressed as emissions per unit of output. Baseline emissions shall be determined as follows:

$$BE_y = EF_{BSL} * Q_{PJ,y} \quad (1)$$

Where:

BE_y Baseline emissions in the project activity in year y (tCO₂e)

EF_{BSL} Emission factor for the baseline situation (tCO₂/MWh)

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

16. The net energy output in the project activity ($Q_{PJ,y}$) is limited to the installed capacity in the baseline situation, unless it has been demonstrated in accordance with paragraph 4 that the new installation (Greenfield project) or the added capacity has the same baseline scenario.

17. The emission factor in the baseline situation (EF_{BSL}) is the coefficient for the fossil fuel used in the baseline expressed as emissions per unit of output (e.g., kg CO₂e/kWh).

$$EF_{BSL} = \sum_{i,j} FC_{i,j,BL,y} * NCV_j * EF_{CO_2,j} / Q_{BSL,j} \quad (2)$$

Where:

EF_{BSL} Emission factor for the baseline situation (tCO₂/MWh)

$FC_{i,j,BL,y}$ Amount of fuel j consumed by the element process i during the year y operating at the baseline energy scenario (mass or volume unit)

NCV_j Net calorific value of the fuel type j (kJ/unit)

$EF_{CO_2,j}$ CO₂ emission factor of the fuel type j (tCO₂/kJ)

$Q_{BSL,j}$ Net energy generated in the element process j in the baseline situation during the corresponding period of time for which the total fuel consumption was taken, in accordance with paragraph 14 (MWh)

18. For the emission factor ($EF_{CO_2,i}$) and the net calorific value (NCV_i) of the fuels used, guidance by the 2006 IPCC Guidelines for National Greenhouse Gas Inventories shall be followed where appropriate. Project participants may either conduct measurements or they may use

⁶ 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.



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III.B. Switching fossil fuels (cont)

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 circumstances. All values shall be chosen in a conservative manner (i.e., lower values for the baseline and higher values for the project 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 net calorific value, either for the *ex ante* investment analysis and efficiency determination, or for the *ex post* determination of the baseline and project emissions.

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:

$$PE_y = FC_y * EF_{CO_2} * NCV \quad (3)$$

Where:

PE_y Project emissions in the project activity in year y (tCO₂e)

FC_y Amount of fossil fuel consumed for captive energy generation in the project activity in year y (mass or volume unit)

EF_{CO_2} CO₂ emission factor for fossil fuel (tCO₂/TJ)⁵

NCV Net calorific value for the fossil fuel (TJ/mass or volume unit)⁵

Leakage

20. No leakage calculation is required.

Emission Reductions

Monitoring

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

$$ER_y = BE_y - PE_y \quad (4)$$

Where:

ER_y Emission reductions in the year y (tCO₂e)

Monitoring

22. Monitoring shall include:



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III.B. Switching fossil fuels (cont)

- (a) Monitoring of the fossil fuel use (FC_y) and output of element process i 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 unit⁷;
- (b) For electricity/thermal energy exported to other facilities, monitoring of the use of electricity and thermal energy shall be undertaken in the recipient end.

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:

23. 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.

⁷The necessary data are probably readily available, but may need to be organized into appropriate records and be supported by receipts for fuel purchases.



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III.B. Switching fossil fuels (cont)

History of the document *

Version	Date	Nature of revision
14	EB 47, Annex 23 28 May 2009	Broaden the applicability, for example, to cases involving multiple elemental processes using different fuels in the baseline shifting to single fuel use in the project; reference to combined tool for the selection of baseline scenario.
13	EB 41, Annex 18 02 August 2008	The applicability condition is expanded to new facilities and guidance on treatment of capacity expansions is included.
12	EB 35, Annex 33 19 October 2007	A Paragraph is added under technology/measures to provide clarity that the methodology is not applicable to project activities that generate renewable energy displacing fossil fuel use.
11	EB 33, Annex 30 27 July 2007	Revision of the approved small-scale methodology AMS-III.B to allow for its application under a programme of activities (PoA).
10	EB 28, Meeting Report, Para. 54 15 December 2006	Removed the interim applicability condition i.e., 25 ktCO ₂ e/yr limit from all Type III categories.
09	EB 25, Annex 31 21 July 2006	Introduce the limit of 15 kilo tonnes of CO ₂ equivalent as annual project activity direct emissions.
08	EB 24, Meeting Report, Para, 64 12 May 2006	Introduced the interim applicability condition i.e., 25ktCO ₂ e/yr limit for all Type III categories.

* This document, together with the 'General Guidance' and all other approved SSC methodologies, was part of a single document entitled: Appendix B of the Simplified Modalities and Procedures for Small-Scale CDM project activities until version 07.

History of the document: Appendix B of the Simplified Modalities and Procedures for Small-Scale CDM project activities

Appendix B of the Simplified Modalities and Procedures for Small-Scale CDM project activities contained both the General Guidance and Approved Methodologies until version 07. After version 07 the document was divided into separate documents: 'General Guidance' and separate approved small-scale methodologies (AMS).		
Version	Date	Nature of revision
07	EB 22, Para. 59 25 November 2005	References to "non-renewable biomass" in Appendix B deleted.
06	EB 21, Annex 22 20 September 2005	Guidance on consideration of non-renewable biomass in Type I methodologies, thermal equivalence of Type II GWhe limits included.
05	EB 18, Annex 6 25 February 2005	Guidance on 'capacity addition' and 'cofiring' in Type I methodologies and monitoring of methane in AMS-III.D included.
04	EB 16, Annex 2 22 October 2004	AMS-II.F was adopted, leakage due to equipment transfer was included in all Type I and Type II methodologies.
03	EB 14, Annex 2 30 June 2004	New methodology AMS-III.E was adopted.
02	EB 12, Annex 2 28 November 2003	Definition of build margin included in AMS-I.D, minor revisions to AMS-I.A, AMS-III.D, AMS-II.E.
01	EB 7, Annex 6 21 January 2003	Initial adoption. The Board at its seventh meeting noted the adoption by the Conference of the Parties (COP), by its decision 21/CP.8, of simplified modalities and procedures for small-scale CDM project activities (SSC M&P).