

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

**TYPE I - RENEWABLE ENERGY PROJECTS**

*Note: Categories I.A, I.B and I.C involve renewable energy technologies that supply electricity, mechanical and thermal energy, respectively, to the user directly. Renewable energy technologies that supply electricity to a grid fall into category I.D.*

Follow the link for [General guidance](#) / [Abbreviations](#) / [Full version of appendix B](#)

***I.D. Renewable electricity generation for a grid***

**Technology/measure**

23. This category comprises renewables, such as photovoltaics, hydro, tidal/wave, wind, geothermal, and biomass, that supply electricity to an electricity distribution system that is or would have been supplied by at least one fossil fuel or non-renewable biomass fired generating unit.
24. If the unit added has both renewable and non-renewable components (e.g. a wind/diesel unit), the eligibility limit of 15MW for a small-scale CDM project activity applies only to the renewable component. If the unit added co-fires [non-]renewable biomass and fossil fuel, the capacity of the entire unit shall not exceed the limit of 15MW.
25. Biomass combined heat and power (co-generation) systems that supply electricity to a grid are included in this category. To qualify under this category, the sum of all forms of energy output shall not exceed 45 MW<sub>thermal</sub>. E.g., for a biomass based co-generating system the rating for the primary boiler shall not exceed 45 MW<sub>thermal</sub>.

**Boundary**

26. The project boundary encompasses the physical, geographical site of the renewable generation source.

**Baseline**

27. In the case of landfill gas, waste gas, wastewater treatment and agro-industries projects, recovered methane emissions are eligible under category III.D. If the recovered methane is used for electricity generation the baseline shall be calculated in accordance with paragraph 28 or 29 below. If the recovered methane is used for heat generation it is eligible under category I.C.
28. For a system where all fossil fuel fired generating units use fuel oil or diesel fuel, the baseline is the annual kWh generated by the renewable unit times an emission coefficient for a modern diesel generating unit of the relevant capacity operating at optimal load as given in Table I.D.1.

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I.D. Renewable electricity generation for a grid (Cont.)

**Table I.D.1**  
**Emission factors for diesel generator systems (in kg CO<sub>2</sub>equ/kWh\*) for three different levels of load factor\*\***

Cases:	Mini-grid with 24 hour service	i) Mini-grid with temporary service (4-6 hr/day) ii) Productive applications iii) Water pumps	Mini-grid with storage
Load factors [%]	25%	50%	100%
<15 kW	2.4	1.4	1.2
>=15 <35 kW	1.9	1.3	1.1
>=35 <135 kW	1.3	1.0	1.0
>=135 <200 kW	0.9	0.8	0.8
> 200 kW***	0.8	0.8	0.8

\*) A conversion factor of 3.2 kg CO<sub>2</sub> per kg of diesel has been used (following revised 1996 IPCC Guidelines for National Greenhouse Gas Inventories)

\*\*) Figures are derived from fuel curves in the online manual of RETScreen International's PV 2000 model, downloadable from <http://retscreen.net/>

\*\*\* default values

29. For all other systems, the baseline is the kWh produced by the renewable generating unit multiplied by an emission coefficient (measured in kg CO<sub>2</sub>equ/kWh) calculated in a transparent and conservative manner as:

- (a) The average of the “approximate operating margin” and the “build margin”, where:
  - (i) The “approximate operating margin” is the weighted average emissions (in kg CO<sub>2</sub>equ/kWh) of all generating sources serving the system, excluding hydro, geothermal, wind, low-cost biomass, nuclear and solar generation;
  - (ii) The “build margin” is the weighted average emissions (in kg CO<sub>2</sub>equ/kWh) of recent capacity additions to the system, which capacity additions are defined as the greater (in MWh) of most recent<sup>3</sup> 20%<sup>4</sup> of existing plants or the 5 most recent plants.”;

OR,

- (b) The weighted average emissions (in kg CO<sub>2</sub>equ/kWh) of the current generation mix.

<sup>3</sup> Generation data available for the most recent year.

<sup>4</sup> If 20% falls on part capacity of a plant, that plant is included in the calculation.

## Appendix B of the simplified modalities and procedures for small-scale CDM project activities

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#### *I.D. Renewable electricity generation for a grid (Cont.)*

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##### **Leakage**

30. If the renewable energy technology is equipment transferred from another activity, leakage calculation is required.

##### **Monitoring**

31. Monitoring shall consist of metering the electricity generated by the renewable technology. In the case of co-fired plants, the amount of biomass input and its energy content shall be monitored.

## **Appendix B<sup>13</sup> of the simplified modalities and procedures for small-scale CDM project activities**

### **INDICATIVE SIMPLIFIED BASELINE AND MONITORING METHODOLOGIES FOR SELECTED SMALL-SCALE CDM PROJECT ACTIVITY CATEGORIES**

#### **B. General guidance**

91. This appendix contains indicative simplified baseline and monitoring methodologies for selected small-scale CDM project activity categories, including recommendations for determining the project boundary, leakage, baseline and monitoring.

92. In accordance with paragraphs 15 and 16 of the simplified modalities and procedures for small-scale CDM project activities (annex II to decision 21/CP.8 contained in document FCCC/CP/2002/7/Add.3), project participants involved in small-scale CDM project activities may propose changes to the simplified baseline and monitoring methodologies specified in this appendix or propose additional project categories for consideration by the Executive Board. Project participants willing to submit a new small-scale project activity category or revisions to a methodology shall make a request in writing to the Board providing information about the technology/activity and proposals on how a simplified baseline and monitoring methodology would be applied to this category. The Board may draw on expertise, as appropriate, in considering new project activity categories and/or revisions of and amendments to simplified methodologies. The Executive Board shall expeditiously, if possible at its next meeting, review the proposed methodology. Once approved, the Executive Board shall amend appendix B.

93. In accordance with paragraph 28 of the simplified modalities and procedures for small-scale CDM project activities, a simplified baseline and monitoring methodology listed in this appendix may be used for a small-scale CDM project activity if project participants are able to demonstrate to a designated operational entity that the project activity would otherwise not be implemented due to the existence of one or more barrier(s) listed in attachment A of this appendix.

94. The appendix reflects the following guidance regarding equipment performance, project boundary, biomass projects, leakage and use of Intergovernmental Panel on Climate Change (IPCC) default values for emission coefficients.

95. Equipment performance: To determine equipment performance, project participants shall use:

- (a) The appropriate value specified in appendix B;
- (b) If the value specified in sub-paragraph (a) is not available, the national standard for the performance of the equipment type (project participants shall identify the standard used);
- (c) If the value specified in sub-paragraph (b) is not available, an international standard for the performance of the equipment type, such as International Organization for Standardization (ISO) and International Electrotechnical Commission (IEC) standards (project participants shall identify the standard used);
- (d) If a value specified in sub-paragraph (c) is not available, the manufacturer's specifications provided that they are tested and certified by national or international certifiers.

96. Project participants have the option of using performance data from test results conducted by an independent entity for equipment installed under the project activity.

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<sup>13</sup> This appendix has been developed in accordance with the simplified modalities and procedures for small-scale CDM project activities (contained in annex II to decision 21/CP.8, see document FCCC/CP/2002/7/Add.3) and it constitutes appendix B to that document. For the full text of the annex II to decision 21/CP.8 please see reference/documents section on UNFCCC CDM web site <http://unfccc.int/cdm> ).

97. Project boundary: The project boundary shall be limited to the physical project activity. Project activities that displace energy supplied by external sources shall earn certified emission reductions (CERs) for the emission reductions associated with the reduced supply of energy by those external sources.

98. Biomass projects: In the case of project activities using biomass, leakage shall be considered.

99. In the cases where leakage is to be considered, it shall be considered only within the boundaries of non-Annex I Parties.

100. In the case of project participants using IPCC default values for emission coefficients, these shall be the most up-to-date values available in the “IPCC Good Practice and Guidance and Uncertainty Management in National Greenhouse Gas Inventories” and the “Revised 1996 IPCC Guidelines for National Greenhouse Gas Inventories”. A link providing more updated information on IPCC default values for emission coefficients is available on the page for small-scale CDM project activities on the UNFCCC CDM web site: <http://unfccc.int/cdm/ssc.htm>.

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**Attachment A to Appendix B**

1. Project participants shall provide an explanation to show that the project activity would not have occurred anyway due to at least one of the following barriers:

- (a) Investment barrier: a financially more viable alternative to the project activity would have led to higher emissions;
- (b) Technological barrier: a less technologically advanced alternative to the project activity involves lower risks due to the performance uncertainty or low market share of the new technology adopted for the project activity and so would have led to higher emissions;
- (c) Barrier due to prevailing practice: prevailing practice or existing regulatory or policy requirements would have led to implementation of a technology with higher emissions;
- (d) Other barriers: without the project activity, for another specific reason identified by the project participant, such as institutional barriers or limited information, managerial resources, organizational capacity, financial resources, or capacity to absorb new technologies, emissions would have been higher.

## Appendix B of the simplified modalities and procedures for small-scale CDM project activities

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#### Attachment B to Appendix B

#### ACRONYMS, ABBREVIATIONS AND UNITS OF MEASURE

<i>Acronyms and abbreviations</i>	
EB	Executive Board
EE	Energy efficiency
CER	Certified emission reduction
CO <sub>2</sub>	Carbon dioxide
BAU	Business as usual
ESCO	Energy service company
GHG	Greenhouse gas
IEC	International Electrotechnical Commission
IPCC	Intergovernmental Panel on Climate Change
ISO	International Organization for Standardization
PV	Photovoltaic
T&D	Transmission and distribution
<i>Units of measure</i>	
h	Hour
d	Day
y	Year
k	Kilo (10 <sup>3</sup> )
M	Mega (10 <sup>6</sup> )
G	Giga (10 <sup>9</sup> )
T	Tera (10 <sup>12</sup> )
g	Gramme
W	Watt
m	Metre
J	Joule