

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 [Full version of appendix B \(http://cdm.unfccc.int/Projects/pac/ssclistmeth.pdf\)](http://cdm.unfccc.int/Projects/pac/ssclistmeth.pdf) to find [General guidance](#) / [Abbreviations](#)

**I.D. 'Grid connected renewable electricity generation'**

**Technology/measure**

1. This category comprises renewable energy generation units, such as photovoltaics, hydro, tidal/wave, wind, geothermal, and renewable biomass, that supply electricity to and/or displace electricity from an electricity distribution system that is or would have been supplied by at least one fossil fuel or non-renewable biomass<sup>6</sup> fired generating unit.
2. 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<sup>7</sup> or fossil fuel, the capacity of the entire unit shall not exceed the limit of 15MW.
3. Biomass combined heat and power (co-generation) systems that supply electricity to and/or displace electricity from 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 all the boilers combined shall not exceed 45 MW<sub>thermal</sub>.

**Boundary**

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

**Baseline**

5. 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 paragraphs 6 or 7 below. If the recovered methane is used for heat generation it is eligible under category I.C.
6. For a system where all generators use exclusively fuel oil and/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.

<sup>6</sup> The Board agreed, at its twenty-first meeting, to delete the references to "non-renewable biomass" in Appendix B. This deletion shall become effective after the twenty-second meeting (23-25 November 2005) of the Board. Please refer to <<http://cdm.unfccc.int/EB/Meetings>>.

<sup>7</sup> The Board agreed, at its twenty-first meeting, to delete the references to "non-renewable biomass" in Appendix B. This deletion shall become effective after the twenty-second meeting (23-25 November 2005) of the Board. Please refer to <<http://cdm.unfccc.int/EB/Meetings>>.

## Appendix B 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

#### *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)<br>ii) Productive applications<br>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

7. 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>8</sup> 20%<sup>9</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>8</sup> Generation data available for the most recent year.

<sup>9</sup> If 20% falls on part capacity of a plant, that plant is included in the calculation.

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

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#### **Leakage**

8. If the energy generating equipment is transferred from another activity or if the existing equipment is transferred to another activity, leakage is to be considered.

#### **Monitoring**

9. Monitoring shall consist of metering the electricity generated by the renewable technology. In the case of co-fired plants, the amount of biomass and fossil fuel input shall be monitored.