CLEAN DEVELOPMENT MECHANISM

**CDM-EB103-A05**

# Draft Small-scale Methodology

# AMS-I.A.: Electricity generation by the user

Version 17.0

Sectoral scope(s): 01

**United Nations**
Framework Convention on
Climate Change

**TABLE OF CONTENTS** **Page**

# 1. Introduction

1. The following table describes the key elements of the methodology:

**Table 1. Methodology key elements**

| | |
|---|---|
| **Typical project(s)** | Renewable electricity generation by individual households/users or groups of households/users. |
| **Type of GHG emissions mitigation action** | Renewable energy.<br>Displacement of more-GHG-intensive, non-renewable electricity applications by introducing renewable energy technologies |

# 2. Scope, applicability, and entry into force

## 2.1. Scope

2. This category comprises renewable electricity generation units, such as solar photovoltaic, hydro, wind~~,~~ and renewable biomass that supply electricity to individual households/users or groups of households/users ~~included in the project boundary~~.

## 2.2. Applicability

3. The methodology is applicable to project activities that involve new installations (greenfield) or replace existing onsite fossil-fuel-fired generation.

4. The applicability of the methodology is limited to individual households and users that do not have a grid connection except when:

(a) A group of households or users are supplied with electricity through a standalone mini-grid powered by renewable energy generation unit(s) where the capacity of the generating units does not exceed 15 MW (i.e. the sum of installed capacities of all renewable energy ~~generators~~ units connected to the mini-grid is less than 15 MW) e.g. a community-based stand-alone off-the-grid renewable electricity systems; or

(b) For renewable energy-based lighting applications, the emission reductions per system is less than 5 tonnes of $CO_2e$ a year and it shall be demonstrated that that fossil fuels would have been used in the absence of the project activity by:

(i) A representative sample survey of target households; or

(ii) Official statistics from the host country government agencies;

(c) A group of households or users are connected to a grid prior to the start date of the project activity (or the start date of validation with due justification), however the electricity from the grid is available for the households and users for less than 36 hours in any given calendar month during the crediting period or the grid connected household coverage in the host country is less than 50%. ~~If based on actual monitoring it can be demonstrated that during a specific month the~~ power

~~supply from the grid to the households and users is for less than 36 hours, emission reductions can be calculated for that specific month~~.

5. The methodology is not applicable ~~in cases where, the~~ to project ~~activity~~ ~~plant, which supplies electricity to this category of users, is~~ activities that include units that will be connected to the grid at any time during the crediting period.

6. Hydro power plants with reservoirs that satisfy at least one of the following conditions are eligible to apply this methodology:

   (a) The project activity is implemented in an existing reservoir with no change in the volume of reservoir;

   (b) The project activity is implemented in an existing reservoir, where the volume of reservoir is increased and the power density of the project activity~~, as per definitions given in the project emissions section,~~ is greater than 4 W/m$^2$;

   (c) The project activity results in new reservoirs and the power density of the power plant~~, as per definitions given in the project emissions section~~, is greater than 4 W/m$^2$.

7. Combined heat and power (cogeneration) systems are not eligible under this category.

8. If the electricity generation unit added has both renewable and non-renewable components (e.g. a wind/diesel unit), the eligibility limit of 15 MW for a small-scale CDM project activity applies only to the renewable component. If the unit added co-fires fossil fuel, the capacity of the entire unit shall not exceed the limit of 15 MW.

9. Project activities that involve retrofit or replacement of an existing ~~facility~~ ~~for~~ renewable ~~energy~~ electricity generation unit are included in this category. To qualify as a small-scale project, the total output of the modified or retrofitted unit shall not exceed the limit of 15 MW.

10. In the case of project activities that involve the addition of renewable ~~energy~~electricity generation units ~~at~~to an existing renewable ~~power~~electricity generation facility, the ~~added~~total capacity of the units added by the project should be lower than 15 MW and should be physically distinct[1] from the existing units.

11. In cases where the project activity utilizes biomass, the applicability conditions of "TOOL16: Project and leakage emissions from biomass" shall apply.

## 2.3. Entry into force

12. The date of entry into force is the date of the publication of the EB 103 meeting report on 14 June 2019.

[1] Physically distinct units are those that are capable of generating electricity without the operation of existing units, and that do not directly affect the mechanical, thermal, or electrical characteristics of the existing facility. For example, the replacement of the nacelle assembly or blades of a wind battery charger would not be considered "physically distinct".

### 2.4. Applicability of sectoral scopes

13. For validation and verification of CDM projects and programme of activities by a designated operational entity (DOE) using this methodology, application of sectoral scope 1 is mandatory.

## 3. Normative references

14. Project participants shall apply the ~~general guidelines to small-scale (SSC) clean development mechanism (CDM) methodologies~~General guidelines for SSC CDM methodologies, ~~general guidance on leakage in biomass project activities (attachment C to Appendix B)~~TOOL22: Leakage in biomass small-scale project activities and ~~the "Guidelines on the demonstrating of additionality of SSC project activities"~~TOOL21: Demonstration of additionality of small-scale project activities provided at <http://cdm.unfccc.int/Reference/Guidclarif/index.html#meth> mutatis mutandis.

15. This methodology also refers to the latest approved versions of the following approved methodologies and tools:

    (a) "ACM0002: Consolidated baseline methodology for grid-connected electricity generation from renewable sources";

    ~~(b) "AM0042 Grid-connected electricity generation using biomass from newly developed dedicated plantations";~~

    (c) "AMS-I.D.: Grid connected renewable electricity generation";

    (d) "AMS-I.F.: Renewable electricity generation for captive use and mini-grid";

    (e) "AMS-I.L.: Electrification of rural communities using renewable energy";

    (f) "TOOL05: ~~Tool to calculate baseline, project and/or leakage emissions from electricity consumption~~Baseline, project and/or leakage emissions from electricity consumption and monitoring of electricity generation";

    (g) "TOOL16: Project and leakage emissions from biomass";

    (h) "Standard: Sampling and surveys for CDM project activities and programme of activities."

## 4. Definitions

16. The definitions contained in the Glossary of CDM terms shall apply.

17. In addition, the following definitions apply:

    (a) **Capacity addition** - increase of the installed power generation capacity of existing power plants through: (i) the installation of new power plants/units in parallel to the existing power plants/units; or (ii) the installation of new power plants/units, additional to the existing power plants/units. The existing power plants/units in the case of capacity addition continue to operate after the implementation of the project activity;

(b) **Co-fired system** - an installation that uses both fossil fuels and renewable fuels in a single boiler for simultaneous combustion; fossil fuel may be used during a period of time when the biomass is not available;

(c) **Existing reservoir** - a reservoir is to be considered as an "existing reservoir" if it has been in operation for at least three years before the implementation of the project activity;

(d) **Greenfield power plant** - a new renewable energy power plant that is constructed and operated at a site where no renewable energy power plant was operated prior to the implementation of the project activity;

(e) **Mini-grid** - a small-scale power system with a total capacity not exceeding 15 MW (i.e. the sum of installed capacities of all generators connected to the mini-grid is equal to or less than 15 MW) which is not connected to a national or a regional grid.

# 5. Baseline methodology

## 5.1. Project boundary

18. The spatial extent of the project boundary includes ~~T~~the physical, geographical site of the renewable ~~energy~~electricity generating unit(s) and the equipment that uses the electricity produced ~~delineates the project boundary~~.

## 5.2. Baseline

19. The ~~energy~~ baseline emissions ~~is~~ are calculated based on the fuel consumption of the technology in use or that would have been used ~~in the absence of the project activity~~ to generate the equivalent quantity of energy[2] in the absence of the project activity, ~~estimated~~ using one of the following three options:

~~(a) Option 1: the energy baseline is calculated based on the average annual electricity consumption of the consumers as per the below:~~

### 5.2.1. Option 1: based on the electricity consumption of the households/user

20. Baseline emissions are calculated as follows:

$$BE_y = E_{BL,y} \times EF_{CO2,y} \quad \text{Equation (1)}$$

Where:

| | | |
|---|---|---|
| $BE_y$ | = | Baseline emissions in year *y* ($tCO_2$) |
| $E_{BL,y}$ | = | Energy baseline in year *y* (kWh) |
| $EF_{CO2,y}$ | = | Emission factor ($tCO_2$/kWh) |

[2] Renewable energy lighting applications shall consider the equivalent level of lighting service instead of energy (See annex 1 of EB 08).

21. The energy baseline is the total annual electricity consumption of the households/users *c* that are supplied with electricity generated by units *i*:

$$EG_{BL,y} = \sum_i \sum_c \left(n_{c,i} \times EC_{c,i,y}\right)/(1 - lTDL) \qquad \text{Equation (2)}$$

Where:

| | | |
|---|---|---|
| $EG_{BL,y}$ | = | Annual energy baseline; kWh Energy baseline in year *y* (kWh) |
| $c$ | = | Type of consumer (e.g. households, rural health centres, rural schools, grain milling, water pumping, irrigation, etc.) covered by the project activity |
| $\sum_i i$ | = | The sum over the group of *i* Type of renewable energy electricity generation technologies unit(s) (e.g. renewable energy technologies for households, rural health centres, rural schools, grain milling, water pumping, irrigation, etc.) implemented as part of by the project activity |
| $n_{c,i}$ | = | Number of consumers type *c* supplied by installations of the renewable energy technology belonging to the group of *i* renewable energy technologies during the year with renewable electricity generation unit(s) type *i* |
| $EC_{c,i,y}$ | = | Average annual individual energy Electricity consumption observed in closest grid electricity systems among rural grid connected consumers belonging to the same group of *i* renewable energy technologies. If energy consumption is metered, $EC_{i,y}$ is the average energy consumed[3] by consumers belonging to the group of *i* renewable energy technologies; kWh consumption by user type c supplied with unit type i in year y in year y. |
| $lTDL$ | = | Average technical transmission and distribution losses that would have been observed in diesel powered mini-grids installed by public programmes or distribution companies in isolated areas, expressed as a fraction[4] |

[3] Potential oversizing of the power capacity installed or energy generated by the CDM project activity shall not be reflected in the baseline and emissions reduction calculation. For this reason, the energy value taken into account shall be the energy consumed. It cannot be the electricity output, except if the project participant justifies that it represents a reasonable estimate of the energy that would have been generated by a diesel generator larger than 35 kW and operating with a load factor of at least 50% to provide similar electricity services.

[4] A reasonable default value for distribution losses on low voltage rural distribution grid could be 20%. Project proponents shall demonstrate in the PDD that in the absence of the project activity electricity supply would have entailed distribution losses e.g. users are in distributed locations, else a value of L=0 shall be used.

~~(b) Option 2: the energy baseline is calculated based on annual electricity generation from project renewable energy technologies as per the below:~~

### 5.2.2. Option 2: based on the annual electricity generation by the project activity

22. Baseline emissions are calculated as follows:

$$BE_{CO2,y} = E_{BL,y} \times EF_{CO2,y}$$ Equation (3)

23. The energy baseline is the total annual electricity generated by the project activity unit(s):

$$E\boldsymbol{G}_{BL,y} = \sum_i EG_{i,y}/(1 - \boldsymbol{l}TDL)$$ Equation (4)

Where:

| | | |
|---|---|---|
| $E\boldsymbol{G}_{BL,y}$ | = | ~~Annual energy baseline; kWh~~ Energy baseline in year *y* (kWh) |
| $\sum_i i$ | = | ~~The sum over the group of *i* renewable energy technologies (e.g. renewable energy technologies for solar home systems, solar pumps) implemented as part of the project activity~~ Renewable energy electricity generation technologies units type *i* implemented as part of by the project activity |
| $EG_{i,y}$ | = | ~~Annual output of the renewable energy technologies of the group of *i* renewable energy technologies installed;~~ Electricity generation by the project activity unit(s) type *i* in year y (kWh) |
| $\boldsymbol{l}TDL$ | = | Average technical transmission and distribution losses that would have been observed in diesel powered mini-grids installed by public programmes or distribution companies in isolated areas, expressed as a fraction[6] |

(i) ~~In the case of project activity applying paragraph 2c, $EG_{i,y}$ corresponds to electricity generation in specific calendar months during which power is available from the grid for delivery to the households or other users for less than 36 hours a month. The availability of grid electricity for delivery to the households or other users shall be determined based on continuous power monitoring and hourly recording in order to determine the grid availability for any given calendar month~~;

(ii) ~~The energy baseline $E_{BL,y}$=0, for any hour during which power is available from the grid for delivery to the households or other users. For example, if the grid is available to deliver power for 15 hours in April, energy baseline can be calculated for April, but the calculation must account for the requirement that during those 15 hours when the grid is available in April, the energy baseline is zero~~;

(c) ~~Option 3: the baseline can be calculated as a trend-adjusted projection of historic fuel consumption in situations where an existing technology is replaced. For the specific case of lighting devices a daily usage of 3.5 hours shall be assumed, unless it is demonstrated that the actual usage hours adjusted for seasonal~~

~~variation of lighting is different based on representatives sampleing survey (90% confidence interval ±10% error) done for minimum of 90 days.~~

24. ~~For Option 1 and Option 2 above the emissions baseline is the energy baseline calculated in accordance with paragraphs~~ 15~~and~~ 15 ~~above times a default emission factor:~~

$$BE_{CO2,y} = E_{BL,y} \times EF_{CO2}$$ Equation (5)

~~Where:~~

| | | |
|---|---|---|
| $BE_{CO2,y}$ | = | ~~Emissions in the baseline in year *y*; tCO2~~ |
| $E_{BL,y}$ | = | ~~Annual energy baseline in year *y*; kWh~~ |
| $EF_{CO2}$ | = | ~~$CO_2$ emission factor; tCO2/kWh~~ |

25. ~~For $EF_{CO2}$, default value of 0.8 kg $CO_2$e/kWh, which is derived from diesel generation units, may be used. A small-scale project proponent may, with adequate justification use a higher emissions factor from Table 2 under the category of "AMS-I.F.: Renewable electricity generation for captive use and mini-grid".~~

26. ~~In case where the project activity displaces existing fossil fuel captive electricity generation, $EF_{CO2}$ of the captive electricity generation shall be determined using Scenario B of the "TOOL05: Tool to calculate baseline, project and/or leakage emissions from electricity consumption~~".

### 5.2.3. Option 3: based on a trend-adjusted projection of historical fuel consumption

27. In the case of replacement of existing fossil fuel based technologies, the baseline emissions in year y are calculated based on a trend-adjusted projection of historical fuel consumption as follows:

$$BE_y = \sum_j FC_{j,y} \times NCV_j \times EF_{CO2,j}$$ Equation (6)

Where:

| | | |
|---|---|---|
| $BE_{CO2y}$ | = | ~~Emissions in the baseline in year *y*; $tCO_2$~~ Baseline emissions in year *y* ($tCO_2$) |
| $FC_{j,y}$ | = | ~~Amount of~~ Projected fuel consumption of fuel type *j*~~,~~ ~~mass or volume unit~~ in year *y* (mass or volume unit) |
| $NCV_j$ | = | Net calorific value of fuel type *j*~~,~~ (~~gigajoule~~GJ per mass or volume unit) |
| $EF_{CO2,j}$ | = | $CO_2$ emission factor of fuel type *j*; $tCO_2$/GJ |
| $j$ | = | Fuel type used for combustion |

28. In the specific case of lighting devices, a daily usage of 3.5 hours per day shall be assumed for the projection of the fuel consumption. Project participants shall justify the use of different usage hours based on representative sampling, conducted in accordance with the "Standard: Sampling and surveys for CDM project activities and programme of activities."

29. The baseline emissions of project activities that involve retrofit/replacement of an existing facility or capacity addition at an existing facility, shall be calculated following the procedures prescribed in "AMS-I.D.: Grid connected renewable electricity generation" with the exception that the applicable emission factor ( $EF_{CO2}$ ) is calculated as described in this methodology.

30. For project activities that introduce renewable-based electricity to communities,[5] baseline emissions can also be determined using the provisions of "AMS-I.L.: Electrification of rural communities using renewable energy", provided that the relevant applicability and monitoring requirements of AMS-I.L. are also met.

### 5.3. Project emissions

31. For most renewable energy project activities, $PE_y$=0. However, for the following categories of project activities, project emissions have to be considered following the procedure described in the most recent version of "ACM0002: Consolidated baseline methodology for grid-connected electricity generation from renewable sources".

    (a) Emissions related to the operation of geothermal power plants (e.g. non-condensable gases, electricity/fossil fuel consumption);

    (b) Emissions from water reservoirs of hydro power plants[6].

32. Project activities that utilize cultivated biomass shall take into account project emissions from biomass cultivation in accordance with "TOOL16: Project and leakage emissions from biomass".

### 5.4. Leakage

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

34. If project activities utilize biomass, leakage emissions shall be taken into account project emissions from biomass in accordance with "TOOL16: Project and leakage emissions from biomass".

## 6. Monitoring methodology

~~35. Monitoring shall consist of:~~

~~(a) An annual check of all systems or a sample thereof to ensure that they are still operating (other evidence of continuing operation, such as on-going rental/lease payments could be a substitute); or~~

~~(b) Metering the electricity generated by all systems in a sample thereof.~~

~~36. For projects where only biomass or biomass and fossil fuel are used the amount of biomass and fossil fuel input shall be monitored.~~

[5] "Communities" of consumers may ~~for example~~ include for example, households, schools, commercial facilities such as shops, and small, medium and micro enterprises (SMMEs).

[6] If the power density of the project activity is greater than 4 W/m$^2$ and less than or equal to 10 W/m$^2$.

~~37. For projects consuming biomass, a specific fuel consumption[7] of each type of fuel (biomass or fossil) to be used should be specified ex ante. The consumption of each type of fuel shall be monitored.~~

~~38. If fossil fuel is used, the electricity generation metered should be adjusted by deducting the electricity generation from fossil fuels using the specific fuel consumption and the quantity of fossil fuel consumed.~~

~~39. If more than one type of biomass fuel is consumed, each shall be monitored separately.~~

~~40. The amount of electricity generated using biomass fuels calculated as per paragraph 28 shall be compared with the amount of electricity generated calculated using specific fuel consumption and amount of each type of biomass fuel used. The lower of the two values should be used to calculate emission reductions.~~

~~41. In the case of project activity applying paragraph 4c, the availability of grid electricity for delivery to the households or other users shall be determined with continuous monitoring in order to determine the grid availability for any given calendar month. The project proponents shall install meters that continuously monitor the status of the grid electricity supply to households and users and record the number of hours during which the grid was not available in the given calendar month.~~

42. For project activities implemented ~~under paragraph 30~~ section 5.2.3 (Option 3), the corresponding monitoring procedures prescribed in "AMS-I.L.: Electrification of rural communities using renewable energy" shall apply.

43. Relevant parameters shall be monitored as indicated in the tables below:

**Data / Parameter table 1.**

| **Data / Parameter:** | ***Continuous operation of the project unit(s)*** |
|---|---|
| Data unit: | - |
| Description: | Continuous operation of the project unit(s) |
| Source of data | Records maintained by PP/CME |
| Measurement procedures (if any): | Record annually the number of units operating (evidence of continuing operation, such as on-going rental/lease payments could be a substitute).<br>Where necessary refer to the "Standard: Sampling and surveys for CDM project activities and programme of activities" |
| Monitoring frequency: | Annual |
| QA/QC procedure | Check of all appliances or a representative sample thereof to ensure that they are still operating or are replaced by an equivalent in service appliance |
| Any comment: | - |

[7] Specific fuel consumption is the fuel consumption per unit of electricity generated (e.g. tonnes of bagasse per megawatt-hour).

**Data / Parameter table 2.**

| **Data / Parameter:** | ***Grid availability*** |
|---|---|
| Data unit: | - |
| Description: | Availability of grid electricity |
| Source of data | Records maintained by PP/CME |
| Measurement procedures (if any): | Record the availability of grid electricity supply to households and users and the number of hours during which the grid was not available in the given calendar month.<br>Grid coverage statistics from reputable sources may be used. |
| Monitoring frequency: | Continuously |
| QA/QC procedure | - |
| Any comment: | If the project activity applies paragraph 4 (c), the availability of grid electricity to the households or other users shall be determined with continuous monitoring in order to determine the grid availability for any given calendar month.<br>If during a specific month the power supply from the grid to the households and users is for less than 36 hours, emission reductions can be calculated for that specific month. |

**Data / Parameter table 3.**

| **Data / Parameter:** | $EF_{CO2,y}$ |
|---|---|
| Data unit: | t $CO_2$e/kWh |
| Description: | Emission factor in year *y* |
| Source of data | - |
| Measurement procedures (if any): | For Options 1 and 2, a default value of 0.8 kg $CO_2$e/kWh, which is derived from diesel generation units, may be used. Small-scale project participants may select a different emissions factor from Table 2 of "AMS-I.F.: Renewable electricity generation for captive use and mini-grid" and appropriately justify the choice in the PDD.<br>For option 3, $EF_{CO2}$ shall be determined as per the "TOOL05: Baseline, project and/or leakage emissions from electricity consumption and monitoring of electricity generation". |
| Monitoring frequency: | Annual |
| QA/QC procedure | - |
| Any comment: | - |

**Data / Parameter table 4.**

| **Data / Parameter:** | $EG_{i,y}$ |
|---|---|
| Data unit: | kWh |
| Description: | Electricity generation by the project activity unit(s) type *i* in year y |
| Source of data | Plant records |
| Measurement procedures (if any): | Measured using calibrated meters. |
| Monitoring frequency: | Continuous monitoring, integrated hourly and at least monthly recording |

| | |
|---|---|
| QA/QC procedure | - |
| Any comment: | If the project activity applies paragraph 4(c), $EG_{BL,y}$ corresponds to the electricity generation in specific calendar months during which grid electricity is available to the households or other users for less than 36 hours. For any hour in which electricity is available from the grid, $EG_{Bl,y} = 0$. |

**Data / Parameter table 5.**

| **Data / Parameter:** | $EC_{c,i,y}$ |
|---|---|
| Data unit: | kWh |
| Description: | Electricity consumption by user type c supplied with unit type i in year y |
| Source of data | Plant records |
| Measurement procedures (if any): | The average individual electricity consumption shall be determined as either:<br>i) Average annual individual energy consumption observed in the closest grid electricity systems among grid connected consumers belonging to the same type c<br>ii) Monitored electricity consumption by individual users type c supplied with unit type i. |
| Monitoring frequency: | Continuous monitoring, integrated hourly and at least monthly recording |
| QA/QC procedure | - |
| Any comment: | |

**Data / Parameter table 6.**

| **Data / Parameter:** | $B_{Biomass,y}$ |
|---|---|
| Data unit: | Mass or volume |
| Description: | Net quantity of biomass consumed in year *y* |
| Source of data | Plant records |
| Measurement procedures (if any): | Use mass or volume based measurements. Adjust for the moisture content in order to determine the quantity of dry biomass.<br>The quantity of biomass shall be measured continuously or in batches.<br>If more than one type of biomass fuel is consumed, each shall be monitored separately.<br>For the case of processed renewable biomass (e.g. briquettes) data shall be collected for mass, moisture content, NCV of the processed biomass that is supplied to users with an appropriate sampling frequency |
| Monitoring frequency: | Continuously monitoring and estimation using annual mass/energy balance |
| QA/QC procedure | Cross-check the measurements with the amount of electricity generated calculated using specific fuel consumption (specified ex-ante) and amount of each type of biomass fuel used. The lower of the two values should be used to calculate emission reductions. |
| Any comment: | |

**Data / Parameter table 7.**

| **Data / Parameter:** | **-** |
|---|---|
| Data unit: | % |
| Description: | Moisture content of the biomass (wet basis) |
| Source of data | Plant records |
| Measurement procedures (if any): | On-site measurements. This applies in the case where emission reductions are calculated based on biomass energy input.<br>For all cases, ex ante estimates should be provided in the PDD and used during the crediting period. Alternatively, moisture content value provided by supplier of biomass should be used if it can be shown that it is reliable (e.g. the price paid for the biomass procured depends on its moisture content) and provided that the project continues to use same type of biomass during the rest of the crediting period.<br>In case of dry biomass, monitoring of this parameter is not necessary |
| Monitoring frequency: | The moisture content of biomass of homogeneous quality shall be monitored for each batch of biomass.<br>The weighted average should be calculated for each monitoring period and used in the calculations |
| QA/QC procedure | - |
| Any comment: | - |

**Data / Parameter table 8.**

| **Data / Parameter:** | $NCV_{i,y}$ |
|---|---|
| Data unit: | GJ/mass or volume unit |
| Description: | Net calorific value of fossil fuel type *i* |
| Source of data | As per "TOOL05: Baseline, project and/or leakage emissions from electricity consumption and monitoring of electricity generation" |
| Measurement procedures (if any): | As per "TOOL05: Baseline, project and/or leakage emissions from electricity consumption and monitoring of electricity generation" |
| Monitoring frequency: | As per "TOOL05: Baseline, project and/or leakage emissions from electricity consumption and monitoring of electricity generation" |
| QA/QC procedure | As per "TOOL05: Baseline, project and/or leakage emissions from electricity consumption and monitoring of electricity generation" |
| Any comment: | - |

**Data / Parameter table 9.**

| **Data / Parameter:** | $NCV_k$ |
|---|---|
| Data unit: | GJ/mass or volume unit |
| Description: | Net calorific value of biomass type *k* |
| Source of data | Plant records |

| | |
|---|---|
| Measurement procedures (if any): | Measurement in laboratories according to relevant national/international standards. Measure quarterly, taking at least three samples for each measurement. The average value can be used for the rest of the crediting period.<br>Measure the NCV based on dry biomass - Check the consistency of the measurements by comparing the measurement results with, relevant data sources (e.g. values in the literature, values used in the national GHG inventory) and default values by the IPCC |
| Monitoring frequency: | Determine once in the first year of the crediting period |
| QA/QC procedure | If the measurement results differ significantly from previous measurements or other relevant data sources, conduct additional measurements |
| Any comment: | - |

**Data / Parameter table 10.**

| **Data / Parameter:** | ***TDL*** |
|---|---|
| Data unit: | - |
| Description: | Average technical transmission and distribution losses |
| Source of data | - |
| Measurement procedures (if any): | A reasonable default value for distribution losses on low voltage rural distribution grid could be 20%. Project proponents shall demonstrate that in the absence of the project activity electricity supply would have entailed distribution losses e.g. users are in distributed locations, else a value of L=0 shall be used. |
| Monitoring frequency: | Determine once in the first year of the crediting period |
| QA/QC procedure | If the measurement results differ significantly from previous measurements or other relevant data sources, conduct additional measurements |
| Any comment: | - |

## ~~6.1. Project activity under a Programme of Activities~~

~~44. The following conditions apply for use of this methodology in a project activity under a programme of activities:~~

~~(a) In the specific case of biomass project activities, the multiple types of biomass, i.e. biomass residues and biomass from dedicated plantations, can be used for a PoA, provided all the other requirements in the methodology such as: TOOL22: Leakage in biomass small-scale project activities (a) leakage emissions in case of biomass residues following the general guidance for leakage in small-scale biomass project activities (attachment C of Appendix B;[8] and (b) consistency with AM0042 "Grid-connected electricity generation using biomass from newly developed dedicated plantations" in case of dedicated plantation are satisfied.~~

- - - - -

[8] Available on <http://cdm.unfccc.int/methodologies/SSCmethodologies/approved.html>.

## Document information*

| *Version* | *Date* | *Description* |
|---|---|---|
| 17.0 | 14 June 2019 | EB 103, Annex 5<br>The revision:<br>• Introduces reference to "TOOL16: Project and leakage emissions from biomass;<br>• Removes provisions related to the withdrawn methodology "AM0042: Grid-connected electricity generation using biomass from newly developed dedicated plantations"<br>• Updates the document to the most recent template;<br>• Makes editorial improvements. |
| 16.0 | 13 September 2012 | EB 69, Annex 26<br>To account for suppressed demand in baseline calculations using AMS-I.L provisions for community electrification projects. |
| 15.0 | 11 May 2012 | EB 67, Annex 18<br>To include guidelines to determine the baseline emission factor for activities displacing existing fossil fuel captive electricity generation. The revision clarifies that users connected to very weak grids (grid supply available for <5% of time) are eligible to apply the methodology. |
| 14.0 | 28 May 2010 | EB 54, Annex 8<br>To include a definition of mini-grid and additional procedure to estimate baseline emissions for retrofit/capacity expansion project activities. |
| 13.0 | 26 September 2008 | EB 42, Annex 16<br>To include project activities for renewable energy based lighting (e.g. solar-lamps) to displace fossil fuel usage in lighting in rural households that are not grid connected or connected to a weak grid prone to blackouts/brownouts. |
| 12.0 | 22 June 2007 | EB 33, Annex 19<br>To clarify the applicability of the methodology and maintain consistency with the revision AMS-I.B, which provides guidance for situations where electricity is a co-product of the project activity, providing mechanical energy for the user. |

* 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.

| | | |
|---|---|---|
| 11.0 | 22 June 2007 | EB 32, Annex 25<br>To clarify the monitoring of biomass in project activities that apply this methodology which is consistent with monitoring of biomass in the approved methodology AMS-I.D. |
| 10.0 | 04 May 2007 | EB 31, Annex 19<br>To clarify that all cogeneration project activities should apply AMS-I.C. |
| 09.0 | 15 December 2006 | EB 28, Annex 24<br>To maintain consistency across categories particularly in relation to AMS-I.D; |

| *Version* | *Date* | *Description* |
|---|---|---|
| | | Revised guidance on capacity addition activities and a default emission coefficient of 0.8 kg $CO_2$ /kWh for diesel generation, as opposed to 0.9 kg $CO_2$ /kWh. |
| 08.0 | 24 February 2006 | EB 23, Annex 29<br>To include provisions for retrofit and renewable energy capacity additions as eligible activities;<br>Provide clarification for baseline calculations under category I.D;<br>Provide clarification on the applicability of Category I.A as against Category I.D. |

**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* | *Description* |
|---|---|---|
| 07.0 | 25 November 2005 | EB 22, Para. 59<br>References to "non-renewable biomass" in Appendix B deleted. |
| 06.0 | 20 September 2005 | EB 21, Annex 22<br>Guidance on consideration of non-renewable biomass in Type I methodologies, thermal equivalence of Type II GWhe limits included. |
| 05.0 | 25 February 2005 | EB 18, Annex 6<br>Guidance on 'capacity addition' and 'cofiring' in Type I methodologies and monitoring of methane in AMS-III.D included. |
| 04.0 | 22 October 2004 | EB 16, Annex 2<br>AMS-II.F was adopted, leakage due to equipment transfer was included in all Type I and Type II methodologies. |
| 03.0 | 30 June 2004 | EB 14, Annex 2<br>New methodology AMS-III.E was adopted. |
| 02.0 | 28 November 2003 | EB 12, Annex 2<br>Definition of build margin included in AMS-I.D, minor revisions to AMS-I.A, AMS-III.D, AMS-II.E. |
| 01.0 | 21 January 2003 | EB 7, Annex 6<br>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). |

Decision Class: Regulatory
Document Type: Standard
Business Function: Methodology
Keywords: electricity generation, renewable energy generation, simplified methodologies, type (i) projects