



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

**TYPE III - OTHER PROJECT ACTIVITIES**

Project participants shall apply the general guidelines to small-scale (SSC) clean development mechanism (CDM) methodologies, abbreviations and general guidance on leakage in biomass project activities, Guidelines on the demonstrating of additionality of SSC project activities at <http://cdm.unfccc.int/Reference/Guidclarif/index.html#meth> > *mutatis mutandis*.

**III.R. Methane recovery in agricultural activities at household/small farm level**

**Technology/measure**

1. This project category comprises recovery and destruction of methane from manure and wastes from agricultural activities that would be decaying anaerobically emitting methane to the atmosphere in the absence of the project activity. Methane emissions are prevented by:
  - (a) Installing methane recovery and combustion system to an existing source of methane emissions; or
  - (b) Changing the management practice of a biogenic waste or raw material in order to achieve the controlled anaerobic digestion equipped with methane recovery and combustion system.
2. The category is limited to measures at individual households or small farms (e.g. installation of a domestic biogas digester). Methane recovery systems that achieve an annual emission reduction of less than or equal to five tonnes of CO<sub>2</sub>e per system are included in this category. Systems with annual emission reduction higher than five tonnes of CO<sub>2</sub>e are eligible under AMS-III.D “Methane recovery in animal manure management systems”.
3. This project category is only applicable in combination with AMS-I.C “Thermal energy production with or without electricity” and/or AMS-I.I “Biogas/biomass thermal applications for households/small users” and/or AMS-I.E “Switch from non-renewable biomass for thermal applications by the user”.
4. The project activity shall satisfy the following conditions:
  - (a) The sludge must be handled aerobically. In case of soil application of the final sludge the proper conditions and procedures that ensure that there are no methane emissions must be ensured;
  - (b) Measures shall be used (e.g. combusted or burnt in a biogas burner for cooking needs) to ensure that all the methane collected by the recovery system is destroyed.
5. Aggregated annual emission reductions of all systems included shall be less than or equal to 60 kt CO<sub>2</sub> equivalent.

**Boundary**

6. The project boundary is the physical, geographical site of the methane recovery and combustion systems.



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### III.R. Methane recovery in agricultural activities at household/small farm level (cont)

#### Project activity emissions

7. Project emissions due to physical leakage of biogas digester is estimated using one of the two options using the method indicated in paragraph 13 of AMS-III.D “Methane recovery in animal manure management systems”.

8. Project emissions consist of CO<sub>2</sub> emissions from use of fossil fuels or electricity for the operation of the system and the physical leakages of methane from the recovery system. The relevant methodological tools “Tool to calculate baseline, project and/or leakage emissions from electricity consumption” and “Tool to calculate project or leakage CO<sub>2</sub> emissions from fossil fuel combustion” shall be followed.

#### Baseline

9. The baseline scenario is the situation where, in the absence of the project activity, biomass and other organic matter are left to decay anaerobically within the project boundary and methane is emitted to the atmosphere. Baseline emissions ( $BE_b$ ) are calculated ex ante, using one of the following methods:

- (a) A simplified method with the most recent IPCC Tier 1 approach (please refer to the chapter ‘Emissions from Livestock and Manure Management’ under the volume ‘Agriculture, Forestry and other Land use’ of the 2006 IPCC Guidelines for National Greenhouse Gas Inventories) that only requires livestock population data by animal species/category and climate region or temperature; or
- (b) The most recent IPCC Tier 2 approach (please refer to the chapter ‘Emissions from Livestock and Manure Management’ under the volume ‘Agriculture, Forestry and other Land use’ of the 2006 IPCC Guidelines for National Greenhouse Gas Inventories) to calculate the amount of the waste or raw material that would decay anaerobically in the absence of the project activity. Country/regional-specific values shall be used if available. The option in paragraph 9(a) and relevant formulae shown in paragraph 10 of AMS-III.D “Methane recovery in animal manure management systems” shall be used to calculate baseline emissions.

10. The amount of waste or raw materials that would decay anaerobically in the absence of the project activity is determined by survey of a sample group of households/small farms with a 90% confidence interval and 10% margin of error. The survey should determine the baseline animal manure management practices applied. If the livestock is raised in shared centralized farms,<sup>1</sup> the project proponent shall be able to show the baseline animal manure management practices at each farm, either individually or through sampling. This small-scale methodology is only applicable to the portion of the manure, which would decay anaerobically in the absence of the project activity established by the survey.

<sup>1</sup> In shared centralized farms systems, multiple households raise their animals in a centralized farm, e.g., in separate barns. In the project activity each family collects the manure of animals raised by it at the centralized farm and uses the collected manures as feedstock for the biodigester situated at the household.



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*III.R. Methane recovery in agricultural activities at household/small farm level (cont)*

**Leakage**

11. If the methane recovery and combustion equipment is transferred from another activity or if the existing equipment is transferred to another activity, leakage is to be considered.

**Monitoring**

12. Monitoring shall consist of:

- (a) Inspection of the project systems. At the time of installation all project activity systems shall be inspected and undergo acceptance testing (commissioning) for proper operation in compliance with specifications. The installation date of each system shall be recorded;
- (b) Recording annually the number of systems operating using survey methods. Emission reductions can only be applied to systems that are demonstrated to be operational and in compliance with manufacturer required maintenance procedures, at least once every two years (biennial) during the crediting period. After the inspection and acceptance testing at year of installation, the inspections can be done in years 3, 5, 7, etc. and the results of such inspections can be applied to crediting years 3 and 4, 5 and 6, 7 and 8 etc. On-going rental/lease payments or a recurring maintenance fee by users can be a substitute to actual site visits. A statistically valid sample of the residences where the systems are installed, with consideration, in the sampling design, of occupancy and demographic differences can be used to determine the percentage of systems operating, as per the relevant requirements for sampling in the “Standard for sampling and surveys for CDM project activities and programme of activities”. When biennial inspection is chosen, a 95% confidence interval and 10% margin of error requirement shall be achieved for the sampling parameter. On the other hand, when the project proponent chooses to inspect annually, a 90% confidence interval and 10% margin of error requirement shall be achieved for the sampling parameter;  
Estimating the average annual hours of operation of a system using survey methods;
- (c) Survey methods are used to determine the annual average animal population (NLT), the amount of waste/animal manure generated on the farm and the amount of waste/animal manure fed into the system e.g. biogas digester (It shall be verified if the manure fed to the digester is consistent with the animal population and with the capacity of the system). If the livestock is raised in the shared centralized farms, the project proponent shall also determine the number of families/households sharing the farm and the annual average animal population (NLT) belonging to each household;
- (d) The proper soil application (not resulting in methane emissions) of the final sludge verified on a sampling basis. Requirements in the “Standard for sampling and surveys for CDM project activities and programme of activities” shall be followed.

The DOE shall randomly verify parameters of the systems monitored above.



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13. The emission reduction achieved by the project activity are calculated by:

$$ER_y = BE_y - PE_y - Leakage \quad (1)$$

Where:

$ER_y$  Emission reductions achieved by the project activity for year  $y$  (tCO<sub>2</sub>e)

$BE_y$  Baseline emissions for year  $y$  (tCO<sub>2</sub>e)

$PE_y$  Project emissions for year  $y$  (tCO<sub>2</sub>e)

**Project activity under a programme of activities**

14. This methodology is applicable for a project activity under a programme of activities. The methodology is applicable to a programme of activities, no additional leakage estimations are necessary other than that indicated under leakage section above.

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**History of the document**

Version	Date	Nature of revision(s)
03.0	13 September 2012	EB 69, Annex # <ul style="list-style-type: none"> <li>To introduce the IPCC Tier 1 approach as an alternative method for calculation of baseline emissions.</li> </ul>
02	EB 59, Annex 4 18 February 2011	<ul style="list-style-type: none"> <li>To allow the combination of this category with AMS-I.I and/or AMS-I.E;</li> <li>To revise the guidance on calculation of project emissions from physical leakage and baseline emissions;</li> <li>To revise sampling requirements;</li> <li>To remove the conditions for PoA.</li> </ul>
01	EB 35, Annex 27 19 October 2007	Initial adoption.
<b>Decision Class:</b> Regulatory <b>Document Type:</b> Standard <b>Business Function:</b> Methodology		