Draft methodological tool

"Project and leakage emissions from composting"

(Version 01.0.0)

I. DEFINITIONS, SCOPE, APPLICABILITY AND PARAMETERS

Definitions

Actively aerated composting. A type of composting where air is blown into the waste using a compressor or a blower.

Anaerobic digestate. Spent contents of an anaerobic digester, which may be liquid, semi solid or solid. Digestate typically has low biodegradability because easily biodegradable organic matter has been converted in the anaerobic digester.

Closed composting installation. A facility for actively aerated composting that is enclosed. Exhaust air from the installation is collected in an exhaust pipe.

Co-composting. A type of composting where solid wastes and liquid wastes are composted together.

Composting. A process of biodegradation of waste under aerobic (oxygen-rich) conditions. Waste that can be composted must contain solid biodegradable organic material. Composting converts biodegradable organic carbon to mostly carbon dioxide (CO_2) and a residue (compost) that can be used as a fertilizer. Other outputs from composting can include, inter alia, methane (CH_4), nitrous oxide (N_2O), and run-off wastewater (in case of co-composting).

Composting cycle. The length of time to compost organic matter in the waste. The cycle begins with fresh waste and finishes when compost is produced.

Windrow. A composting installation where waste is composted in a long, low ridge. This shape is designed to passively aerate the waste by making use of wind and natural drafts caused by the increased temperatures of the biodegradation process.

Scope and applicability

This tool provides procedures to calculate project and/or leakage emissions from composting and co-composting. Typical applications of the tool include projects composting municipal solid wastes, agricultural wastes and anaerobic digestate:

The following sources of project emissions are accounted for in this tool:

(a) CH_4 and N_2O emission from composting;

(b) CO_2 emissions from consumption of fossil fuels and electricity at the composting installation; and

(c) CH_4 emissions from leaked run-off wastewater in the case of co-composting.

The following source of leakage emissions is accounted for in this tool[1]:

(a) CH_4 emissions from the anaerobic decay of the residual organic content of compost disposed in a landfill or subjected to anaerobic storage.

Transport emissions are not accounted for in this tool because it is assumed that in the baseline there are equivalent transport activities[2].

This tool also refers to the latest approved versions of the following tools:

- "Tool to calculate baseline, project and/or leakage emissions from electricity consumption";
- "Tool to calculate project or leakage CO_2 emissions from fossil fuel combustion";
- "Tool to determine methane emissions avoided from disposal of waste at a solid waste disposal site"; and
- "Tool to determine the mass flow of a greenhouse gas in a gaseous stream".

For more information regarding the proposed new methodologies and the tools as well as their consideration by the Executive Board please refer to <http://cdm.unfccc.int/goto/MPappmeth>.

The applicability conditions of these tools also apply.

Parameters

This tool provides procedures to determine the following parameters:

Parameter	SI Unit	Description
$PE_{COMP,y}$	t CO_2e	Project emissions associated with composting in year *y* (t CO_2e / yr)
$LE_{COMP,y}$	t CO_2e	Leakage emissions associated with composting in year *y* (t CO_2e / yr)

II. PROJECT EMISSIONS PROCEDURE

The project emissions from composting ($PE_{COMP,y}$) are determined as follows:

$$PE_{COMP,y} = PE_{EC,y} + PE_{FC,y} + PE_{CH4,y} + PE_{N2O,y} + PE_{RO,y} \tag{1}$$

Where:

$PE_{COMP,y}$ = Project emissions associated with composting in year *y* (t CO_2e / yr)

$PE_{EC,y}$ = Project emissions from electricity consumption associated with composting in year *y* (t CO_2 / yr)

$PE_{FC,y}$ = Project emissions from fossil fuel consumption associated with composting in year *y* (t CO_2 / yr)

$PE_{CH4,y}$ = Project emissions of methane from the composting process in year *y* (t CO_2e / yr)

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[1] If this source is inside the project boundary, then it may be accounted for as project emissions.

[2] For example, the waste that is transported to the composting installation in the project activity would instead be transported to an alternative treatment location (e.g. a landfill). The compost that is transported to its place of application in the project activity, would replace the need to transport fertilizer to the same place of application.

$PE_{N2O,y}$ = Project emissions of nitrous oxide from the composting process in year *y* (t CO_2e / yr)
$PE_{RO,y}$ = Project emissions of methane from run-off wastewater associated with co-composting in year *y* (t CO_2e / yr)

Determination of the quantity of waste composted (Q_y)

The quantity of waste composted is a parameter required in the determination of emissions associated with each source of project emissions. There are two options to determine the quantity of waste composted in year *y* (Q_y). Option 1 monitors the weight of waste delivered to the composting installation using an on-site weighbridge. Option 2, which can be used in the case that there is no weighbridge available on site, calculates Q_y based on the average amount of waste delivered by trucks (CT_y) and the number of deliveries (NT_y), as follows:

$$Q_y = CT_y \cdot NT_y \qquad \textbf{(2)}$$

Where:
Q_y = Quantity of waste composted in year *y* (t / yr)
CT_y = Average amount of waste delivered by trucks to the composting installation in year *y* (t / yr)
NT_y = Number of trucks of waste delivered to the composting installation in year *y*

In case of co-composting, liquid wastes are not accounted for in the estimation of Q_y.

Determination of project emissions from electricity consumption ($PE_{EC,y}$)

Where the composting activity involves electricity consumption, project participants may choose between the following two options to calculate $PE_{EC,y}$:

Option 1: Procedure using monitored data

$PE_{EC,y}$ shall be calculated using the latest approved version of the "Tool to calculate baseline, project and/or leakage emissions from electricity consumption", where the project emission source *j* referred to in the tool is *composting*.

When applying this tool, if monitored data for electricity consumption is not available, the electricity consumption from composting ($EC_{PJ, comp,y}$) may be determined based on a default factor for electricity consumed per ton of waste composted (SEC_{comp}), as follows:

$$EC_{PJ,comp,y} = Q_y \cdot SEC_{comp} \qquad \textbf{(3)}$$

Where:
$EC_{PJ,comp,y}$ = Quantity of electricity consumed from composting in year *y* (MWh / yr)
Q_y = Quantity of waste composted in year *y* (t / yr)
SEC_{comp} = Quantity of electricity consumed per ton of waste composted (MWh / t)

Option 2: Procedure using a default value

Project emissions from electricity consumption of the composting activity are calculated as follows:

$$PE_{EC,y} = Q_y \cdot EF_{EC} \qquad \textbf{(4)}$$

Where:

$PE_{EC,y}$ = Project emissions from electricity consumption associated with composting in year *y* (t CO_2 / yr)
Q_y = Quantity of waste composted in year *y* (t / yr)
EF_{EC} = Default emission factor for electricity consumed by the composting activity per ton of waste composted (t CO_2 / t)

Determination of project emissions from fossil fuel consumption ($PE_{FC,y}$)

Where the composting activity involves fossil fuel consumption, project participants may choose between the following two options to calculate $PE_{FC,y}$:

Option 1: Procedure using monitored data

$PE_{FC,y}$ shall be calculated using the latest approved version of the "Tool to calculate project or leakage CO_2 emissions from fossil fuel combustion", where the project emission source *j* referred to in the tool is *composting*.

Option 2: Procedure using a default value

Project emissions from fossil fuel consumption associated with composting are calculated as follows:

$$PE_{FC,y} = Q_y \cdot EF_{FC} \qquad \textbf{(5)}$$

Where:

$PE_{FC,y}$ = Project emissions from fossil fuel consumption associated with composting in year *y* (t CO_2 / yr)
Q_y = Quantity of waste composted in year *y* (t / yr)
$EF_{FC,y}$ = Default emission factor for fossil fuels consumed by the composting activity per ton of waste (t CO_2 / t)

Determination of methane and nitrous oxide emissions from the composting process

Project emissions of methane from the composting process ($PE_{CH4,y}$) are determined as follows:

$$PE_{CH4,y} = Q_y \cdot EF_{CH4,y} \cdot GWP_{CH4} \qquad \textbf{(6)}$$

Where:

$PE_{CH4,y}$ = Project emissions of methane from the composting process in year *y* (t CO_2e / yr)
Q_y = Quantity of waste composted in year *y* (t / yr)
$EF_{CH4,y}$ = Emission factor of methane per ton of waste composted valid for year *y* (t CH_4 / t)
GWP_{CH4} = Global Warming Potential of CH_4 (t CO_2e / t CH_4)

Project emissions of nitrous oxide from composting ($PE_{N2O,y}$) are determined as follows:

$$PE_{N2O,y} = Q_y \cdot EF_{N2O,y} \cdot GWP_{N2O} \qquad \textbf{(7)}$$

Where:

$PE_{N2O,y}$ = Project emissions of nitrous oxide from composting in year *y* (t CO_2e / yr)
Q_y = Quantity of waste composted in year *y* (t / yr)
$EF_{N2O,y}$ = Emission factor of nitrous oxide per ton of waste composted valid for year *y* (t N_2O / t)
GWP_{N2O} = Global Warming Potential of N_2O (t CO_2e / t N_2O)

There are two options which project participants may choose for determining $EF_{CH4,y}$ and $EF_{N2O,y}$:

Option 1: Procedure using monitored data

$EF_{CH4,y}$ and $EF_{N2O,y}$ are determined according to equations (8) and (9) below based on measurements of the emissions during a composting cycle ($ECC_{CH4,c}$ and $ECC_{N2O,c}$). This is a campaign type measurement, where measurements must be made for a composting cycle in each climatic season of year *y* (with two measurement in one season). The measurement has to be repeated for each year *y* of the crediting period. The method for measuring $ECC_{CH4,c}$ and $ECC_{N2O,c}$ depends on the type of composting installation:

- Non-closed composting installation (eg windrows): flux box measurement; and
- Closed composting installation: measurement of the gaseous flow and concentration of GHG in the exhaust gas pipeline.

The emission factors are calculated as follows:

$$EF_{CH4,y} = \frac{\sum_{c=1}^{x} ECC_{CH4,c}/Q_c}{x} \tag{8}$$

Where:

$EF_{CH4,y}$ = Emission factor of methane per ton of waste composted valid for year *y* (t CH_4 / t)
$ECC_{CH4,c}$ = Methane emissions from composting during the composting cycle *c* (t CH_4)
Q_c = Quantity of waste composted in composting cycle *c* (t)
c = Composting cycles for which measurements were undertaken
x = Number of composting cycles *c* for which emissions were measured in year *y* (at least three)

$$EF_{N2O,y} = \frac{\sum_{c=1}^{x} ECC_{N2O,c}/Q_c}{x} \tag{9}$$

Where:

$EF_{N2O,y}$ = Emission factor of nitrous oxide per ton of waste composted valid for year *y* (t N_2O / t)
$ECC_{N2O,c}$ = Nitrous oxide emissions from composting during the composting cycle *c*(t N_2O)
Q_c = Quantity of waste composted in composting cycle *c* (t)
c = Composting cycles for which measurements were undertaken
x = Number of composting cycles *c* for which emissions were measured in year *y* (at least three)

Option 2: Procedure using default values

Default values are used: $EF_{CH4,y} = EF_{CH4,default}$ and $EF_{N2O,y} = EF_{N2O,default}$.The default values are provided in the Data and parameters not monitored section of this tool.

Determination of emissions from run-off wastewater ($PE_{RO,y}$)

Project emissions of methane from run-off wastewater ($PE_{RO,y}$) are calculated only for the case of co-composting. Moreover, if run-off wastewater is collected and re-circulated to the composting process, then $PE_{RO,y}$ is assumed to be zero (for example, this is the case for tunnel co-composting technology). Otherwise, it is calculated as follows:

$$PE_{RO,y} = Q_{RO,y} \cdot COD_{RO,y} \cdot B_{0,ww} \cdot MCF_{ww,treatment} \cdot \varphi \cdot GWP_{CH4} \quad \textbf{(10)}$$

Where:

$PE_{RO,y}$ = Project emissions of methane from run-off wastewater associated with co-composting in year *y* (t CO_2e / yr)

$Q_{RO,y}$ = Volume of run-off wastewater from the co-composting installation in year *y* (m^3 / yr)

$COD_{RO,y}$ = Average chemical oxygen demand (COD) of the run-off wastewater from the co-composting installation in year *y* (t COD / m^3)

$B_{0,ww}$ = Methane producing capacity of the wastewater (t CH_4 / t COD)

$MCF_{ww,treatment}$ = Methane correction factor for the wastewater treatment system where the run-off wastewater is treated

φ = Model correction factor to account for model uncertainties of methane emissions from wastewater run-off

GWP_{CH4} = Global Warming Potential of methane (t CO_2e / t CH_4)

III. LEAKAGE EMISSIONS PROCEDURE

If compost is subjected to anaerobic storage or disposed of in a SWDS[3], then leakage emissions from composting ($LE_{COMP,y}$) shall be estimated to account for methane emissions from the anaerobic decay of compost disposed of in a SWDS or subjected to anaerobic storage, using the "Tool to determine methane emissions avoided from disposal of waste at a solid waste disposal site". The following guidance is given for applying the tool:

- $LE_{COMP,y}$ is the parameter $LE_{SWDS,y}$ in the tool;
- $W_{j,x}$ in the tool to the amount of compost produced disposed of in a SWDS or subjected to anaerobic storage, where:
  - *j* is compost and therefore the procedure in the tool to determine the amount of organic waste type *j* to be disposed in the SWDS does not need to be followed; and
  - *x* refers to each year since the start of the first crediting period, up to and including year *y*.

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[3] If compost is used as a cover for a SWDS, rather than disposed in it, then this is not accounted for as a source of leakage emissions.

IV. DATA AND PARAMETERS NOT MONITORED

Data / Parameter:	$B_{0,ww}$
Data unit:	t CH_4 / t COD
Description:	Methane producing capacity of the wastewater
Source of data:	IPCC 2006 Guidelines for National Greenhouse Gas Inventories
Value to be applied:	0.25
Any comment:	This parameter is used to calculate $PE_{run-off,y}$ and is only required for the case of co-composting

Data / Parameter:	$EF_{CH4,default}$
Data unit:	t CH_4 / t
Description:	Default emission factor of methane per ton of waste composted (wet basis)
Source of data:	The emission factor was selected based on studying published results of emission measurements from composting facilities, literature reviews on the subject and published emission factors. Data from recent, high quality sources was analyzed and a value conservatively selected at the higher end of the range in results
Value to be applied:	0.002
Any comment:	Applicable to Option 2 in the step "Determination of methane and nitrous oxide emissions from the composting process"

Data / Parameter:	$EF_{N2O,default}$
Data unit:	t N_2O / t
Description:	Default emission factor of nitrous oxide per ton of waste composted (wet basis)
Source of data:	The emission factor was selected based on studying published results of emission measurements from composting facilities, literature reviews on the subject and published emission factors. Data from recent, high quality sources was analyzed and a value conservatively selected at the higher end of the range in results
Value to be applied:	0.0002
Any comment:	Applicable to Option 2 in the step "Determination of methane and nitrous oxide emissions from the composting process"

Data / Parameter:	SEC_{comp}
Data unit:	MWh / t
Description:	Quantity of electricity consumed per ton of waste composted
Source of data:	Based on a review of information from relevant, validated CDM projects
Value to be applied:	0.01
Any comment:	Applicable to Option 1 in the step "Determination of project emissions from electricity consumption ($PE_{EC,y}$)"

Data / Parameter:	EF_{EC}
Data unit:	t CO_2 / t
Description:	Default emission factor for electricity consumed by the composting activity per ton of waste composted (wet basis)
Source of data:	Based on a review of electricity consumption per ton of waste composted in relevant, validated CDM projects and a conservative default emission factor for CO_2 emissions per MWh electricity consumption from the "Tool to calculate baseline, project and/or leakage emissions from electricity consumption"
Value to be applied:	0.013
Any comment:	Applicable to Option 2 in the step "Determination of project emissions from electricity consumption ($PE_{EC,y}$)"

Data / Parameter:	EF_{FC}
Data unit:	t CO_2 / t
Description:	Default emission factor for fossil fuel consumed by the composting activity per ton of waste composted (wet basis)
Source of data:	Based on a review of fossil fuel consumption per ton of waste composed in relevant validated CDM projects and a conservative default emission factor for diesel (from the 2006 IPCC Guidelines)
Value to be applied:	0.0207
Any comment:	Applicable to Option 2 in the step "Determination of project emissions from fossil fuel consumption ($PE_{FC,y}$)"

Data / Parameter:	GWP_{CH4}
Data unit:	t CO_2e / t CH_4
Description:	Global Warming Potential of CH_4
Source of data:	IPCC
Value to be applied:	21 for the first commitment period. Shall be updated for future commitment periods according to any future COP/MOP decisions
Any comment:	-

Data / Parameter:	GWP_{N2O}
Data unit:	t CO_2e / t N_2O
Description:	Global Warming Potential of N_2O
Source of data:	IPCC
Value to be applied:	310 for the first commitment period. Shall be updated for future commitment periods according to any future COP/MOP decisions
Any comment:	-

Data / Parameter:	$MCF_{ww,treatment}$
Data unit:	-
Description:	Methane correction factor for the wastewater treatment system where the run-off wastewater is treated
Source of data:	Default values from chapter 6 of volume 5. Waste in the 2006 IPCC Guidelines for National Greenhouse Gas Inventories (see Table 1)
Value to be applied:	Use the default values below corresponding to the type of wastewater treatment system. If this is not possible, then as a conservative estimation, waste water treatment can be assumed to take place under completely anaerobic conditions, where $MCF_{ww,\ treatment}$ equals 1 **Table 1 IPCC default values for MCF** (see table below)
Any comment:	This parameter is used to calculate $PE_{run\text{-}off,y}$ and is only required for the case of co-composting

Table 1 IPCC default values for MCF

Type of wastewater treatment and discharge pathway or system	**MCF value**
Discharge of wastewater to sea, river or lake	0.1
Aerobic treatment, well managed	0.0
Aerobic treatment, poorly managed or overloaded	0.3
Anaerobic digester for sludge without methane recovery	0.8
Anaerobic reactor without methane recovery	0.8
Anaerobic shallow lagoon (depth less than 2 metres)	0.2
Anaerobic deep lagoon (depth more than 2 metres)	0.8
Septic system	0.5

Data / Parameter:	φ
Data unit:	-
Description:	Model correction factor to account for model uncertainties of methane emissions from run-off wastewater
Source of data:	Draft Decisions On Methodological Issues Relating To Articles 5, 7 And 8 Of The Kyoto Protocol (Agenda Item 4 (B)) (FCCC/SBSTA/2003/10/Add.2, page 25).
Value to be applied:	1.12
Any comment:	This parameter is used to calculate $PE_{RO,y}$ and is only required for co-composting. An assigned uncertainty band of 40% was assumed when selecting this default value from the source referenced above

V. MONITORING METHODOLOGY PROCEDURE

Monitoring procedures

Monitoring involves an annual assessment of the amount of waste composted and, in case of co-composting, also the amount of run-off and its COD concentration. For all other monitored parameters there are also options to use default values.

Data and parameters monitored

Data / Parameter:	$COD_{RO,y}$
Data unit:	t COD / m³
Description:	Average chemical oxygen demand (COD) of the run-off wastewater from the co-composting installation in year *y*
Source of data:	Operator of the composting site
Measurement procedures:	Measure the COD according to national or international standards in liquid samples that are taken in a representative way from unfiltered run-off waste-water $COD_{RO,y}$ is the average of the COD measurements of the 12 samples taken in year *y*
Monitoring frequency:	Monthly
QA/QC procedures:	Document which national or international standard is applied for COD measurement in the monitoring report
Any comment:	An example of an international standard is *ISO 6060:1989 Water quality -- Determination of the chemical oxygen demand* This parameter is used to calculate $PE_{RO,y}$ and is only required for co-composting

Data / Parameter:	$ECC_{CH4,c}$, $ECC_{N2O,c}$
Data unit:	t CH_4, t N_2O
Description:	Methane and nitrous oxide emissions from the composting installation during the composting cycle *c*
Source of data:	On site measurement
Measurement procedures (if any):	Measurement procedures are specified for closed composting installations and non-closed composting installations **Closed composting installation.** Choose between the following two options to measure emissions from a closed-composting system for a composting cycle: Option 1*:* Measure methane and/or nitrous oxide concentrations, gas velocity, temperature and pressure in the exhaust pipe using appropriate analytical equipment (e.g. FID, IR, FTIR). Gas flow can be calculated from gas velocity and exhaust pipe diameter and has to be corrected for pressure and temperature. Methane and nitrous oxide emissions are obtained by integrating the product of gas flow and methane and nitrous oxide concentrations in the gas over the entire duration of the measurement (one composting cycle). Option 2*:* Use the “Tool to determine the mass flow of a greenhouse gas in a gaseous stream”. When applying the tool, the following guidance is given: • The gaseous stream the tool should be applied to is the exhaust gas from the closed composting installation; • CH_4 and/or N_2O are the greenhouse gases for which the mass flow should be determined; • The flow of the gaseous stream should be measured on an hourly basis or a smaller time interval; and • The simplification offered for calculating the molecular mass of the gaseous stream is valid (equations 3 or 17 in the tool)

	Non-closed composting installation (windrows). Measure emissions using a flux box. In a flux box measurement, the concentration increase over time of CH_4 and/or N_2O in the box is measured and the emission flux from the surface covered by the box is calculated (kilogram CH_4 or N_2O per square meter per hour). From the measurements made during the cycle, an overall emission flux value can be determined. Emissions during the composting cycle can then be calculated over the time of the composting cycle and the total surface area of the windrow (kg per windrow per hour). The measurements shall be conducted as follows: Select measurement sites (at least 10 measurement sites per windrow): • Identify at least two measurement cross sections (across the width), which are spaced equally along the length of the windrow; • In each cross-section, identify five measurement locations spaced equally apart; two on each side of the windrow, and one on the top Measurement frequency: • Perform at least five measurement events in each measurement site of the windrow during a composting cycle (resulting in at least 50 individual measurements). Measurement events must be at regular time intervals during the composting cycle Identify and repeat invalid measurements: • Make measurements at each measurement site over at least a continuous one minute period, with consecutive concentration readings stored at a frequency of at least one per second; • Identify if concentration increase is constant in time. If it is constant, then the measurement is valid. If the rate of increase is not constant, then this indicates a build up of pressure in the flux box and the measurement is invalid and must be repeated Identify the overall flux rate for the composting cycle: • Identify the 80% confidence interval for all measurement made during a composting cycle (this is at least 50 measurements); • Identify an overall flux rate as the upper value in the 80% confidence interval
Monitoring frequency:	Measure at least one composting cycle per climatic season, and at least two cycles in one climatic season. This means there are at least three measurements of $ECC_{CH4,cc}$/$ECC_{N2O,cc}$ in **each year in the case of two seasons.**
QA/QC procedures:	Closed composting installation: • According to the “Tool to determine the mass flow of a greenhouse gas in a gaseous stream”. Flux box measurement: • Flux box equipment accuracies (as specified by the supplier of the flux box equipment) shall be 1 ppm or better for CH_4 and 100 ppb or better for N_2O.
Any comment:	Applicable to Option 1 in the step “Determination of methane and nitrous oxide emissions from the composting process”

Data / Parameter:	Q_c
Data unit:	t
Description:	Quantity of waste composted in composting cycle *c* (wet basis)
Measurement procedures:	Weighed using weighbridge
Monitoring/recording frequency:	Measure the weight of waste for every truck delivery and aggregate for the same composting cycle that ECC is being estimate for.
QA/QC procedures:	Weighbridge subject to periodic calibration (in accordance with stipulation of the weighbridge supplier)
Any comment:	This is the specific amount of waste treated for the composting cycle *c* that emission measurements are made for ($ECC_{CH4,c}$, $ECC_{N2O,c}$). Applicable to Option 1 in the step “Determination of methane and nitrous oxide emissions from the composting process”

Data / Parameter:	Q_y
Data unit:	t / yr
Description:	Quantity of waste composted in year *y* (wet basis)
Measurement procedures:	Use a weighbridge
Monitoring/recording frequency:	Continuously
QA/QC procedures:	Weighbridge will be subject to periodic calibration (in accordance with stipulation of the weighbridge supplier)
Any comment:	Applicable to Option 1 in the step “Determination of the quantity of waste composted”. The parameter corresponds to the quantity of solid waste delivered to the composting installation, weighed on a wet basis. In the case of co-composting, the weight of liquid wastes is neglected

Data / Parameter:	$Q_{RO,y}$
Data unit:	m^3 / yr
Description:	Volume of run-off wastewater from the co-composting installation in year *y*
Measurement procedures:	When run-off wastewater is collected in a drainage system, measure the accumulative volume flow over time. If there is no system for collection of run-off, the volume of run-off is the sum of (i) the amount of wastewater applied in excess (i.e. amount of moisture above the field capacity of the waste being composted) and (ii) the amount of precipitation on the surface of the composting installation in the case of unroofed sites
Monitoring frequency:	Continuously
QA/QC procedures:	-
Any comment:	-

Data / Parameter:	NT_y
Data unit:	-
Description:	Number of trucks of waste delivered to the composting installation in year *y*
Measurement procedures:	To be registered by personnel at the entrance gate of the composting installation
Monitoring/recording frequency:	Register every truck delivery and aggregate annually
QA/QC procedures:	-
Any comment:	Applicable to Option 2 in the step “Determination of the quantity of waste composted”

Data / Parameter:	CT_y
Data unit:	t
Description:	Average quantity of waste delivered by a truck to the composting installation in year *y*
Measurement procedures:	To be registered by personnel at the entrance gate of the composting installation
Monitoring/recording frequency:	Register every truck delivery and determine the average for the year *y*
QA/QC procedures:	-
Any comment:	Applicable to Option 2 in the step “Determination of the quantity of waste composted”

VI. REFERENCES AND ANY OTHER INFORMATION

Perera, M.D.N., Hettiaratchi, J.P.A., Achari, G. (2002): A mathematical modeling approach to improve the point estimation of landfill gas surface emissions using the flux chamber technique. Journal of Environmental Engineering Science 1, 451–463

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History of the document

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