CLEAN DEVELOPMENT MECHANISM
SMALL-SCALE PROGRAM ACTIVITY DESIGN DOCUMENT FORM (CDM-SSC-CPA-DD)
Version 01

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NOTE:

(i) This form is for submission of CPAs that apply a small scale approved methodology using the provision of the proposed small scale CDM PoA.

(ii) The coordinating/managing entity shall prepare a CDM Small Scale Programme Activity Design Document (CDM-SSC-CPA-DD)[1,2] that is specified to the proposed PoA by using the provisions stated in the SSC PoA DD. At the time of requesting registration the SSC PoA DD must be accompanied by a CDM-SSC CPA-DD form that has been specified for the proposed SSC PoA, as well as by one completed CDM-SSC CPA-DD (using a real case). After the first CPA, every CPA that is added over time to the SSC PoA must submit a completed CDM-SSC CPA-DD.

[1] The latest version of the template form CDM-CPA-DD is available on the UNFCCC CDM web site in the reference/document section.

[2] At the time of requesting validation/registration, the coordinating managing entity is required to submit a completed CDM-POA-DD, the PoA specific CDM-CPA-DD, as well as one of such CDM-CPA-DD completed (using a real case).

SECTION A. General description of small scale CDM programme activity (CPA)

A.1. Title of the small-scale CPA:

South East Asia Biogas Programme of Activities : << >> Biogas to Electricity Project - CPA Number: << >>

Version < >
Date: << DD >>/ << MM>>/<< YYYY>>

A.2. Description of the small-scale CPA:

The SSC-CPA is << >>. The project is located << >>. The project is developed by << >>.

This SSC-CPA << >> is the << >> CDM programme activity under the South East Asia Biogas Programme of Activities (SEA Biogas PoA) coordinated by PT. Biogas Program International (PT. BPI). << >>, the CPA implementer, is the entity which would enter a contractual agreement with the Coordinating/Managing Entity for this CPA under this PoA.

The proposed SSC-CPA will be implemented at << name of site where SSC is implemented at >>. This project aims to reduce the methane emissions, a highly potent Greenhouse Gas (GHG) resulting from anaerobic digestion of << name of effluent >> in the << indicate pre-project scenario >> where there is currently no methane recovery, by introducing << indicate name of technology>>. The proposed SSC-CPA therefore involves an AMS III.H option << indicate the AMS III.H measure option or combination, i.e. 1 (a), 1(d), 1(e) or 1(f) that the SSC-CPA corresponds to>> type measure. There is currently no legislation in place in << host country name >> that limits the amount of biogas that can be released to the atmosphere.

This SSC-CPA utilizes the << effluent name >> that is produced in << type of agro-industrial facility where the effluent is produced in>>.

<< description of how the effluent used by the project is generated, how it is treated in the baseline scenario, how much effluent is typically obtained, e.g. per unit of front end feed to the agro-industrial production facility, the estimated amount of effluent produced per year and the COD loading, description of baseline and project scenario >>

It is estimated that the project activity will reduce methane emissions by << >> tCO_2e from being emitted to the atmosphere and in addition to this, reduce a further << >> tCO_2 by displacing electricity from the << >> grid that would have otherwise been generated by the combustion of fossil fuels connected to the grid.

A.3. Entity/individual responsible for the small-scale CPA:

<< >>.

A.4. Technical description of the small-scale CPA:

A.4.1. Identification of the small-scale CPA:

Wastewater Treatment Process

The project activity consists in the installation of << technology to be introduced by the proposed CPA >> to recover biogas resulting from the anaerobic decomposition of << effluent name >>

<< description of the technologies>> .The recovered biogas will be utilized for electricity generation in << number of biogas fired power unit and their capacity >> . By collecting and utilizing the recovered biogas, the project activity will reduce the CH_4 emissions that would have otherwise been emitted to the atmosphere from the <<pre-project scenario>>. In addition, the electricity generated by biogas will be exported to the grid and will displace CO_2 emissions resulting from the combustion of fossil fuels in grid connected power plants.

The existing wastewater treatment system sections, baseline system and the proposed SSC-CPA project activity are shown the Figure 1 below.

<< insert relevant diagram>>

Figure 1. Biogas production process diagram

The Project activity involves the introduction of an << technology to be applied by the project >> which comprises the following components:

<< Description of biogas production, treatment and transmission system to be introduced>>

Table 1 – Biogas Project Design parameters[3]

Description	Value	Unit
Type of technology	**<< >>**	**-**
<< effluent name >> treatment capacity	<< >>	m^3/d
<< include other relevant parameters and add corresponding number of rows as required>>	<< >>	<< >>
Biogas production rate	<< >>	m^3/d
Methane content	<< >>	%

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Biogas heating value	<< >>	kcal/m^3

Table 2 – << Power generation technology>> data[4]

Description	Value	Unit
Installed capacity of generator		MW
Number of Units		-

Electricity Consumption/Generation

It is estimated that the project will enable << >> MWh/yr of electricity to be generated, of which << >> MWh/yr will be exported to the grid. The balance, << >> MWh/yr is the amount of electricity that is estimated to be consumed by the project facilities..

Flaring system

<< *type of flare* >> will be installed as part of the project activity in order to combust the methane present in any excess biogas recovered.

A.4.1.1. Host Party:

The host party of this CPA is the << >> .

A.4.1.2. Geographic reference or other means of identification allowing the unique identification of the small-scale CPA (maximum one page):

Component	Details
Village/Sub-district/District	<< >>
Nearest Airport	<< >> .
Latitude and Longitude	<< decimal format>>
Source of wastewater	<< >>

The location of the project site is shown in the following map:
<< paste map >>

Figure 2 – Location map of the project site

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A.4.2. Duration of the small-scale CPA:

A.4.2.1. Starting date of the small-scale CPA:

<< >>
This starting date is not prior to the date at which the CDM-PoA-DD was first published for Global Stakeholder Consultation.

A.4.2.2. Expected operational lifetime of the small-scale CPA:

The expected operational lifetime of this CPA is << >> years.

A.4.3. Choice of the crediting period and related information:

<< >>.

A.4.3.1. Starting date of the crediting period:

The starting date of the crediting period is the registration date of the related CPA or the << date >> , whichever is later.

A.4.3.2. Length of the crediting period, first crediting period if the choice is renewable CP:

The length of the crediting period for this CPA is <<10/7 >> years (<< indicate if renewable or fixed crediting period applies>>). Duration of the crediting period of any CPA shall be limited to the end date of this PoA regardless of when the CPA was added.

A.4.4. Estimated amount of emission reductions over the chosen crediting period:

The estimated amount of emission reductions was calculated for this CPA from the equations described in the PoA-DD for the South East Asia Biogas Programme of Activities. The table below demonstrates the total emission reductions estimated for the first crediting period for this proposed CPA.

Table 3- Estimated amount of emission reductions over the chosen crediting period

As per AMS – III.H version 16

Years	Annual estimation of emission reductions in tonnes of $tCO_2.eq$
Year 1	<< >>
Year 2	<< >>
Year 3	<< >>
Year.....	<< >>

Total emission reductions (tonnes of CO_2-eq)	<< >>
Total number of crediting years	<< >>
Annual average over the crediting period of estimated reductions (tonnes of CO_2-eq)	<< >>

As per AMS – I.D version 17

Years	Annual estimation of emission reductions in tonnes of $tCO_2.eq$
Year 1	<< >>
Year 2	<< >>
Year 3	<< >>
Year.....	<< >>
Total emission reductions (tonnes of CO_2-eq)	<< >>
Total number of crediting years	<< >>
Annual average over the crediting period of estimated reductions (tonnes of CO_2-eq)	<< >>

As per combination of AMS-III.H version 16 and AMS-I.D version 17

Years	Annual estimation of emission reductions in tonnes of $tCO_2.eq$
Year 1	<< >>
Year 2	<< >>
Year 3	<< >>
Year	<< >>
Total emission reductions (tonnes of CO_2-eq)	<< >>
Total number of crediting years	<< >>
Annual average over the crediting period of estimated reductions (tonnes of CO_2-eq)	<< >>

A.4.5. Public funding of the CPA:

The proposed CDM-SSC-CPA << does not / does receive public funding (if so discuss how this does no result in the diversion of ODA >>

A.4.6. Information to confirm that the proposed small-scale CPA is not a de-bundled component

The proposed small-scale CPA is not a de-bundled component of a large scale project activity as there is no activity that satisfies both conditions (a) and (b) below:

(a) Has the same activity implementer as the proposed small scale CPA or has a coordinating or managing entity, which also manages a large scale PoA of the same technology/measure, and;

<< provide response >>

(b) The boundary is within 1 km of the boundary of the proposed small-scale CPA, at the closest point.

<< provide response if the answer to a) above is yes >>

Therefore, the proposed SSC-CPA is not a de-bundled component.

A.4.7. Confirmation that small-scale CPA is neither registered as an individual CDM project activity or is part of another Registered PoA:

The proposed CPA is not registered as an individual CDM project and is not part of another PoA.

SECTION B. Eligibility of small-scale CPA and Estimation of emissions reductions

B.1. Title and reference of the Registered PoA to which small-scale CPA is added:

South East Asia Biogas Programme of Activities
Reference of Registered PoA: << >>
PoA-DD version: << >>
Date: << >> (DD/MM/YYYY)

B.2. Justification of the why the small-scale CPA is eligible to be included in the Registered PoA :

The proposed SSC-CPA is eligible to be included to the South East Asia Biogas Programme of Activities because it fulfils all eligibility requirement of the SEA Biogas PoA:

Eligibility criteria	How the CPA complies with the eligibility criteria
Paragraph 1 Have a start date which is not prior to the date at which the CDM-PoA-DD was first published for Global Stakeholder Consultation on 11 August 2011. The start date CPA can be sourced from the contract which has been signed for the equipment (in case available); can also be checked during physical site visit for projects where construction has not yet started.	<< >>
Paragraph 2 Demonstrate that its geographical boundary is consistent with the geographical boundary set in the PoA-DD. The location (coordinate or	<< >>

village/town/district/province) of the project activity as per AMS-III.H and AMS-I.D shall meet the geographical boundary set in the PoA. A map to assess that the location of project activity lies within the geographical boundary set in the PoA will be provided and presented in CPA-DD.	
Paragraph 3 Demonstrate that the methane recovery component shall not exceed 60 ktCO_2e/yr and that the output capacity of the electricity production component does not exceed 15 MW and does comply with the applicability criteria of AMS-III.H version 16 and AMS-1.D version 17. The project must comprise measures that recover biogas from biogenic matter in wastewater as per AMS-III.H version 16. The electricity generated by the project activity will be exported to the grid to be in line with AMS-I.D. The crosschecking refers to the section E.2 of PoA-DD. All requirements listed in section E.2 are to be met.	<< >> Thus this project complies with AMS-III.H version 16 and AMS-I.D version 17. Applicability of its approved methodology is explained afterward.
Paragraph 4 Be implemented at a site where at the time of validation of the CPA there are neither any mandatory requirements in place, nor under discussion by the relevant regulatory authorities in the host country, that prohibit or limit in any way the amount of greenhouse gases that result from waste water treatment facilities from being released into the atmosphere. This can be verified by reviewing the regulation on effluent quality standard for industrial activity or any other relevant document.	<< >>
Paragraph 5 Have entered a cooperation agreement between the CPA implementer with the Coordinating/Managing Entity or CME (PT. Biogas Program International), authorizing the CME to include the CPA to participate in the PoA and therefore ceding the carbon rights to CME. Compliance with this eligibility criteria can be confirmed by means of the ERPA or contract with the CME.	<< >>
Paragraph 6	<< >>

Employ new biogas recovery equipment and new power plant. Sources of information that can be reviewed to confirm compliance with this eligibility criteria include but are not limited to proposals and data from for vendors of equipment, feasibility studies and the contract with the technology provider.	
Paragraph 7 Demonstrate that this project activity shall not lead to double counting of Emission Reductions by confirming that this project activity shall not be a part of any of the below mentioned category post approval of the project activity under CDM (1) standalone CDM project activity, (2) Bundled CDM project activity, (3) Another registered PoA. Compliance with this criteria can be confirmed by reviewing and assessing the information contained in the record keeping system and by applying the provisions in the Section A.4.4.1 of PoA-DD.	<< >>
Paragraph 8 Demonstrate the compliance with the EB 54 Annex 13 "Guidelines on assessment of de-bundling for SSC project activities". The CPA is considered as debundled if both conditions (a) and (b) below are satisfied: a. Has the same activity implementer as the proposed small scale CPA or has a coordinating or managing entity, which also manages a large scale PoA of the same technology/measure, and; b. The boundary is within 1 km of the boundary of the proposed small-scale CPA at the closest point Compliance with this eligibility criteria can be assessed and confirmed by analysing the information that is to be provided in the record keeping system and by following the procedure described in Section A.4.4.1 of PoA-DD.	<< >>
Paragraph 9 Have a crediting period that does not exceed the duration of the PoA. It can be crosschecked from the start date of the crediting period of the PoA and the length of the crediting period of the SSC-CPA.	<< >>

Paragraph 10 Undertake a local stakeholder consultation. It can be sourced from the minutes of stakeholder meeting.	<< >>
Paragraph 11 In the event that it receives public funding, clearly describe this in the SSC-CPA-DD and provide an affirmation indicating that such funding does not result in a diversion of Official Development Assistance (ODA). It can be sourced from the confirmation of non –ODA letter.	<< >>
Paragraph 12 If being implemented at a site where there is an existing waste water treatment facility, demonstrate that the IRR of the proposed CPA (without CDM revenue) shall be below its benchmark and that the sensitivity confirms this conclusion. Compliance with such eligibility criterion can be confirmed by reviewing the information and data used for assessing and demonstrating additionality of SSC-CPA as described as per section A.4.3 and E.5.1 of PoA-DD and presented in the CPA's corresponding CPA-DD.	<< >>
Paragraph 13 If being implemented at a site where there is a plan to increase the wastewater treatment capacity, or where no wastewater treatment facilities exist, the CPA shall be deemed additional, if as according to EB 61 Annex 21 and Attachment A of Appendix B of 4/CMP.1 Annex II it can be shown that the project activity would otherwise not have been implemented due to the existence of an investment barrier, and that therefore a financially more viable alternative to the project activity would have led to higher emissions. Compliance with such eligibility criterion can be confirmed by reviewing the information and data used for assessing and demonstrating additionality of SSC-CPA as described as per section A.4.3 and E.5.1 of PoA-DD and presented in the CPA's corresponding CPA-DD.	<< >>

Table B.2.1 Compliance with relevant methodologies

Technology/measure under AMS III.H version 16"Methane recovery in Wastewater Treatment"	**Project Activity**
1. This methodology comprises measures that recover biogas This methodology comprises measures that recover biogas from biogenic organic matter in wastewater by means of one, or a combination, of the following options: (a) Substitution of aerobic wastewater or sludge treatment systems with anaerobic systems with biogas recovery and combustion; (b) Introduction of anaerobic sludge treatment system with biogas recovery and combustion to a wastewater treatment plant without sludge treatment (c) Introduction of biogas recovery and combustion to a sludge treatment system (d) Introduction of biogas recovery and combustion to an anaerobic wastewater treatment system such as anaerobic reactor, lagoon, septic tank or an on site industrial plant;[5] (e) Introduction of anaerobic wastewater treatment with biogas recovery and combustion, with or without anaerobic sludge treatment, to an untreated wastewater stream; (f) Introduction of a sequential stage of wastewater treatment with biogas recovery and combustion, with or without sludge treatment, to an anaerobic wastewater treatment system without biogas recovery (e.g. introduction of treatment in an anaerobic reactor with biogas recovery as a sequential treatment step for the wastewater that is presently being treated in an anaerobic lagoon without methane recovery).	The project falls into category 1 << ( ) >> << Describe project activity and indicate if there are any sludge treatment systems present in the baseline scenario. If such is the case, clearly indicate such systems and ensure that they are not considered for the purpose of the baseline emissions calculation (this is done for the purpose of simplicity and conservativeness in estimation of such emissions)>> Option (1.b) and (1.c) described in paragraph 1 of AMS-III.H version 16 are not included under the PoA. << Justification for its compliance. Compliance with this criteria shall be assessed based on site visit and project description, obtained from e.g. FSR, technology supplier, etc>>

[5] Other technologies in Table 6.3 of Chapter 6: Wastewater Treatment and Discharge of 2006 IPCC Guidelines for National Greenhouse Gas Inventories are included.

2. In cases where baseline system is anaerobic lagoon the methodology is applicable if: (a) The lagoons are ponds with a depth greater than two meters, without aeration. The value for depth is obtained from engineering design documents, or through direct measurement, or by dividing the surface area by the total volume. If the lagoon filling level varies seasonally, the average of the highest and lowest levels may be taken; (b) Ambient temperature above 15°C, at least during part of the year, on a monthly average basis; (c) The minimum interval between two consecutive sludge removal events shall be 30 days.	<< >> << Justification for its compliance. Compliance with this criteria to be determined based or derived from e.g. wastewater treatment system diagrams, site measurements, wastewater system design documents, etc >>
3. The recovered biogas from the above measures may also be utilised for the following applications instead of combustion/flaring: (a) Thermal or mechanical,[6] electrical energy generation directly; (b) Thermal or mechanical, electrical energy generation after bottling of upgraded biogas, in this case additional guidance provided in Annex 1 shall be followed; or (c) Thermal or mechanical, electrical energy generation after upgrading and distribution, in this case additional guidance provided in Annex 1 shall be followed: (i) Upgrading and injection of biogas into a natural gas distribution grid with no significant transmission constraints; (ii) Upgrading and transportation of biogas via a dedicated piped network to a group of end users; or (iii) Upgrading and transportation of biogas (e.g. by trucks) to distribution points for end users.	<< >> Other applications (b) through (e) are not included under the PoA. << Justification for its compliance. Compliance with this applicability condition can be assessed by reviewing the project's proposed design, FSR, equipment or technology supplier's information>>.

[6] For example combusted in a prime mover such as an engine coupled to a machine such as grinding machine.

(d) Hydrogen production; (e) Use as fuel in transportation applications after upgrading.	
4. If the recovered biogas is used for project activities covered under paragraph 3 (a), that component of the project activity can use a corresponding methodology under Type I.	<< >> << Justification for its compliance. Compliance with this applicability condition can be assessed e.g. from the FSR, system design drawings, technology supplier or manufacturer's information>>.
5. For project activities covered under paragraph 3 (b), if bottles with upgraded biogas are sold outside the project boundary, the end-use of the biogas shall be ensured via a contract between the bottled biogas vendor and the end-user. No emission reductions may be claimed from the displacement of fuels from the end use of bottled biogas in such situations. If however the end use of the bottled biogas is included in the project boundary and is monitored during the crediting period CO_2 emissions avoided by the displacement of fossil fuel can be claimed under the corresponding Type I methodology, e.g. AMS-I.C "Thermal energy production with or without electricity".	<< >> Type (b) application described in paragraph 3 of AMS-III.H version 16 is not included under the PoA. << Justification for its compliance. Compliance with this applicability condition can be assessed e.g. from the FSR, system design drawings, technology supplier or manufacturer's information>>
6. For project activities covered under paragraph 3 (c) (i), emission reductions from the displacement of the use of natural gas are eligible under this methodology, provided the geographical extent of the natural gas distribution grid is within the host country boundaries.	<< >> Type (c) application described in paragraph 3 of AMS-III.H version 16 is not included under the PoA. << Justification for its compliance. Compliance with this applicability condition can be assessed e.g. from the FSR, system design drawings, technology supplier or manufacturer's information>>
7. For project activities covered under paragraph 3 (c) (ii), emission reductions for the displacement of the use of fuels can be claimed following the provision in the corresponding Type I methodology, e.g. AMS-I.C.	<< >> Type (c) application described in paragraph 3 of AMS-III.H version 16 is not included under the PoA. << Justification for its compliance. Compliance with this applicability condition can be assessed e.g. from the FSR, system

	design drawings, technology supplier or manufacturer's information>>
8. In particular, for the case of 3 (b) and (c) (iii), the physical leakage during storage and transportation of upgraded biogas, as well as the emissions from fossil fuel consumed by vehicles for transporting biogas shall be considered. Relevant procedures in paragraph 11 of Annex 1 of AMS-III.H "Methane recovery in wastewater treatment" shall be followed in this regard.	<< >> Type (c) application described in paragraph 3 of AMS-III.H version 16 is not included under the PoA. << Justification for its compliance. Compliance with this applicability condition can be assessed e.g. from the FSR, system design drawings, technology supplier or manufacturer's information>>
9. For project activities covered under paragraph 3 (b) and (c), this methodology is applicable if the upgraded methane content of the biogas is in accordance with relevant national regulations (where these exist) or, in the absence of national regulations, a minimum of 96% (by volume).	<< >> Type (b) and (c) applications described in paragraph 3 of AMS-III.H version 16 are not included under the PoA. << Justification for its compliance. Compliance with this applicability condition can be assessed e.g. from the FSR, system design drawings, technology supplier or manufacturer's information>>
10. If the recovered biogas is utilized for the production of hydrogen (project activities covered under paragraph 3 (d)), that component of the project activity shall use the corresponding methodology AMS-III.O "Hydrogen production using methane extracted from biogas".	<< >> Type (d) application described in paragraph 3 of AMS-III.H version 16 is not included under the PoA. << Justification for its compliance. Compliance with this applicability condition can be assessed e.g. from the FSR, system design drawings, technology supplier or manufacturer's information>>
11. If the recovered biogas is used for project activities covered under paragraph 3 (e), that component of the project activity shall use corresponding methodology AMS-III.AQ "Introduction of Bio-CNG in road transportation".	<< >> Type (e) application described in paragraph 3 of AMS-III.H version 16 is not included under the PoA. << Justification for its compliance. Compliance with this applicability condition can be assessed e.g. from the FSR, system design drawings, technology supplier or manufacturer's information>>
12. New facilities (Greenfield projects) and	<< >>

project activities involving a change of equipment resulting in a capacity addition of the wastewater or sludge treatment system compared to the designed capacity of the baseline treatment system are only eligible to apply this methodology if they comply with the relevant requirements in the "General guidelines to SSC CDM methodologies". In addition the requirements for demonstrating the remaining lifetime of the equipment replaced, as described in the general guidelines shall be followed.	<<Justification for its compliance. Compliance with this applicability condition can be assessed e.g. from the FSR, system design drawings, technology supplier or manufacturer's information>>
13. The location of the wastewater treatment plant as well as the source generating the wastewater shall be uniquely defined and described in the PDD.	<< >> << Justification for its compliance. Compliance with this applicability condition can be assessed by assessing the description given in section A.4.1.2>>
14. Measures are limited to those that result in aggregate emissions reductions of less than or equal to 60 kt CO_2 equivalent annually from all Type III components of the project activity	<< >>

Technology/measure under AMS I.D version 17 "Grid Connected Renewable Electricity Generation"	***Project Activity***
1. This methodology comprises renewable energy generation units, such as photovoltaic, hydro, tidal/wave, wind, geothermal and renewable biomass[7]: a) Supplying electricity to a national or a regional grid. b) Supplying electricity to an identified consumer facility via national/regional grid through a contractual arrangement such as wheeling	<< >> << Justification for its compliance Compliance with this applicability condition can be assessed by reviewing the emissions reductions calculations presented as part of the CPA DD submission to the DOE>>.
2. Illustration of respective situations under which each of the methodology (i.e AMS-I.D, AMS-I.F and AMS-I.A[8]) applies in included in Table 2	<< >> Only AMS-I.D is applicable under the PoA. << Justification for its compliance.

[7] Refer to EB 23, annex 18 or definition of renewable biomass

[8] AMS-I.D "Grid connected renewable electricity generation", AMS-I.F "Renewable electricity generation for captive use and mini-grid" and AMS-I.A "Electricity generation by the user".

	Compliance with this applicability condition can be assessed e.g. from feasibility study, technology supplier or manufacture's information, as proof of the intention to produce power for export to a grid>>
3. This methodology is applicable to project activities that (a) install a new power plant at a site where there was no renewable energy power plant operating prior to the implementation of the project activity (Greenfield plant); (b) involve a capacity addition[9]; (c) involve a retrofit[10] of (an) existing plant (s); or (d) involve a replacement[11] of (an) existing plant (s).	<< >> Other applications (b), (c) and (d) are not applicable under the PoA <<Justification for its compliance Compliance with this applicability condition can be assessed e.g. from the FSR, system design drawings, technology supplier or manufacturer's information, as proof of the intention to produce power for export to a grid, in conjunction with visit to the actual site >>.
4. Hydro power plants with reservoirs that satisfy at least one of the following conditions are eligible to apply this methodology: • The project activity is implemented in an existing reservoir with no change in the volume of reservoir; • 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;	<< >> A hydro power plant is not included under the PoA << Justification for its compliance Compliance with this applicability condition can be assessed e.g. from the FSR, system design drawings, technology supplier or manufacturer's description of the project>>.

[9] A capacity addition is an increase in the installed power generation capacity of an existing power plant through: (i) The installation of a new power plant besides the existing power plant/units; or (ii) The installation of new power units, additional to the existing power plant/units. The existing power plant/units continue to operate after the implementation of the project activity

[10] Retrofit (or rehabilitation or refurbishment). It involves an investment to repair or modify an existing power plant/unit, with the purpose to increase the efficiency, performance or power generation capacity of the plant, without adding new power plants or units, or to resume the operation of closed (mothballed) power plants. A retrofit restores the installed power generation capacity to or above its original level.
Retrofits shall only include measures that involve capital investments and not regular maintenance or housekeeping measures.

[11] Replacement. It involves investment in a new power plant or unit that replaces one or several existing unit(s) at the existing power plant. The installed capacity of the new plant or unit is equal to or higher than the plant or unit that was replaced.

• 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	
5.If the new unit 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 new unit co-fires fossil fuel[12], the capacity of the entire unit shall not exceed the limit of 15 MW.	<< >>. << Justification for its compliance Compliance with this applicability condition can be assessed e.g. from the FSR, technology supplier or manufacturer's information>>.
6.Combined heat and power (co-generation) systems are not eligible under this category.	<< >> Co-generation is not included under the PoA. << Justification for its compliance Compliance with this applicability condition can be assessed e.g. from the FSR, system design drawings, technology supplier or manufacturer's information>>.
7.In the case of project activities that involve the addition of renewable energy generation units at an existing renewable power generation facility, the added capacity of the units added by the project should be lower than 15 MW and should be physically distinct[13] from the existing units	<< >> The addition of renewable energy generation units at an existing renewable power generation facility is not included under the PoA. << Justification for its compliance Compliance with this applicability condition can be assessed e.g. from the FSR, system design drawings, technology supplier or manufacture's information describing the technology and source of energy used to generate power>>.
8. In the case of retrofit or replacement, to qualify as a small-scale project, the total output of the retrofitted or replacement unit shall not exceed the limit of 15 MW.	<< >>. A retrofit or replacement project is not included under the PoA.

[12] A co-fired system uses both fossil and renewable fuels.

[13] 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 addition of a steam turbine to an existing combustion turbine to create a combined cycle unit would not be considered "physically distinct".

	<< Justification for its compliance Compliance with this applicability condition can be assessed e.g. from the FSR, technology supplier or manufacture's information>>.

B.3. Assessment and demonstration of additionality of the small-scale CPA , as per eligibility criteria listed in the Registered PoA:

< If the proposed SSC-CPA involves the implementation of a project at a site where a waste water treatment facility exists apply a Benchmark Investment analysis indicating the basis upon which it is made (pre or post tax) and the choice of benchmark type used (Commercial Lending rate, WACC) and complete the relevant sections below. Otherwise (if the proposed project is a Greenfield or a capacity expansion project) apply EB 61 annex 21 paragraph 5 and attachment A of Appendix B of 4/CMP.1 Annex II and demonstrate that the SSC-CPA would otherwise not have been implemented due to the existence of an investment barrier, and that therefore a financially more viable alternative to the project activity would have led to higher emissions as specified in the PoA-DD >>

<< The following section is applicable when the additionality is assessed and demonstrated using a Benchmark Investment analysis>>

Additionality is assessed and demonstrated by applying << state whether pre-tax or post-tax IRR >> and comparing the obtained value with a << state the benchmark used >> based on the approach described in the SEA Biogas PoA-DD.

Investment analysis

The proposed CPA would not have occurred without CDM income due the investment barrier, in accordance with section E.5.2 of the SEA Biogas PoA-DD:

Pursuant to the PoA-DD, the Project IRR calculations will be based on a list of economic parameters provided by the CPA implementer that were available at the date of the investment decision. This list of parameters includes:

Table 4 - Parameters for IRR calculation

PROJECT DATA			
	Unit	**Value**	**References**
Technical lifetime	Year	<< >>	<< >>
Start date		<<DD/MM/YYYY>>	<< >>
Investment decision date		<<DD/MM/YYYY>>	<< >>
Construction start date	Year	<< >>	<< >>
Date project starts	Year	<< >>	<< >>

operating			
FINANCIAL PARAMETERS			
Unit			**References**
Total amount of electricity sold to the grid	MWh/y	<< >>	<< >>
Electricity price	Currency unit/kWh	<< >>	<< >>
Inflation rate	% per year	<< >>	<< >>
Exchange Rate	Foreign currency unit/applied currency unit	<< >>	<< >>
COSTS AND EQUIPMENT			
Unit			**References**
Total investment	Currency unit	<< >>	<< >>
Operation & Maintenance cost	Currency unit /year	<< >>	<< >>
Insurance	% of Capex p.a.	<< >>	<< >>
Tax (post-tax IRR)	% p.a	<< >>	<< >>
Depreciation (post-tax IRR)	%	<< >>	<< >>

The assessment period is chosen to be equal to the lifetime of the installed equipment; equal to << >> years.

<< discuss the value of tariff to be applied for the electricity sold to the grid >>

Inserting these values in the investment analysis models yields a project **IRR of << >> %**.

Benchmark calculation

The benchmark used to compare the return of the project has been chosen as the << state whether pre-tax or post-tax WACC or commercial lending rate>>. In order to determine the << state benchmark >>, the <<indicate cost of equity or commercial lending rate >> has been determined by << indicate how the cost of equity or commercial lending rate is to be determined >>. The list of parameters used to estimate the << state benchmark >> is provided below:

Table 5 - Parameters for WACC calculation

Parameters	Description	Source and choice of the value	value
RFR	Risk Free Rate in a mature equity market	. Lowest rate between the host country and government bond	<< >> %

		and U.S. long –term government bond. U.S. long-term government bond is considered as risk free instrument. Bond rate is taken as the 6 month average prior to the investment decision and for a duration equal to the technical lifetime of the project activity Source: http://www.treasury.gov/resource-center/data-chart-center/interest-rates/Pages/TextView.aspx?data=yieldYear&year=2010	
ß unlevered	Beta (unlevered)	Total Beta (*Unlevered*) from Damadoran (Stern University) for the relevant industrial sector; most recent year data before the investment decision was made. http://pages.stern.nyu.edu/~adamodar/ "Total Beta by industry sector"	<< >>
RP	The Total Risk Premium	The Total Risk Premium includes an Equity Risk Premium and a Country Risk Premium: The reason behind this premium stems from the risk-return trade off, in which a higher rate of return is required to entice investors to take on riskier investments. These are risk premiums estimates for other countries outside of the U.S. based upon the country ratings assigned by Moodys. http://pages.stern.nyu.edu/~adamodar/ "Risk Premium for other Markets". Value taken for << indicate host country name>> .	<< >>%

SP	Size Premium	<< >>	<< >>
CD	Cost of Debt.	<< >>	<< >> %
%Debt	% Finance from debt	<< >>	<< >>%
%Equity	% Finance from equity	<< >>	<< >> %
D/E	Debt to equity ratio	Calculation	<< >>
CE	Cost of Equity	Calculated as per CAPM	<< >>
T	Tax rate	<< >>	<< >>
Date of performing financial analysis	DD/MM/YYYY	<< >>	<< >>

As per the date of investment the << state benchmark **>>** has been determined to be << >> %.

The results of the financial analysis show that the project is not financially viable. The Project IRR without CDM revenues is below the << state benchmark >>.

Sensitivity analysis

Investment analysis shall include a sensitivity analysis that shows whether the conclusion regarding the financial/economic attractiveness is robust to reasonable variations in the critical assumptions. The investment analysis provides a valid argument in favour of additionality only if it consistently supports (for a realistic range of assumptions) the conclusion that the project activity is unlikely to be financially/economically attractive.

According to the "Guidance on the assessment of investment analysis", version 05, paragraph 20, only variables, including the initial investment cost, that constitutes more than 20% of either total project cost or total project revenue should be subjected to reasonable variation (all parameters varied need not necessarily be subjected to both negative and positive variations of the same magnitude).

With reference to the "Guidance on the assessment of investment analysis" version 05, paragraph 21, as a general point of departure variations in the sensitivity analysis should at least cover a range of +10% and -10%. A sensitivity analysis was undertaken by varying the most sensitive parameters by +/- << >> %, as summarized in the table below.

The results in the table below show that << discuss the results the of sensitivity analysis >>.

Table 6 - Sensitivity analysis

Factor	Variation		
	-10%	0%	10%
Total investment	<< >>%	<< >>%	<< >>%
O&M Cost	<< >>%	<< >>%	<< >>%
Revenues	<< >>%	<< >>%	<< >>%
Benchmark	<< >>%		

The analysis shows that << provide the conclusion that stems from carrying out the sensitivity analysis>>. The CDM enables an estimated additional revenue stream to be generated of around << XXX >> Euros/yr which will alleviate the investment barrier of the project activity.

B.4. Description of the sources and gases included in the project boundary and proof that the small-scale CPA is located within the geographical boundary of the registered PoA.

The gases and sources relevant to the Project are listed below based on AMS III.H Version 16:

Table 7 - Summary of Gases and Sources included in project boundary

	Source	Gas	Included ?	Justification / Explanation
Baseline	Wastewater treatment process	CO_2	No	CO_2 emissions from the decomposition of organic waste are not accounted for.
		CH_4	Yes	The treatment of wastewater under the baseline scenario which consist of: << describe the sources of methane in the baseline condition as per AMS III.H Version 16, e.g. that need to be considered>> (i) Emission from the baseline wastewater treatment system affected by the project activity (ii) Emission from degradable organic carbon in treated wastewater discharged (iii) Emission from anaerobic decay of the final sludge produced by the baseline wastewater treatment system. *If the sludge is controlled combusted, disposed in a landfill with biogas recovery, or used for soil application in baseline scenario, this term shall be neglected. Methane emissions resulting from baseline sludge treatment systems that are affected by the project activity are not taken into account for the purpose of simplicity and conservativeness in the determination of*

				baseline emissions.
		N_2O	No	Excluded for simplification and conservativeness.
	Electricity and/or fossil fuel consumption	CO_2	Yes	Where applicable, emissions from the electricity consumption that would have been consumed in the absence of the project activity and which would have been sourced from the grid or from fossil fuel based captive power plant. << add justification in case excluded >>
		CH_4	No	Excluded for simplification and conservativeness.
		N_2O	No	Excluded for simplification and conservativeness.
Project Activity	Wastewater treatment processes	CO_2	No	CO_2 emissions from the decomposition of organic waste are not accounted for.
		CH_4	Yes	The treatment of wastewater under the project scenario which may consist of : << list the sources of methane emissions in the project activity as per AMS III.H Version 16, e.g. that may need to be considered>> (i) Emission from wastewater treatment system affected by the project (ii) Emission from sludge treatment system affected by the project activity, and not equipped with biogas recovery (iii) Emission from degradable organic carbon in treated wastewater discharged (iv) Emission from anaerobic decay of the final sludge produced in year *y*. Applicable only if the sludge is not controlled combusted, not disposed in a landfill with biogas recovery, or not used for soil application in aerobic conditions in the project activity. (v) Emission from biogas released in capture system (vi) Emission due to incomplete flaring system (vii) Emission from biomass stored under anaerobic conditions
		N_2O	No	Excluded for simplification and conservativeness
	Electricity from on-site electricity use	CO_2	Yes	<< indicate the sources of emissions associated with the consumption of electricity by the project activity>>

				Electricity consumed by the project activity if provided by the biogas power plant shall be considered to have a zero emission factor. If electricity from grid and/or from fossil fuel captive power plant is consumed to run the project activity, these emissions source shall be included
		CH_4	No	Excluded for simplification. This emission source is assumed to be very small
		N_2O	No	Excluded for simplification. This emission source is assumed to be very small

The gases and sources relevant to the Project are listed below based on the AMS I.D methodology:

Source		Gas	Included?	Justification/Explanation
Baseline	<< name of grid >> electricity production	CO_2	Yes	According to AMS I.D only CO_2 emission from electricity generation should be accounted
		CH_4	No	According to AMS I.D
		N_2O	No	According to AMS I.D
Project Activity	Electricity consumption in the project activity	CO_2	Yes	According to AMS I.D
		CH_4	No	According to AMS I.D
		N_2O	No	According to AMS I.D
	On-site fossil fuel consumption	CO_2	Yes	Where applicable, and in accordance with AMS I.D version 17 << add justification if excluded >>

This SSC-CPA is located within the boundaries of the registered PoA as specified in Section A.4.1.2.

B.5. Emission reductions:

B.5.1. Data and parameters that are available at validation:

Data / Parameter:	$\eta_{COD,BL,i}$
Data unit:	%
Description:	The COD removal efficiency of the baseline treatment system i *here:* i = for <<indicate baseline wastewater treatment system(s)>>
Source of data used:	<< >>
Value applied:	<< >>
Justification of the choice of data or description of measurement methods	<< >>

and procedures actually applied:	
Any comment:	This parameter may be used to calculate $COD_{ww,discharge,BL,y}$ ex-post.

Data / Parameter:	**$MCF_{ww,treatment,BL,i}$**
Data unit:	-
Description:	The methane correction factor for baseline wastewater treatment system *i*
Source of data used:	AMS-III.H version 16: Table III.H.1.
Value applied:	<< >>
Justification of the choice of data or description of measurement methods and procedures actually applied:	<< Provide justification of choice and indicate baseline waste water treatment and discharge pathway or system >>
Any comment:	-

Data / Parameter:	**$MCF_{ww,treatment,PJ,k}$**
Data unit:	-
Description:	The methane correction factor for project wastewater treatment system *k*
Source of data used:	AMS-III.H version 16: Table III.H.1.
Value applied:	<< >>
Justification of the choice of data or description of measurement methods and procedures actually applied:	<< provide justification of choice and indicate project wastewater treatment and discharge pathway or system >>
Any comment:	-

Data / Parameter:	**$B_{o,ww}$**
Data unit:	$kgCH_4/kgCOD$
Description:	Methane producing capacity of the wastewater
Source of data used:	AMS-III.H version 16 Paragraph 20
Value applied:	0.25
Justification of the choice of data or description of measurement methods and procedures actually applied:	Corrected IPCC (2006) default value.
Any comment:	-

Data / Parameter:	UF_{BL}
Data unit:	-
Description:	Model correction factor to account model uncertainties
Source of data used:	AMS-III.H version 16 Paragraph 20 The value is based on Reference: FCCC/SBSTA/2003/10/Add.2, page 25
Value applied:	0.89
Justification of the choice of data or description of measurement methods and procedures actually applied:	This is default value applied to estimate the methane emission from the baseline wastewater treatment system affected by the project.
Any comment:	-

Data / Parameter:	UF_{PJ}
Data unit:	-
Description:	Model correction factor to account for model uncertainties
Source of data used:	AMS-III.H version 16 Paragraph 30
Value applied:	1.12
Justification of the choice of data or description of measurement methods and procedures actually applied:	This is default value applied to estimate the methane emission from the wastewater treatment system affected by the project.
Any comment:	-

Data / Parameter:	GWP_{CH4}
Data unit:	tCO_2e/tCH_4
Description:	Global warming potential (GWP) of methane
Source of data used:	AMS-III.H version 16
Value applied:	21
Justification of the choice of data or description of measurement methods and procedures actually applied:	As per meth AMS-III.H version 16
Any comment:	-

Data / Parameter:	$MCF_{s,treatment,PJ,l}$
Data unit:	-
Description:	Methane correction factor for the project sludge treatment system *l*
Source of data used:	AMS-III.H version 16; Table III.H.1

Value applied:	<< >>
Justification of the choice of data or description of measurement methods and procedures actually applied:	
Any comment:	This parameter is used to calculate methane emissions from sludge treatment systems affected by the project activity and not equipped with biogas recovery ($PE_{s,treatment,y}$) (in case existent). <<indicate this parameter only if applicable to the CPA>>

Data / Parameter:	**DOC_s**
Data unit:	-
Description:	Degradable organic content of the untreated sludge generated in the year *y* (fraction, dry basis).
Source of data used:	AMS-III.H version 16
Value applied:	<< >>
Justification of the choice of data or description of measurement methods and procedures actually applied:	Default values of 0.5 for domestic sludge; (wet basis, considering a default dry matter content of 10%) or 0.09 for industrial sludge (wet basis, assuming dry matter content of 35%), were corrected for dry basis.
Any comment:	This parameter is used to calculate methane emissions from sludge treatment systems affected by the project activity and not equipped with biogas recovery in year y ($PE_{s,treatment,y}$) and/or methane emissions from anaerobic decay of the final sludge produced in year y ($PE_{s,final,y}$) (in case existent). <<indicate this parameter only if applicable to the CPA>>

Data / Parameter:	**DOC_F**
Data unit:	-
Description:	Fraction of DOC dissimilated to biogas (IPCC default value)
Source of data used:	AMS-III.H version 16
Value applied:	0.5
Justification of the choice of data or description of measurement methods and procedures actually applied:	
Any comment:	This parameter is used to calculate methane emissions from sludge treatment systems affected by the project activity and not equipped

	with biogas recovery in year y ($PE_{s,treatment,y}$) and/or methane emissions from anaerobic decay of the final sludge produced in year y ($PE_{s,final,y}$) (in case existent). <<indicate this parameter only if applicable to the CPA>>

Data / Parameter:	**F**
Data unit:	-
Description:	Fraction of CH_4 in biogas (IPCC default value)
Source of data used:	AMS-III.H version 16
Value applied:	0.5
Justification of the choice of data or description of measurement methods and procedures actually applied:	
Any comment:	This parameter is used to calculate methane emissions from sludge treatment systems affected by the project activity and not equipped with biogas recovery in year y ($PE_{s,treatment,y}$) and/or methane emissions from anaerobic decay of the final sludge produced in year y ($PE_{s,final,y}$) (in case existent). <<indicate this parameter only if applicable to the CPA>>

Data / Parameter:	**$EF_{composting}$**
Data unit:	t CH_4/t waste treated
Description:	Emission factor for composting organic waste
Source of data used:	AMS-III.H version 16
Value applied:	0.01 (dry weight basis)
Justification of the choice of data or description of measurement methods and procedures actually applied:	Emission factors can be based on facility/site-specific measurements, country specific values or IPCC default values (Table 4.1 chapter 4, volume 5, 2006 IPCC Guidelines for National Greenhouses Gas Inventories). IPCC default value is 0.01 tCH_4/t waste treated on a dry weight basis.
Any comment:	This parameter is used to calculate methane emissions from sludge treatment systems affected by the project activity and not equipped with biogas recovery in year y ($PE_{s,treatment,y}$) and where the sludge is composted (in case existent). <<indicate this parameter only if applicable to the CPA>>

Data / Parameter:	**$MCF_{ww,BL,discharge}$**

Data unit:	-
Description:	Methane correction factor based on discharged pathway in the baseline situation of the wastewater
Source of data used:	AMS-III.H version 16: Table III.H.1.
Value applied:	0.1
Justification of the choice of data or description of measurement methods and procedures actually applied:	IPCC default value for Methane Correction Factor (MCF) for discharged of wastewater to sea, river or lake
Any comment:	-

Data / Parameter:	**$MCF_{ww,PJ,discharge}$**
Data unit:	-
Description:	Methane correction factor based on discharge pathway in the project scenario
Source of data used:	AMS-III.H version 16: Table III.H.1.
Value applied:	0.1
Justification of the choice of data or description of measurement methods and procedures actually applied:	IPCC default value for Methane Correction Factor (MCF) for discharged of wastewater to sea, river or lake
Any comment:	-

Data / Parameter:	**$MCF_{s,BL,final}$**
Data unit:	-
Description:	Methane correction factor of the disposal site that receives the final sludge in the baseline situation
Source of data used:	AMS-III.H version 16; table III.H.1
Value applied:	Estimated as per the procedures described in the "Emissions from solid waste disposal sites" Version 06.01
Justification of the choice of data or description of measurement methods and procedures actually applied:	Application A of the tool is selected to determine the $MCF_{s,BL,final}$
Any comment:	This parameter is used to calculate baseline methane emissions from anaerobic decay of the final sludge ($BE_{s,final,y}$) (in case existent) <<indicate this parameter only if applicable to the CPA>>

Data / Parameter:	$MCF_{s,PJ,final}$
Data unit:	-
Description:	Methane correction factor of the disposal site that receives the final sludge in the project situation
Source of data used:	AMS-III.H version 16; table III.H.1
Value applied:	Estimated as per the procedures described in the "Emissions from solid waste disposal sites" Version 06.01
Justification of the choice of data or description of measurement methods and procedures actually applied:	Application A of the tool is selected to determine the $MCF_{s,PJ,final}$
Any comment:	This parameter is used to calculate project methane emissions from anaerobic decay of the final sludge ($PE_{s,final,y}$) (in case existent) <<indicate this parameter only if applicable to the CPA>>

Data / Parameter:	**CFE_{ww}**
Data unit:	-
Description:	Capture efficiency of the biogas recovery equipment in the wastewater treatment system
Source of data used:	AMS-III.H version 16
Value applied:	0.9
Justification of the choice of data or description of measurement methods and procedures actually applied:	This is default value applied to estimate the fugitive emission through capture inefficiencies in the anaerobic wastewater treatment system in the year y
Any comment:	-

Data / Parameter:	**$EF_{CO2, grid, y}$**
Data unit:	tCO_2/MWh
Description:	CO_2 emission factor of the grid in year *y*
Source of data used:	<< indicate whether host country DNA, Power Companies, other Government or public authorities>>
Value applied:	<<For SSC CPAs exporting electricity to the Sumatera grid the following value shall be applied **Grid** | **$EF_{CO2,grid,y}$** Sumatera | 0.743 The value above shall be applied for *ex-ante* calculations and will

	remain fixed during the first crediting period of the PoA. SSC-CPAs that displace electricity from the Sumatera grid shall apply this value ex-ante and it shall remain fixed for the first crediting period of such SSC-CPAs. The ex-ante grid emission factor above will be revised along with renewal of the crediting period of the PoA. SSC-CPAs that displace electricity from the Sumatera grid that are newly included or that renew their crediting period shall always apply the value given in the corresponding table of the PoA-DD that is available (valid) at the particular time. For SSC-CPAs connected to grids other than the Sumatera grid, the value of the grid emission factor will be provided in the corresponding SSC-CPA-DD and calculated on CPA level as per the "Tool to calculate the emission factor for an electricity system", version 02.2.1 by using available data from the Host Country DNA or self-calculated by the PPs using PT. PLN's published data or other publicly-made documentation. >>
Justification of the choice of data or description of measurement methods and procedures actually applied:	<< The emission factor from grid where the project is connected to. Indicate source and choice of data >>
Any comment:	

Data / Parameter:	$\rho_{CH4,n}$
Data unit:	kg/m^3
Description:	Density of methane at normal conditions
Source of data used:	Default value
Value applied:	0.716
Justification of the choice of data or description of measurement methods and procedures actually applied:	As per "Tool to determine project emissions from flaring gases containing methane" version 01
Any comment:	

Data / Parameter:	SGR_{BL}
Data unit:	-
Description:	Sludge generation ratio of the wastewater treatment plant in the baseline scenario (tonne of dry matter in sludge/t COD removed).
Source of data used:	<< >>
Value applied:	<< >>

Justification of the choice of data or description of measurement methods and procedures actually applied:	This ratio will be determined as per paragraph 26,27 or 28 of approved methodology AMS-III.H version 16
Any comment:	This parameter is used to calculate methane emissions from anaerobic decay of the final sludge ($BE_{s,final,y}$) (in case existent). It is thus used to calculate $S_{final,BL,y}$ ex-post as per AMS-III.H. <<indicate this parameter only if applicable to the CPA>>

Other data and parameters to be reported in the SSC-CPA-DD

Additional data and parameter tables shall be included to the SSC-CPA-DD form to describe any ex ante Data/Parameter that may be required as part of the application of a given tool to a particular SSC-CPA.

Data / Parameter:	
Data unit:	
Description:	Parameters related to emissions from electricity consumption in year *y*
Source of data used:	Described at applicable CPA
Value applied:	Described at applicable CPA
Justification of the choice of data or description of measurement methods and procedures actually applied:	As per the procedure in the "tool to calculate baseline, project and/or leakage emissions from electricity consumption" version 01. Alternatively it shall be assumed that all relevant electrical equipment operate at full rated capacity, plus 10% to account for distribution losses, for 8760 hours per annum.
Any comment:	shall be described as per the corresponding tool, whenever such tool is applied to a Specific SSC-CPA

Data / Parameter:	
Data unit:	
Description:	Parameters related to emissions from fossil fuel consumption in year *y*
Source of data used:	Described at applicable CPA
Value applied:	Described at applicable CPA
Justification of the choice of data or description of measurement methods and procedures actually applied:	As per the procedure in the "tool to calculate project or leakage CO_2 emissions from fossil fuel combustion" version 02.
Any comment:	shall be described as per the corresponding tool, whenever such tool is applied to a Specific SSC-CPA

Data / Parameter:	
Data unit:	
Description:	Parameters related to the calculation of methane emissions from biomass stored under anaerobic conditions which does not occur in the baseline situation
Source of data used:	Described at applicable CPA
Value applied:	Described at applicable CPA
Justification of the choice of data or description of measurement methods and procedures actually applied:	As per the tool "Emissions from solid waste disposal sites" version 06.0.1.
Any comment:	shall be described as per the corresponding tool, whenever such tool is applied to a Specific SSC-CPA

Data / Parameter:	
Data unit:	
Description:	Parameters related to the determination of the remaining lifetime of equipment
Source of data used:	Described at applicable CPA
Value applied:	Described at applicable CPA
Justification of the choice of data or description of measurement methods and procedures actually applied:	As per the procedure in the "tool to determine the remaining lifetime of equipment" version 01.
Any comment:	shall be described as per the corresponding tool, whenever such tool is applied to a Specific CPA-DD

B.5.2. Ex-ante calculation of emission reductions:

The total emissions reduction of the CPA is calculated according to methodology AMS III.H version 16 and AMS I.D version 17. The electricity generated by the project activity will be exported to the << name of grid >> to which the project is connected. << indicate the source of information from which the CM is determined >>

Wastewater Treatment Process (AMS III.H Version 16)

A. Baseline Emissions

$$BE_y = \{BE_{power,y} + BE_{ww,treatment,y} + BE_{ww,discharge,y} + BE_{s,final,y}\}$$

= << >> tCO_2/y + << >> tCO_2/y + << >> tCO_2/y + << >> tCO_2/y

= << >> tCO_2e/y

A.1 Baseline emissions from electricity and fossil fuel consumption ($BE_{power,y}$)

<< where applicable determined as per the procedures described in the "Tool to calculate baseline, project and/or leakage emissions from electricity consumption" version 01 and "Tool to calculate project or leakage CO_2 emissions from fossil fuel combustion" version 02, respectively>>.

$BE_{power,y}$ = << >> tCO_2e/y.

A.2 Methane emissions from the baseline wastewater treatment systems affected by the project ($BE_{ww,treatment,y}$)

<< describe determination of baseline COD removal efficiency >>.

$$BE_{ww,treatment,y} = \sum_i (Q_{ww,i,y} * COD_{inflow,i,y} * \eta_{COD,BL,i} * MCF_{ww,treatment,BL,i}) * B_{o,ww} * UF_{BL} * GWP_{CH4}$$

$$= \sum (<< >> m^3/y \times << >> kgCOD/m^3 \times << >> \% \times << >>) \times 0.25\ kgCH_4/kg\ COD \times 0.89 \times 21\ tCO_2/tCH_4$$

= << >> tCO_2e/y

<< If applicable, indicate that for ex-post baseline emission calculation, the monitoring parameter $COD_{ww,untreated,y}$ refers to the baseline COD of wastewater inflow ($COD_{inflow,i,y}$) where i is index for anaerobic baseline wastewater treatment system. >>

A.3 Methane emissions from degradable organic carbon in treated wastewater discharged ($BE_{ww,discharge,y}$)

<< describe determination of $COD_{ww,discharge,BL,y}$ ex-ante and ex-post >>

To determine $COD_{ww,discharge,BL,y}$ if the baseline treatmet system (s) is different from the treatment system (s) in the proejct scenario, the monitored values of the COD inflow during crediting period will be used to calculate the baseline emission *ex-post*. The outflow COD if the baseline systems will be stimated using the removal efficiency of the baseline treatment systems, estimated as per paragraphs 26, 27 or 28 of approved methodology AMS-III.H version 16. *Ex-post* the parameter $COD_{ww,dicharge,BL,y}$ would thus be calculated as follows:

$$COD_{ww,discharge,BL,y} = \Pi_i (1 - \eta_{COD,BL,i}) * COD_{ww,untreated,y}$$

$$BE_{ww,discharge,y} = Q_{ww,y} * GWP_{CH4} * B_{o,ww} * UF_{BL} * COD_{ww,discharge,BL,y} * MCF_{ww,BL,discharge}$$

= << >> $m^3/y \times 21\ tCO_2/tCH_4 \times 0.25\ kgCH_4/kg\ COD \times 0.89 \times << >>\ kgCOD/m^3 \times << >>$

= << >> tCO_2e/y

A.4 Methane emissions from anaerobic decay of the final sludge produces ($BE_{s,final,y}$)

$$BE_{s,final,y} = S_{final,BL,y} * DOC_s * UF_{BL} * MCF_{s,BL,final} * DOC_F * F * 16/12 * GWP_{CH4}$$

= << >> t x << >> x 0.89 x << >> x 0.5 x 0.5 x 16/12 x 21 tCO_2/tCH_4

= << >> tCO_2e/y

<<In SSC CPAs where the baseline wastewater treatment system is different from the project system, this parameter will be estimated using the monitored amount of dry matter in the final sludge generated by the project activity ($S_{final,PJ,y}$) corrected for the sludge generation ratios of the project and baseline systems as per equation 5 of AMS III.H Version 16, i.e.

$$S_{final,BL,y} = S_{final,PJ,y} * \frac{SGR_{BL}}{SGR_{PJ}} >>$$

B. Project Activity Emissions

$$PE_y = \begin{Bmatrix} PE_{power,y} + PE_{ww,treatment,y} + PE_{s,treatment,y} + PE_{ww,discharge,y} + PE_{s,final,y} + \\ PE_{fugitive,y} + PE_{biomass,y} + PE_{flaring,y} \end{Bmatrix}$$

= << >> tCO_2e/y + << >> tCO_2e/y + << >> tCO_2e/y + << >> tCO_2e/y + << >> tCO_2e/y + << >> tCO_2e/y + << >> tCO_2e/y

= << >> tCO_2e/y

B.1 Project emissions from electricity and fossil fuel consumption ($PE_{power,y}$)

<< to be determined as per "Tool to calculate baseline, project and/or leakage emissions from electricity consumption" version 01 and "Tool to calculate project or leakage CO_2 emissions from fossil fuel combustion", version 02>>

$PE_{power,y}$ = << >> tCO_2e/y

B.2 Methane emissions from wastewater treatment systems affected by the project activity ($PE_{ww,treatment,y}$) :

<< In case aerobic well-managed wastewater treatment system is existent in project scenario, indicate that project emissions from aerobic treatment system are zero because the MCF of aerobic treatment (well managed) is zero. >>

$$PE_{ww,treatment,y} = \sum_k (Q_{ww,k,y} * COD_{inflow,k,y} * \eta_{COD,PJ,k,y} * MCF_{ww,treatment,PJ,k}) * B_{o,ww} * UF_{PJ} * GWP_{CH4}$$

<< In SSC-CPA, further description on how to determine the chemical oxygen demand removal efficiency of the project wastewater treatment system *k* in year *y* ($\eta_{COD,PJ,k,y}$) shall be provided.

If an aerobic pond exists in the wastewater treatment system of the SSC-CPA, then the COD removal efficiency of the project wastewater treatment system *k* in year *y* is given by:

$$\eta_{COD,PJ,k,y} = (COD_{ww,treated,y} - COD_{ww,outflow,k,y}) / COD_{ww,treated,y}$$

Therefore, by substituting the above equation for $\eta_{COD,PJ,k,y}$, the project emissions from the wastewater treatment system affected by the project activity where an aerobic pond exists can be expressed as follows: :

$$PE_{ww,treatment,y} = \sum_k (Q_{ww,k,y} * (COD_{ww,treated,y} - COD_{ww,outflow,k,y}) * MCF_{ww,treatment,PJ,k}) * B_{o,ww} * UF_{PJ} * GWP_{CH4}$$

If on the other hand, an aerobic pond does not exist in the wastewater treatment system of the SSC-CPA, then:

$$COD_{ww,outflow,k,y} = COD_{ww,discharge,PJ,y}$$

The COD removal efficiency of the project wastewater treatment system *k* in year *y* is given by:

$$\eta_{COD,PJ,k,y} = (COD_{ww,treated,y} - COD_{ww,discharge,PJ,y}) / COD_{ww,treated,y}$$

Therefore, by substituting the above equation for $\eta_{COD,PJ,k,y}$, the project emissions from the wastewater treatment system affected by the project activity where an aerobic pond does not exist can be expressed as follows:

$$PE_{ww,treatment,y} = \sum_k (Q_{ww,k,y} * (COD_{ww,treated,y} - COD_{ww,discharge,PJ,y}) * MCF_{ww,treatment,PJ,k}) * B_{o,ww} * UF_{PJ} * GWP_{CH4}$$ >>

= $\sum$ (<< >> m^3/y x (<< >> kgCOD/m^3 - << >> kgCOD/m^3) x << >>) x 0.25 x 1.12 x 21 tCO_2/tCH_4

= << >> tCO_2e/y

For ex-ante calculation:

<<indicate ex-ante determination of $COD_{ww,treated,y}$ and/or $COD_{ww,outflow,k,y}$ and/or $COD_{ww,discharge,PJ,y}$ >>

B.3 Methane emission from sludge treatment system affected by the project activity, and not equipped with biogas recovery ($PE_{treatment,s,y}$)

<<indicate ex-ante and ex-post determination of parameters >>

$$PE_{treatment,s,y} = \sum_l s_{l,PJ,y} * MCF_{s,treatment,PJ,l} * DOC_s * UF_{PJ} * DOC_F * F * 16/12 * GWP_{CH4}$$

= << >> t x << >> x << >> x 1.12 x 0.5 x 0.5 x 16/12 x 21 tCO_2/tCH_4
= << >> yCO_2e/y

<< if sludge composted, the following equation shall be applied>>

$$PE_{s,treatment,y} = \sum_{l} S_{l,PJ,y} * EF_{composting} * GWP_{CH4}$$

= << >> t x 0.01 tCH_4/t sludge x 21 tCO_2/tCH_4
= << >> tCO_2e/y

B.4 Methane emissions from degradable organic carbon in treated wastewater discharged ($PE_{ww,discharge,y}$)

$$PE_{ww,discharge,y} = Q_{ww,y} * GWP_{CH4} * B_{o,ww} * UF_{PJ} * COD_{ww,discharge,PJ,y} * MCF_{ww,PJ,discharge}$$

= << >> m^3/y x 21 tCO2/tCH_4 x 0.25 $kgCH_4/kgCOD$ x 1.12 x << >> t/m^3 x << >>

= << >> tCO_2e/y

<<indicate ex-ante and ex-post determination of $COD_{ww,discharge,PJ,y}$ >>

B.5 Methane emissions from anaerobic decay of the final sludge ($PE_{s,final,y}$)

$$PE_{s,final,,y} = S_{final,PJ,y} * DOC_s * UF_{PJ} * MCF_{s,PJ,final} * DOC_F * F * 16/12 * GWP_{CH4}$$

= << >> t x << >> x 1.12 x << >> x 0.5 x 0.5 16/12 x 21 tCO_2/tCH_4
= << >> tCO_2e/y

<<indicate ex-ante and ex-post determination of $S_{final,PJ,y}$ >>

B.6 Project activity emissions from methane release in capture systems ($PE_{fugitive,s,y}$)

a) Based on the methane emission potential of wastewater and/or sludge:

$PE_{fugitive,s,y}$ is zero since the PoA does not introduce biogas recovery and combustion to a sludge treatment system (either existent or new). Therefore scenario 1 (b) and (c) of approved methodology AMS-III.H version 16 have been excluded from the list of potential technologies/measures to be introduced under the SEA Biogas PoA. Since the parameter "Amount of sludge treated in the project sludge treatment system *l* equipped with biogas recovery system in year *y*" is zero, the calculation of $PE_{fugitive,s,y}$ becomes zero. Therefore, the fugitive emission is as follow:

$$PE_{fugitive,y} = PE_{fugitive,ww,y} + PE_{fugitive,s,y}$$

= << >> tCO_2e/y + 0 tCO_2e/y

$$PE_{fugitive,ww,y} = (1 - CFE_{ww}) * MEP_{ww,treatment,y} * GWP_{CH4}$$

= (1 – 0.9) x << >> t/y x 21 tCO2/tCH_4

= << >> tCO_2e/y

$$MEP_{ww,treatment,y} = Q_{ww,y} * B_{o,ww} * UF_{PJ} * \sum_{k} COD_{removed,PJ,k,y} * MCF_{ww,treatment,PJ,k}$$

= << >> m^3/y x 0.25 $kgCH_4/kgCOD$ x 1.12 x << >> t/m^3 x << >>

= << >> tCO_2e/y

The parameter $COD_{removed,PJ,k,y}$ (for k = anaerobic waste water treatment system) is calculated based on the difference between the inflow COD ($COD_{ww,untreated,y}$) and the outflow COD ($COD_{ww,treated,y}$).

(b) Optionally a default value of 0.05 m³ biogas leaked/m³ biogas produced may be used as an alternative to calculations per equation 9 to 13 of the approved methodology AMS-III.H version 16.

B.7 Project emission due to incomplete flaring in year y ($PE_{flaring,y}$)

The project emission due to incomplete flaring in year y is considered if there is an excess biogas production in the project activity. For ex-ante estimation, baseline emission calculation for wastewater treatment (i.e. equation 2 of the approved methodology AMS-III.H version 16) can be used but without the consideration of GWP for CH_4. However, the ex-post emission reduction shall be calculated as per the "Tool to determine project emissions from flaring gases containing methane" by using actual monitored data. Hence, the methane emissions due to incomplete flaring in year *y* ($PE_{flaring,y}$), as per approved methodology AMS-III.H version 16 are the same value of the project emissions from flaring of the residual gas stream in year *y* ($PE_{flare,y}$), as per the "Tool to determine project emissions from flaring gases containing methane."

As shown below it is assumed that << indicate if all the biogas all the biogas recovered in used gainfully to generate electricity for export to the grid or whether it is anticipated that a portion will also be flared>>

For ex-post emission calculation however, in case any biogas is flared, the project emission due to incomplete flaring will be determined as per the "Tool to determine project emissions from flaring gases containing methane", version 01.

Determination of $TM_{RG,h}$

$$TM_{RG,h} = FV_{RG,h} x fv_{CH4,RG,h} x \rho_{CH4,n}$$

= << >> Nm^3/h x << >> % x 0.716 kg/Nm^3

= << >> kg/h

Determination of $\eta_{flare,h}$

<< indicate value of efficiency to be used for ex-ante calculation depending on the type of flare to be installed>>.

Calculation of $PE_{flaring,y}$

$$PE_{flare,y} = \sum_{h=1}^{8760} TM_{RG,h} x(1-\eta_{flare,y}) x \frac{GWP_{CH4}}{1000}$$

= << >> kg/h x << >> h/d x << >> d/y x (1 – << >> %) x 21 $tCO_2/tCH_4/1000$

= << >> tCO_2e/y

B.8 Methane emission from biomass stored under anaerobic condition ($PE_{biomass,y}$)

<< to be determined as per determined as per the procedure in the "Emissions from solid waste disposal sites" version 06.0.1 if applicable to the SSC CPA>>

$PE_{biomass,y}$ = << >> tCO_2e/y

C. Leakage

The equipment to be installed is new. Hence the technology is not using equipment transferred from another activity, therefore leakage effects at the site of the other activity is zero, $(LE_y) = 0$.

D. Emission Reduction

The ex-ante estimation of emission reduction is as follow:

$$ER_{y,ex\ ante} = BE_{y,ex\ ante} - \left(PE_{y,ex\ ante} + LE_{y,ex\ ante}\right)$$

= << >> tCO_2/y – (<< >> tCO_2/y + << >> tCO_2/y)

= << >> tCO_2e/y

<< Description of the emissions reductions achieved by the project activity (ex post) >>:

Electricity Generation (AMS I.D version 17)

A. Baseline Emission

Electricity Generation from biogas ($EG_{BL,y}$)

According to the AMS-I.D, paragrapgh 11, the baseline emissions are the quantity of net electricity supplied to the grid as a result of the implementation of the project activity expressed in MWh multiplied by the grid emission factor. << Explain how the Grid Emissions factor is determined and the source of information used >>

$$BE_y = EG_{BL,y} \times EF_{CO_2,grid,y}$$

= << >> MWh/y x << >> tCO_2/MWh

= << >> tCO_2e/y

B. Project Emission

No project emission is expected to occur.

<<However, should there be any fossil fuel consumption due to the SSC-CPA project activity, CO_2 emissions from on-site consumption of fossil fuels shall be considered and determined as per the procedure described in the "Tool to calculate project or leakage CO_2 emissions from fossil fuel combustion" version 02>>.

PE_y = << >> tCO_2e/y

C. Leakage

<< Indicate whether leakage needs to be considered or not and why >>

(LE_y) = << >> tCO_2e/y

D. Emission Reduction

$$ER_y = BE_y - PE_y - LE_y$$

= << >> tCO_2/y – << >> tCO_2/y – << >> tCO_2/y

= << >> tCO_2e/y

The total estimation of emission reduction by CPA would be:

$$ER_{total,y} = ER_{y,\exp ost} + ER_y$$

$$ER_{total,y} = [BE_{y,\exp ost} - (PE_{y,\exp ost} + LE_{y,\exp ost})] + (BE_y - PE_y - LE_y)$$

= << >> + << >>

= << >> tCO_2e/y

B.5.3. Summary of the ex-ante estimation of emission reductions:

1. **Wastewater Treatment Process (AMS III.H version 16)**

Years	Estimation of baseline emissions (tonnes of CO_2 e)	Estimation of project activity emissions (tonnes of CO_2e)	Estimation of leakage (tonnes of CO_2 e)	Estimation of emission reductions (tonnes of CO_2 e)
Year 1				
Year 2				
Year 3				
Year				
Total (tonnes of CO_2)				

2. **Electricity Generation (AMS I.D Version 17)**

Years	Estimation of baseline emissions (tonnes of CO_2 e)	Estimation of project activity emissions (tonnes of CO_2e)	Estimation of leakage (tonnes of CO_2 e)	Estimation of emission reductions (tonnes of CO_2 e)
Year 1				
Year 2				
Year 3				
Year.....				
Total (tonnes of CO_2)				

3. **Combined annual emission reduction (AMS III.H version 16 and AMS I.D version 17)**

Years	Estimation of baseline emissions (tonnes of CO_2 e)	Estimation of project activity emissions (tonnes of CO_2e)	Estimation of leakage (tonnes of CO_2 e)	Estimation of emission reductions (tonnes of CO_2 e)
Year 1				
Year 2				
Year 3				
Year -.....				
Total (tonnes of CO_2)				

B.6.1. Description of the monitoring plan:

The monitoring plan details the actions necessary to record all the data parameters required by the methodology AMS III.H, version 16, as detailed in section E.7.1 of the PoA-DD. Details of the

monitoring procedures and frequency of monitoring are described for each parameter in this section. All data will be recorded at the specified frequency.

The implementer of the CPA will be responsible for collecting the monitoring data and will provide the Coordinating/Managing Entity, i.e. PT. Biogas Program International, with full data records and if applicable calibration certificates. The data will be archived electronically, backed up regularly, and be stored by the coordinating entity for 2 years after the end of the crediting period of each CPA or the last issuance of CERs of this project, whichever occurs last.

The installation of the monitoring equipment is detailed below for each parameter. The CPA operator will implement QA&QC measures to calibrate and guarantee the accuracy of metering and safety of the project operation. The metering devices will be calibrated and inspected properly and periodically as per standard industry norms and requirements.

Procedures to discount conservatively the emission reductions from the projects will be defined, in the event either the project owner or the coordinating entity detects any distortion or mal-function of the monitoring equipment. The readings from monitoring equipment will be readily accessible for the Designated Operational Entity (DOE) carrying out the verification of monitoring data.

The CPA implementer will implement an operational and management structure to monitor emission reductions from the project activity. Specific personnel will be assigned to be responsible for project management as well as for all the different parameters to be monitored and reported.

The parameters to be monitored are:

Data / Parameter:	**$Q_{ww,i,y}$**
Data unit:	m^3/year
Description:	Volume of wastewater <<indicate type of wastewater >> treated in baseline wastewater treatment system *i* in year *y*. <<Indicate where it is measured>>
Source of data to be used:	Flow meter
Value of data	<< >>
Description of measurement methods and procedures to be applied:	Monitored continuously and recorded daily. In case totalized volumes are not measured, at least hourly measurements are undertaken, if less, confidence/precision level of 90/10 shall be attained
QA/QC procedures to be applied:	Calibration and maintenance are carried out periodically, according to the manufacturer's specification
Any comment:	These parameters are assumed to be identical: $Q_{ww,,i,y} = Q_{ww,y}$ Data is electronically archived two years from the end of the crediting period. This parameter is also used to monitor the volume of wastewater treated in the project wastewater treatment system *k* in year *y* ($Q_{ww,k,y}$)

Data / Parameter:	**$COD_{ww,untreated,y}$**
Data unit:	$tCOD/m^3$
Description:	The Chemical Oxygen Demand (COD) of the untreated wastewater in the project activity in year y. This parameter is measured before the biogas digester.
Source of data to be used:	Representative sampling
Value of data	<< >>
Description of measurement methods and procedures to be applied:	To be measured. Measurement according to national or international standards. COD is measured through representative sampling.
QA/QC procedures to be applied:	Samples and measurements shall ensure a 90/10 confidence/precision level
Any comment:	To be measured monthly. Measurements may be carried out by a third party laboratory. This monitoring parameter as per AMS-III.H version 16 is identical with the $COD_{inflow,i,y}$. This is used to calculate the ex-post $BE_{ww,treatment,y}$ This parameter is also used to calculate $COD_{ww,discharge,BL,y}$ ex-post as per AMS-III.H

Data / Parameter:	**$COD_{ww,treated,y}$**
Data unit:	$tCOD/m^3$
Description:	The Chemical Oxygen Demand (COD) of the wastewater after the treatment system affected by the project activity and equipped with biogas recovery in year y. This parameter is measured after the biogas digester.
Source of data to be used:	Representative sampling
Value of data	<< >>
Description of measurement methods and procedures to be applied:	To be measured. Measurement according to national or international standards.
QA/QC procedures to be applied:	Samples and measurements shall ensure a 90/10 confidence/precision level.
Any comment:	To be measured monthly. Measurements may be carried out by a third party laboratory. This monitoring parameter as per AMS-III.H version 16 is measured to determine the $COD_{inflow,k,y}$ in the project scenario wastewater treatment system *k* in year *y* and to calculate ($\eta_{PJ,k,y}$). This is used to calculate the ex-post $PE_{ww,treatment,y}$

Data / Parameter:	**$COD_{ww,out\ flow,k,y}$**
Data unit:	$tCOD/m^3$

Description:	The outflow Chemical Oxygen Demand (COD) of the treated wastewater in system *k* in year *y*. This parameter is measured after the wastewater treatment system affected by the project activity and not equipped with biogas recovery. <<Indicate, where it is measured >>
Source of data to be used:	Representative sampling
Value of data	<< >>
Description of measurement methods and procedures to be applied:	To be measured. Measurement according to national or international standards.
QA/QC procedures to be applied:	Samples and measurements shall ensure a 90/10 confidence/precision level.
Any comment:	To be measured monthly. This parameter and previous parameter (**$COD_{ww,treated,y}$**) will be used to determine the COD removal efficiency ($\eta_{PJ,k,y}$) of the project wastewater treatment system *k* in year *y*.

Data / Parameter:	**$S_{l,PJ,y}$**
Data unit:	t
Description:	Amount of dry matter in the sludge treated by the sludge treatment system *l* in the project scenario in year *y*
Source of data to be used:	Monitoring of 100% of the sludge amount through continuous or batch measurements and moisture content through representative sampling to ensure the 90/10 confidence/precision level.
Value of data applied for the purpose of calculating expected emission reduction in section B.5	<< >>
Description of measurement methods and procedures to be applied:	Measure the total quantity of sludge on a wet basis. The volume (m^3) and density or direct weighing may be used to determine the sludge amount (wet basis). Representative samples are taken to determine the moisture content to calculate the total sludge amount on dry basis
QA/QC procedures to be applied:	
Any comment:	This parameter is used to calculate methane emissions from sludge treatment systems affected by the project activity and not equipped with biogas recovery ($PE_{s,treatment,y}$) (in case existent).

Data / Parameter:	**$S_{final,PJ,y}$**
Data unit:	t
Description:	Amount of dry matter in the final sludge generated in the project

	wastewater treatment system in year *y*
Source of data to be used:	Monitoring of 100% of the sludge amount through continuous or batch measurements and moisture content through representative sampling to ensure the 90/10 confidence/precision level.
Value of data applied for the purpose of calculating expected emission reduction in section B.5	<< >>
Description of measurement methods and procedures to be applied:	Measure the total quantity of sludge on a wet basis. The volume (m^3) and density or direct weighing may be used to determine the sludge amount (wet basis). Representative samples are taken to determine the moisture content to calculate the total sludge amount on dry basis
QA/QC procedures to be applied:	If the methane emissions from anaerobic decay of the final sludge are to be neglected because the sludge is controlled combusted, disposed of in a landfill with methane recovery, or used for soil application, then end-use of the final sludge will be monitored during the crediting period.
Any comment:	This parameter is used to calculate methane emission from anaerobic decay of the final sludge ($PE_{s,final,y}$) (in case existent). This parameter is used to calculate $S_{final,BL,y}$ ex-post in the calculation of methane emissions from anaerobic decay of the final sludge ($BE_{s,final,y}$) (in case existent) as per AMS-III.H.

Data / Parameter:	**$COD_{ww,discharge,PJ,y}$**
Data unit:	$tCOD/m^3$
Description:	The Chemical Oxygen Demand (COD) of the treated wastewater discharged to the river in the project scenario in year y. It is measured in the last anaerobic pond or after the aerobic pond (in case existence).
Source of data to be used:	Representative sampling
Value of data	<< >>
Description of measurement methods and procedures to be applied:	To be measured. Measurement according to national or international standards. COD is measured through representative sampling. For ex-ante estimation, <<indicate source of data>>.
QA/QC procedures to be applied:	Samples and measurements shall ensure a 90/10 confidence/precision level.
Any comment:	To be measured monthly. Measurements may be carried out by a third party laboratory.

Data / Parameter:	$BG_{Burnt, y}$
Data unit:	m^3
Description:	Biogas volume in year y
Source of data to be used:	Flow meter
Value of data:	<< >>
Description of measurement methods and procedures to be applied:	Monitored continuously and recorded on daily or weekly basis. In case totalizer readings are not available, at least hourly measurements are undertaken, if less, confidence/precision level of 90/10 shall be attained.
QA/QC procedures to be applied:	Calibration and maintenance are carried out periodically, according to the manufacturer's specification
Any comment:	In all cases, the amount of biogas recovered, fuelled, flared or otherwise utilized (e.g. injected into a natural gas distribution grid or distributed via a dedicated piped network) shall be monitored ex-post, using continuous flow meters. If the biogas streams used as fuel and flared are monitored separately, the two fractions can be added together, without the need to monitor the recovered biogas before the separation. The methane content measurement shall be carried out close to a location in the system where a biogas flow measurement takes place.Data is electronically archived two years from the end of the crediting period.

Data / Parameter:	$w_{CH4,y}$
Data unit:	%
Description:	Methane content in biogas in the year *y*
Source of data to be used:	Gas Analyser
Value of data:	<< >>
Description of measurement methods and procedures to be applied:	The fraction of methane in the gas will be measured with a continuous analyser or alternatively, with periodical measurement at a 90/10 confidence/precision level. It will be measured using equipment that can directly measure methane content in the biogas – the estimation of methane content of biogas based on measurement of other constituents of biogas such as CO_2 is not permitted. The methane content measurement shall be carried out close to a location in the system where a biogas flow measurement takes place. This parameter will be used to determine the methane content and applied to calculate MD_y as per approved methodology AMS-III.H version 16.
QA/QC procedures to be applied:	Calibration and maintenance are carried out periodically, according to the manufacturer's specification
Any comment:	

	This parameter will also represent the volumetric fraction of methane present in the residual gas stream **($fV_{CH4,RG,h}$)** and will be applied to calculate mass flow rate of methane in the residual gas ($TM_{RG,h}$) as per the "Tool to determine the project emission from flaring gases containing methane" version 01**.** The location of methane measurement shall be chosen to make sure that measurement is before the gas streams separate out for the gas engines and flare

Data / Parameter:	**T**
Data unit:	^0C
Description:	Temperature of the biogas
Source of data to be used:	Thermocouple
Value of data	<< >>
Description of measurement methods and procedures to be applied:	Shall be measured at the same time when methane content in biogas ($w_{CH4,y}$) is measured. The temperature of the gas is required to determine the density of the methane combusted. If the biogas flow meter employed measure flow, pressure and temperature and display or output the normalised flow of biogas, then there is no need for separate monitoring of pressure and temperature of the biogas.
QA/QC procedures to be applied:	Calibration and maintenance are carried out periodically, according to the manufacturer's specification.
Any comment:	Data is electronically archived two years from the end of the crediting period. The temperature of biogas shall be monitored in cases where biogas volumes are measured in terms of m^3. The temperature values shall be used to convert biogas volume in m^3 into Nm^3. However if biogas volumes are measured in terms of Nm^3, this parameter is not applicable

Data / Parameter:	**P**
Data unit:	Pa
Description:	Pressure of the biogas
Source of data to be used:	Pressure Gauge
Value of data	<< >>
Description of measurement methods and procedures to be applied:	Shall be measured at the same time when methane content in biogas ($w_{CH4,y}$) is measured. The pressure of the gas is required to determine the density of the methane combusted. If the biogas flow meter employed measure flow, pressure and temperature and display or output the normalised flow of biogas, then there is no need for separate monitoring of pressure and temperature of the biogas.
QA/QC procedures to	Calibration and maintenance are carried out periodically,

be applied:	according to the manufacturer's specification.
Any comment:	Data is electronically archived two years from the end of the crediting period. The pressure of biogas shall be monitored in cases where biogas volumes are measured in terms of m^3. The pressure values shall be used to convert biogas volume in m^3 into Nm^3. However if biogas volumes are measured in terms of Nm^3, this parameter is not applicable

Data / Parameter:	$\mathbf{FV_{RG,h}}$
Data unit:	Nm^3/h
Description:	Volumetric flow rate of the residual gas in dry basis at normal conditions in hour *h*
Source of data to be used:	Flow meter
Value of data	-
Description of measurement methods and procedures to be applied:	Ensure that the same basis (dry or wet) is considered for this measurement and the measurement of volumetric fraction of all components in the residual gas ($fv_{i,h}$) when the residual gas temperature exceeds 60 ºC. Parameter monitored continuously. Values to be averaged hourly or at shorter time interval. The parameter represents biogas flow rate to the flare.
QA/QC procedures to be applied:	Flow meter is to be periodically calibrated according to the manufacturer's recommendation.
Any comment:	Data is electronically archived two years from the end of the crediting period.

Data / Parameter:	$\eta_{\textbf{open}\ \text{flare,h}}$
Data unit:	%
Description:	The flare efficiency in hour *h* (open flare)
Source of data to be used:	Determined based on operation flaring time
Value of data	0 or 50%
Description of measurement methods and procedures to be applied:	Default values will be applied. The default figure used for calculation will be determined based on the flame detection
QA/QC procedures to be applied:	For open flares, the flare efficiency in hour *h* is : • 0% if the flame is not detected for more than 20 minutes during the hour h. • 50% if the flare is detected for more than 20 minutes during the hour h Regular maintenance shall be carried out to ensure optimal operation of flares.
Any comment:	Data is electronically archived two years from the end of the crediting period.

Data / Parameter:	$\eta_{\textbf{enclosed}\ \text{flare,h}}$
Data unit:	%
Description:	The flare efficiency in hour *h* (enclosed flare)
Source of data to be used:	Biogas to flare flow meter, flare exhaust temperature readings. Flare manufacturer's range of biogas flow and exhaust temperature
Value of data	Described in CPA
Description of measurement methods and procedures to be applied:	Default values will be applied. The default figure used for calculation will be determined based on the flame detection
QA/QC procedures to be applied:	• 0% if the temperature in the exhaust gas of the flare (T_{flare}) is below 500 °C for more than 20 minutes during the hour *h*. • 50%, if the temperature in the exhaust gas of the flare (T_{flare}) is above 500 °C for more than 40 minutes during the hour h, but the manufacturer's specifications on proper operation of the flare are not met at any point in time during the hour *h*. • 90%, if the temperature in the exhaust gas of the flare (T_{flare}) is above 500 °C for more than 40 minutes during the hour *h* and the manufacturer's specifications on proper operation of the flare are met continuously during the hour h. Regular maintenance shall be carried out to ensure optimal operation of flares.
Any comment:	Data is electronically archived two years from the end of the crediting period.

Data / Parameter:	$\mathbf{T}_{flare}$
Data unit:	^{0}C
Description:	Temperature in the exhaust of the enclosed flare
Source of data to be used:	Thermocouple measurements by project participants
Value of data applied for the purpose of calculating expected emission reduction in section B.5	Provided in CPA monitoring report
Description of measurement methods and procedures to be applied:	Measure the temperature of the exhaust gas stream in the flare by Type N thermocouple. A temperature above 500 °C indicates a significant amount of gases are still being burnt and that the flare is operating
QA/QC procedures to be applied:	Thermocouples should be replaced or calibrated every year
Any comment:	An excessively high temperature at the sampling point (above 700

	°C) may be an indication that the flare is not being adequately operated or that its capacity is not adequate to the actual flow

Data / Parameter:	**Other flare operation parameters**
Data unit:	-
Description:	This should include all data and parameters that are required to monitor whether the flare operates within the range of operating conditions according to the manufacture's specifications including a flame detector in case of open flares
Source of data to be used:	measurement by CPA implementer
Value of data	provided in CPA monitoring report
Description of measurement methods and procedures to be applied:	Continuously
QA/QC procedures to be applied:	-
Any comment:	Only applicable in case of use default value

Other data and parameters to be monitored by each SSC-CPA-DD

Additional data and parameter tables shall be included to the SSC-CPA-DD form to describe any monitoring Data/Parameter that may be required as part of the application of a given tool to a particular SSC-CPA.

Data / Parameter:	
Data unit:	-
Description:	Parameters related to emissions from electricity consumption in year *y*
Source of data to be used:	Measurements by CPA implementer.
Value of data applied for the purpose of calculating expected emission reduction in section B.5	Provided in CPA monitoring report
Description of measurement methods and procedures to be applied:	As per the procedure in the "tool to calculate baseline, project and/or leakage emissions from electricity consumption". Alternatively it shall be assumed that all relevant electrical equipment operate at full rated capacity, plus 10% to account for distribution losses, for 8760 hours per annum.
QA/QC procedures to be applied:	-
Any comment:	shall be described as per the corresponding tool, whenever such tool is applied to a Specific CPA DD

Data / Parameter:	
Data unit:	-
Description:	Parameters related to emissions from fossil fuel consumption in year *y*
Source of data to be used:	Measurements by CPA implementer.
Value of data applied for the purpose of calculating expected emission reduction in section B.5	Provided in CPA monitoring report
Description of measurement methods and procedures to be applied:	As per the procedure in the "tool to calculate project or leakage CO_2 emissions from fossil fuel combustion" version 02.
QA/QC procedures to be applied:	-
Any comment:	shall be described as per the corresponding tool, whenever such tool is applied to a Specific CPA DD

Data / Parameter:	
Data unit:	-
Description:	Parameters related to the calculation of methane emissions from biomass stored under anaerobic conditions which does not occur in the baseline situation
Source of data to be used:	Measurements by CPA implementer.
Value of data applied for the purpose of calculating expected emission reduction in section B.5	Provided in CPA monitoring report
Description of measurement methods and procedures to be applied:	As per the "Emissions from solid waste disposal sites" version 06.0.1.
QA/QC procedures to be applied:	-
Any comment:	shall be described as per the corresponding tool, whenever such tool is applied to a Specific CPA DD

For electricity generation/consumption

Data / Parameter:	**$EG_{BL,y}$**
Data unit:	kWh
Description:	Quantity of net electricity supplied to the grid as a result of the implementation of the CDM project activity in year y

Source of data to be used:	kWh meter
Value of data	<< >>
Description of measurement methods and procedures to be applied:	Parameter monitored continuously and monthly recording.
QA/QC procedures to be applied:	Calibration should be undertaken as prescribed in the relevant paragraph of the General Guidelines to SSC CDM Methodologies
Any comment:	Data Electronically archived two years from the end of the crediting period.

The location of the monitoring points is shown in Figure 3 below.

Figure 3. Monitoring Diagram

<< insert monitoring diagram >>

C.1. Please indicate the level at which environmental analysis as per requirements of the CDM modalities and procedures is undertaken. Justify the choice of level at which the environmental analysis is undertaken:

☐ Please tick if this information is provided at the PoA level. In this case sections C.2. and C.3. need not be completed in this form.

C.2. Documentation on the analysis of the environmental impacts, including transboundary impacts:

<< >>

C.3. Please state whether an environmental impact assessment is required for a typical CPA, included in the programme of activities (PoA), in accordance with the host Party laws/regulations:

<< >>

SECTION D. Stakeholders' comments

>>

D.1. Please indicate the level at which local stakeholder comments are invited. Justify the choice:

☐ Please tick if this information is provided at the PoA level. In this case sections D.2. to D.4. need not be completed in this form.

D.2. Brief description how comments by local stakeholders have been invited and compiled:

<< >>

D.3. Summary of the comments received:

<< >>

D.4. Report on how due account was taken of any comments received:

<< >>

Annex 1

CONTACT INFORMATION ON ENTITY/INDIVIDUAL RESPONSIBLE FOR THE SMALL-SCALE CPA

Organization:	
Street/P.O.Box:	
Building:	
City:	
State/Region:	
Postfix/ZIP:	
Country:	
Telephone:	
FAX:	
E-Mail:	
URL:	
Represented by:	
Title:	
Salutation:	
Last Name:	
Middle Name:	
First Name:	
Department:	
Mobile:	
Direct FAX:	
Direct tel:	
Personal E-Mail:	

Annex 2

INFORMATION REGARDING PUBLIC FUNDING

Annex 3

BASELINE INFORMATION

Annex 4

MONITORING INFORMATION

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