COMPONENT PROJECT DESIGN DOCUMENT FORM FOR SMALL-SCALE COMPONENT PROJECT ACTIVITIES (F-CDM-SSC-CPA-DD) Version 02.0

COMPONENT PROJECT ACTIVITIES DESIGN DOCUMENT (CPA-DD)

SECTION A. General description of CPA

A.1. Title of the proposed or registered PoA

>>
FIRA Wastewater Treatment System, Methane Capture and Utilisation Programme in Mexico
Version 01
30/04/2012

A.2. Title of the CPA

>>
Advanced wastewater treatment system at DESCRIBE
CPA- (number)
Version (number)
DD/MM/YYYY

A.3. Description of the CPA

>>
The purpose of the small-scale CDM programme activity (SSC-CPA) is to reduce methane emissions from the wastewater of the COMPONENT of COMPANY ("NAME"). NAME OPERATIONAL HISTORY. PRODUCTION CAPACITY INFORMATION.

The current wastewater treatment system at NAME consists of DESCRIBE. The open anaerobic lagoons have [SLUDGE REMOVAL FREQUENCY] an average depth greater than two meters, without aeration [taking into account seasonal variation]. The anaerobic decay of organic waste in the lagoons generates methane gas (CH_4). [Furthermore, currently thermal energy is generated by NAME using FOSSIL FUEL in a boiler to generate steam for its processes.] The existing scenario is also the baseline scenario.

Under the SSC-CPA, the open anaerobic lagoons will either be covered or replaced with enclosed anaerobic reactors; the new system will be equipped with biogas recovery and combustion. In this way, the SSC-CPA will reduce the emission of CH_4 to the atmosphere. [Recovered biogas will be combusted in the boiler to generate thermal energy (steam), replacing FOSSIL FUEL and reducing CO_2 emissions from fossil fuel.]

The SSC-CPA will contribute to sustainable development in the following ways:

- NAME SSC-CPA will provide technology demonstration in a sector with rudimentary or non-existent wastewater treatment practices.
- The new wastewater treatment technology is expected to result in wastewater with lower organic loading, improving the conditions of the surrounding land.
- The SSC-CPA is located in a rural area and provides skills and technology development in an area with lower income and education levels.
- Jobs will be generated, both temporary positions related to construction of the project technology and longer-term due to operation of the project wastewater treatment system

A.4. Entity/individual responsible for CPA

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The entity responsible for the proposed SSC-CPA is COMPANY, which is not a Project Participant to the PoA.

A.5. Technical description of the CPA

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The existing scenario at the SSC-CPA involves wastewater treatment in open anaerobic lagoons [and thermal energy generation relying on fossil fuel combustion (FOSSIL FUEL)]. The existing scenario is also the baseline, and is described in detail here.

The wastewater addressed by the programme activity results from PROCESS. The location of the WASTEWATER TREATMENT SYSTEM is listed in section A.4.1.2. The wastewater treatment system consists of DESCRIBE. This wastewater treatment system has been in operation for YEARS.

DESCRIBE ANY ELECTRICITY AND/OR FOSSIL FUEL USAGE BY CURRENT WASTEWATER TREATMENT SYSTEM.

Table 1. Baseline wastewater treatment characteristics

Component	**Characteristics**	**Reference**
Local average temperature	VALUE	{PROVIDE}
Lagoon depth	VALUE	{PROVIDE}
Wastewater flow (annual)	VALUE	{PROVIDE}
COD of untreated vinasse	VALUE	{PROVIDE}
COD of treated vinasse (sent to irrigation)	VALUE	{PROVIDE}
Sludge removal	VALUE	{PROVIDE}

Table 2. Baseline wastewater treatment electricity and/or fossil fuel use

Component	**Annual Energy Usage**	**Reference**
[ELECTRICITY]	VALUE	{PROVIDE}
[FOSSIL FUEL]	VALUE	{PROVIDE}
[e.g. Pump}	*{4 MWh}*	*{Electricity invoice}*

[In the baseline, heat (steam) is generated for use WHERE with a EQUIPMENT burning FOSSIL FUEL. Steam generation is ANNUAL QUANTITY. The annual fuel consumption is ANNUAL QUANTITY.]

Table 3. Baseline thermal energy generation characteristics

Boiler Model	**Installed capacity**	**Fuel power input capacity**	**Efficiency**	**References**
DATA	VALUE	VALUE	VALUE	{PROVIDE}

The CDM activity consists of implementing a biodigester as part of the wastewater treatment system by either covering the open anaerobic lagoons, or replacing them with enclosed anaerobic reactors; the system will be equipped with biogas recovery and combustion. A post treatment lagoon or tank may also be implemented. Sludge treatment is expected to remain the same. Treated wastewater will continue to be FINAL STEP OF TREATMENT. In this way, the SSC-CPA will reduce the emission of CH_4 to the atmosphere.

[Recovered biogas will be combusted in the boiler to generate thermal energy (steam), replacing FOSSIL FUEL and reducing CO_2 emissions from fossil fuel. The project aims to replace about PERCENT of the baseline fossil fuel use (actual amount will vary subject to biogas generation rates achieved). DESCRIBE EQUIPMENT TO BE PUT IN PLACE FOR GENERATION OF THERMAL ENERGY USING BIOGAS.]

[The technology provider for the biodigester has not yet been contracted; hence, the description of the project system may be subject to changes.]

A.6. Party(ies)

Name of Party involved (host) indicates a host Party	Private and/or public entity(ies) CPA implementer(s) (as applicable)	Indicate if the Party involved wishes to be considered as CPA implementer (Yes/No)
Mexico	NAME OF CPA DEVELOPER	No

A.7. Geographic reference or other means of identification

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- CPA – (number)
- SIIOF ID Number (if available) (number)

ADDRESS
GEOGRAPHIC COORDINATES

A.8. Duration of the CPA

A.8.1. Start date of the CPA

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DD/MM/YYYY (EVENT THAT MARKS STARTING DATE)

A.8.2. Expected operational lifetime of the CPA

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(number)years (number)months

A.9. Choice of the crediting period and related information

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Renewable crediting period; or

Fixed Crediting period

[Delete the one that is not applicable]

A.9.1. Start date of the crediting period

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DD/MM/YYYY, or date of inclusion of the SSC-CPA in the registered PoA, whichever is later

A.9.2. Length of the crediting period

>>

(number)years (number) months

A.10. Estimated amount of GHG emission reductions

Emission reductions during the crediting period	
Years	**Annual GHG emission reductions (in tonnes of CO_2e) for each year**
1	VALUE
2	VALUE
3	VALUE
4	VALUE
5	VALUE
6	VALUE
7	VALUE
8	VALUE
9	VALUE
10	VALUE
Total number of crediting years	VALUE
Annual average GHG emission reductions over the crediting period	VALUE
Total estimated reductions (tonnes of CO_2e)	VALUE

A.11. Public funding of the CPA

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Part of the SSC-CPA's financing (via a financial intermediary) will be supported by FIRA or by a guarantee from FIRA. FIRA is a government trust fund; its resources come from the Ministry of Finance. All the money that FIRA operates is, by definition, public funding. However, public funding is not used to purchase the SSC-CPA's CERs.

A.12. Debundling of small-scale component project activities

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There is no (i) registered small-scale CPA of a PoA, (ii) application to register another small-scale CPA of a PoA or (iii) another registered CDM project activity which:

(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 sectoral scope, and;

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

Hence this proposed small-scale CPA is not a de-bundled component of a large scale activity.

A.13. Confirmation for CPA

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The SSC-CPA is neither registered as an individual CDM project activity nor is part of another Registered PoA. This SSC-CPA will be uniquely identified by its serial number in the SIIOF database as well as by the signed agreements received from the entity responsible for the SSC-CPA. These documents assert the rights of the carbon credits to the CME of this SSC-PoA only.

SECTION B. Environmental analysis

B.1. Analysis of the environmental impacts

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The environmental impacts of the project DESCRIBE TYPE OF ANALYSIS / PROCEDURES, in line with the requirements for the State of STATE NAME. DESCRIBE OUTCOME OF ANALYSIS.

DETAILS AND DATE OF APPROVAL OF ANY SUBMISSIONS DD/MM/YYYY.

SECTION C. Local stakeholder comments

C.1. Solicitation of comments from local stakeholders

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The stakeholder consultation was carried out on DD/MM/YYYY at LOCATION. Invitation letters were sent to the key stakeholders WHEN. Records of the invitations will be provided to the DOE upon request. An announcement for the event was published in the VENUE on DATE. A copy of this announcement will be provided to the DOE upon request.

The event was held at TIME with the following agenda:

Presentation	Name, Title and Organization of Presenter
DATA	{PROVIDE}
DATA	{PROVIDE}
DATA	{PROVIDE}
DATA	{PROVIDE}
DATA	{PROVIDE}
DATA	{PROVIDE}
DATA	{PROVIDE}

A total of (number) people attended and signed the attendance sheet for the event. Attendance consisted of [other industry players, representatives of the industry associations, government officials and employees]. The sign-in list of the event, the event's agenda and pictures of the event can be provided to the DOE upon request.

C.2. Summary of comments received

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In summary the comments and questions were made regarding:

- SUMMARIZE TOPICS

C.3. Report on consideration of comments received

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DESCRIBE

SECTION D. Eligibility of CPA and Estimation of emissions reductions

D.1. Title and reference of the approved baseline and monitoring methodology(ies) selected:

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The following methodologies are employed:

- AMS-III.H. "Methane recovery in wastewater treatment" - Version 16.0
- AMS-I.C. "Thermal energy production with or without electricity" - Version 19.0

The Board (e.g. SSC working group) agreed that a combination of any one of the Type III methodologies where activities lead to generation of methane, (i.e. AMS-III.H) with any one of the Type I methodologies for utilising the methane generated for generation of renewable energy (i.e. AMS-I.C.), can be applied in a PoA without a pre approval[1].

In addition, the following tools are referred according to the methodologies mentioned as follows:

- "Tool to calculate baseline, project and/or leakage emissions from electricity consumption" - Version 1.
- "Emissions from solid waste disposal sites" – Version 06.0.1
- "Tool to determine project emissions from flaring gases containing methane" - Version 1.
- "Tool to calculate project or leakage CO2 emissions from fossil fuel combustion" – Version 2
- "Tool to determine the baseline efficiency of thermal or electric energy generation systems" – Version 1.

D.2. Application of methodology(ies)

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The activities pertain to sectoral scope 13: Waste handling and disposal. The activity of each SSC-CPA pertains to project Type III. The methodology used is the *AMS-III.H, version 16. Methane Recovery in Wastewater Treatment* and the corresponding methodology is applicable as follows:

Paragraph	Condition	Compliance by an SSC-CPA
1	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-f)	The SSC-CPA involve activity(ies) taking place at agro-industrial facilities that generate wastewater containing biogenic organic matter. The SSC-CPA will apply the measure 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, or the measure 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.

[1] View report: <http://cdm.unfccc.int/Panels/ssc_wg/meetings/027/ssc_027_an08.pdf>

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.	SSC-CPA has a baseline system of an open anaerobic lagoon. The SSC-CPA has provided the characteristics of lagoon depth, ambient temperature and sludge removal events to demonstrate that they comply with the stated requirements (view tables in subsection A.5 of this document).
3	The recovered biogas from the above measures may also be utilized for the following applications instead of combustion/flaring: (a-e)	The recovered biogas will be used for thermal energy generation (generation of steam).
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.	Not applicable, it is not intended to generate electricity in this SSC-CPA.
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 CO2 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..	No activities covered under paragraph 3(b) will be either covered nor carried out, hence they are not applicable.
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.	No activities covered under paragraph 3(c) (i) will be either covered nor carried out, hence they are not applicable.
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.	No activities covered under paragraph 3(c) (ii) will be either covered nor carried out, hence they are not applicable.

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.	No activities covered under paragraph 3(b) and 3(c) will be either covered nor carried out, hence they are not applicable.
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).	No activities covered under paragraph 3(b) and 3(c) will be neither covered nor carried out, hence they are not applicable.
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.	No activities covered under paragraph 3(d) will be either covered nor carried out, hence they are not applicable
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	No activities covered under paragraph 3(e) will be either covered nor carried out, hence they are not applicable
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.	The SSC-CPA will comply with the relevant guidelines, however the project also do not involve any changes of equipment (i.e. not even the current steam boiler).
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.	It has been described the relevant location(s) and source(s) of wastewater in this document (view subsection A.7)
14	Measures are limited to those that result in aggregate emissions reductions of less than or equal to 60kt CO_2 equivalent annually from all Type III components of the project activity.	This SSC-CPA estimates emissions reductions less than 60kt CO2 equivalent annually from all Type III components of the project activity.

SSC-CPAs may also have a component pertaining to project Type I. The Type I activities will pertain to sectoral scope 1: Energy industries (renewable / non-renewable sources). When the component involves thermal energy production, the project category will be *"AMS-I.C, version 19 Thermal Energy Production with or without Electricity"*. The corresponding methodology will be applicable as follows:

Paragraph	Condition	Compliance by an SSC-CPA
1	This methodology comprises renewable energy technologies that supply users with thermal energy that displaces fossil fuel use. These units include technologies such as solar thermal water heaters and dryers, solar cookers, energy derived from renewable biomass and other technologies that provide thermal energy that displaces fossil fuel.	The activity will utilize biogas captured from anaerobic wastewater treatment system to replace fossil fuel in thermal energy applications
2	Biomass-based cogeneration systems are included in this category. For the purpose of this methodology .cogeneration. shall mean the simultaneous generation of thermal energy and electrical energy in one process. Project activities that produce heat and power in separate element processes (for example heat from a boiler and electricity from a biogas engine) do not fit under the definition of cogeneration project.	Biomass-based activities are not eligible under the PoA; not relevant
3	Emission reductions from a biomass cogeneration system can accrue from one of the following activities: (a) Electricity supply to a grid; (b) Electricity and/or thermal energy (steam or heat) production for on-site consumption or for consumption by other facilities; (c) Combination of (a) and (b).	Biomass-based activities are not eligible under the PoA; not relevant
4	The total installed/rated thermal energy generation capacity of the project equipment is equal to or less than 45 MW thermal (see paragraph 6 for the applicable limits for cogeneration project activities).	The maximum installed capacity possible using biogas would be approximately 4.57 MWe[2]. The installed capacity does not exceed 45 MW thermal.
5	For co-fired systems, the total installed thermal energy generation capacity of the project equipment, when using both fossil and renewable fuel shall not exceed 45 MW thermal (see paragraph 6 for the applicable limits for cogeneration project activities).	The installed capacity does not exceed 45 MW thermal.
6	The following capacity limits apply for biomass cogeneration units: (a-c)	Biomass-based activities are not eligible under the PoA; not relevant

[2] The limit for the Type III activity is 60,000 tCO2e, i.e. not more than 60,000 t of CO2 equivalent of methane may be generated each year. 60,000 tCO2e / 21 GWP_{CH4} x (50.4 GJ/tCH4) / (3.6 GJ/MWh) / 8760 hr = 4.57 MW

7	The capacity limits specified in the above paragraphs apply to both new facilities and retrofit projects. In the case of project activities that involve the addition of renewable energy units at an existing renewable energy facility, the total capacity of the units added by the project should comply with capacity limits in paragraphs 4 to 6 and should be physically distinct from the existing units	DESCRIBE
8	Project activities that seek to retrofit or modify an existing facility for renewable energy generation are included in this category	DESCRIBE
9	New Facilities (Greenfield projects) and project activities involving capacity additions compared to the baseline scenario are only eligible if they comply with the related and relevant requirements in the "General Guidelines to SSC CDM methodologies".	The SSC-CPA will comply with the relevant guidelines.
10	If solid biomass fuel (e.g. briquette) is used, it shall be demonstrated that it has been produced using solely renewable biomass and all project or leakage emissions associated with its production shall be taken into account in the emissions reduction calculation.	DESCRIBE
11	Where the project participant is not the producer of the processed solid biomass fuel, the project participant and the producer are bound by a contract that shall enable the project participant to monitor the source of the renewable biomass to account for any emissions associated with solid biomass fuel production. Such a contract shall also ensure that there is no double-counting of emission reductions	DESCRIBE
12	In case electricity and/or steam/heat produced by the project activity is delivered to another facility or facilities within the project boundary, a contract between the supplier and consumer(s) of the energy will have to be entered into that ensures there is no double-counting of emission reductions.	Not applicable for the current CPA.
13	If the project activity recovers and utilizes biogas for power/heat production and applies this methodology on a stand alone basis i.e. without using a Type III component of a SSC methodology, any incremental emissions occurring due to the implementation of the project activity (e.g. physical leakage of the anaerobic digester, emissions due to inefficiency of the flaring), shall be taken into account either as project or leakage emissions.	This methodology will only be used in conjunction with a Type III methodology.
14	Charcoal based biomass energy generation project activities are eligible to apply the methodology only if the charcoal is produced from renewable biomass sources provided: (a-b)	DESCRIBE

D.3. Sources and GHGs

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Source		Gas	Included?	Justification / Explanation
Baseline	Emissions of the wastewater treatment system	CO_2	No	Minor source; exclusion is conservative
		CH_4	Yes	Primary source from anaerobic decay
		N_2O	No	Minor source; exclusion is conservative
	Emissions on account of electricity or fossil fuel used	CO_2	Yes	Primary source from combustion of fossil fuels
		CH_4	No	Minor source; exclusion is conservative
		N_2O	No	Minor source; exclusion is conservative
Project	Emissions from electricity and fuel used by the project facilities	CO_2	Yes	Primary source from combustion of fossil fuels
		CH_4	No	Minor source
		N_2O	No	Minor source
	Emissions from the project wastewater and/or sludge treatment system	CO_2	No	Minor source
		CH_4	Yes	Primary source from anaerobic decay
		N_2O	No	Minor source

D.4. Description of the baseline scenario

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For NAME, applying AMS-III.H version 16 the baseline scenario is the methane emissions that would have been emitted by the baseline wastewater treatment system and the carbon dioxide emissions on account of fossil fuel used for the baseline wastewater treatment facility. The specific baseline scenario is an anaerobic wastewater treatment system such as DESCRIBE.

For a SSC-CPA applying AMS-I.C version 19, the simplified baseline for renewable energy technologies that displace technologies using fossil fuels is the fuel consumption of the technologies that would have been used in the absence of the project activity, times an emission factor for the fossil fuel displaced.

D.5. Demonstration of eligibility for a CPA

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Additionality is demonstrated in line with Attachment A to Appendix B of the simplified modalities and procedures for small-scale CDM project activities; here an explanation is provided to show that the project activity would not have occurred anyway due to an (a) Investment barrier.

Demonstration of the Investment Barrier

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The key data for assessing additionality of the SSC-CPA are the inputs required for the simple financial analysis, consisting of calculation of the NPV for the activity without carbon finance. These consist of the following:

Table 4. Financial analysis inputs

Key Data	Value	Reference

Key Data	Value	Reference
Capital Expenditure (including all components of the activity, i.e. advanced wastewater treatment system, plus energy generation component, if applicable) – DESCRIBE	VALUE	{PROVIDE}
Operating & Management costs (including all components of the activity, i.e. advanced wastewater treatment system, plus energy generation component, if applicable) – DESCRIBE	VALUE	{PROVIDE}
Any subsidies applied – DESCRIBE	VALUE	{PROVIDE}
(Expected) Date of investment	VALUE	{PROVIDE}
(Expected) Date of operation	VALUE	{PROVIDE}
Expected electricity generation (if applicable) – DESCRIBE	VALUE	{PROVIDE}
Electricity tariff (if applicable) – DESCRIBE	VALUE	{PROVIDE}
Expected heat generation (if applicable) – DESCRIBE	VALUE	{PROVIDE}
Fossil fuel price (if applicable)	VALUE	{PROVIDE}
WACC (for debt cost, apply the Interbank Equilibrium Interest Rate[3] at the date of financial closure of the activity, or at the date of SSC-CPA-DD completion if the former is in the future; for equity cost, apply the equity benchmark approved by the CDM EB as stated in the most recent approved version of the "Guidelines on the assessment of investment analysis")	VALUE	{PROVIDE}

Table 5. Results of the Financial analysis

	NPV without CERs	NPV with CERs
NAME SSC-CPA	VALUE	VALUE

The key criterion for assessing the results of the NPV calculation is whether the NPV is less than or equal to zero. This is the case, thus the activity is financially unattractive and faces an investment barrier. In line with Attachment A to Appendix B, the activity is therefore additional.

CDM Consideration

The following timeline of development demonstrates how CDM was considered in the implementation of the SSC-CPA activity at NAME.

Action	Date
VALUE	{PROVIDE}
VALUE	{PROVIDE}
VALUE	{PROVIDE}

[3] http://www.banxico.org.mx/sitioingles/portalesEspecializados/tasasInteres/tasaObjetivo.html

D.6. Estimation of emission reductions

D.6.1. Explanation of methodological choices

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From the methodology AMS-III.H version 16 Methane recovery in wastewater treatment.:

The activity will consist of paragraph 1(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; or (f): Introduction of a sequential stage of wastewater treatment with biogas recovery and combustion, without sludge treatment, to an anaerobic wastewater treatment system without biogas recovery. Biogas will be flared and may be used for heat generation.

Baseline emissions for the systems affected by the project activity will consist of Methane emissions from baseline wastewater treatment systems ($BE_{ww,treatment,y}$).

For case 1 (d) and 1 (f) of the methodology, *ex post* emission reductions shall be based on the lowest value of the following, as per paragraph 34:

(i) The amount of biogas recovered and fuelled or flared (MD_y) during the crediting period, that is monitored *ex post*; and

(ii) *Ex post* calculated baseline, project and leakage emissions based on actual monitored data for the project activity.

Since biogas will be flared, MD_y will be measured using the conditions of the flaring process.

For the thermal energy generation from biogas, baseline emissions include the baseline emissions from steam/heat displaced by the project activity during the year *y* ($BE_{thermal,CO2,y}$). Project emissions shall include any significant emissions associated with project activity (i.e. use of biogas for thermal energy generation) within the project boundary that are not accounted for as part of $PE_{power,y}$ above, although it is not expected that there will be any relevant emissions fulfilling these criteria.

D.6.2. Data and parameters that are to be reported ex-ante

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Note: Data and parameters will depend upon the specific configuration of the activity implemented under each SSC-CPA, and may differ from the following.

AMS-III.H.

Data / Parameter	$\eta_{COD,BL,i}$
Unit	-
Description	COD removal efficiency of the baseline treatment system *i*
Source of data	Historical records of at least one year prior to the project implementation
Value(s) applied	VALUE
Choice of data or Measurement methods and procedures	From direct measurements records, feasibility studies, among other sources of data. DESCRIBE
Purpose of data	Calculation of baseline emissions
Additional comment	-

Data / Parameter	$MCF_{ww,treatment,BL,i}$
Unit	-
Description	Methane correction factor for baseline wastewater treatment systems *i*
Source of data	Table III.H.1
Value(s) applied	VALUE
Choice of data or Measurement methods and procedures	DESCRIBE
Purpose of data	Calculation of baseline emissions
Additional comment	

Data / Parameter	$B_{o,ww}$
Unit	kg CH_4/kg COD
Description	Methane producing capacity of the wastewater
Source of data	IPCC, AMS-III.H
Value(s) applied	0.25
Choice of data or Measurement methods and procedures	Default as per methodology
Purpose of data	Calculation of baseline emissions
Additional comment	

Data / Parameter	UF_{BL}
Unit	-
Description	Model correction factor to account for model uncertainties
Source of data	FCCC/SBSTA/2003/10/Add.2, page 25, AMS-III.H
Value(s) applied	0.89
Choice of data or Measurement methods and procedures	Default as per methodology
Purpose of data	Calculation of baseline emissions
Additional comment	

Data / Parameter	GWP_{CH4}
Unit	-
Description	Global Warming Potential for methane
Source of data	AMS-III.H
Value(s) applied	21
Choice of data or Measurement methods and procedures	Default as per methodology
Purpose of data	Calculation of baseline emissions; and Calculation of project emissions
Additional comment	

Data / Parameter	CFE_{ww}
Unit	-
Description	Capture efficiency of the biogas recovery equipment in the wastewater treatment systems
Source of data	AMS-III.H
Value(s) applied	0.9
Choice of data or Measurement methods and procedures	Default as per methodology
Purpose of data	Calculation of project emissions
Additional comment	

Data / Parameter	$MCF_{ww,treatment,PJ,k}$
Unit	-
Description	Methane correction factor for the project wastewater treatment system *k* equipped with biogas recovery equipment
Source of data	Table III.H.1
Value(s) applied	VALUE
Choice of data or Measurement methods and procedures	as per Table III.H.1 DESCRIBE
Purpose of data	Calculation of project emissions
Additional comment	DESCRIBE IF NEEDED

Data / Parameter	UF_{PJ}
Unit	-
Description	Model correction factor to account for model uncertainties
Source of data	AMS-III.H
Value(s) applied	1.12
Choice of data or Measurement methods and procedures	Default as per methodology
Purpose of data	Calculation of project emissions
Additional comment	

From the Tool to determine project emissions from flaring gases containing methane

Data / Parameter	$\rho_{CH4,n}$
Unit	kg/m^3
Description	Density of methane gas at normal conditions
Source of data	Tool to determine project emissions from flaring gases containing methane Version 1, EB 28 annex 13
Value(s) applied	0.716
Choice of data or Measurement methods and procedures	Default value according to Tool
Purpose of data	Calculation of project emissions
Additional comment	DESCRIBE IF NEEDED

From the Tool to calculate baseline, project and/or leakage emissions from electricity consumption

Data / Parameter	$EF_{EL,k,y}$, $EF_{EL,j,y}$
Unit	tCO_2/MWh
Description	Emission factor for electricity generation for source *j/k* in year *y*
Source of data	Refer to *Tool to calculate baseline, project and/or leakage emissions from electricity consumption*
Value(s) applied	Defined by SSC-CPA
Choice of data or Measurement methods and procedures	DESCRIBE IF NEEDED
Purpose of data	Calculation of baseline emissions; and/or Calculation of project emissions
Additional comment	DESCRIBE IF NEEDED

Data / Parameter	$TDL_{k,y}$, $TDL_{j,y}$
Unit	-
Description	Average technical transmission and distribution losses for providing electricity to source j or k in year y
Source of data	Refer to *Tool to calculate baseline, project and/or leakage emissions from electricity consumption*
Value(s) applied	Defined by SSC-CPA
Choice of data or Measurement methods and procedures	As per options given in the *Tool to calculate baseline, project and/or leakage emissions from electricity consumption*
Purpose of data	Calculation of baseline emissions; and/or Calculation of project emissions
Additional comment	DESCRIBE IF NEEDED

Tool to calculate project or leakage CO2 emissions from fossil fuel combustion

Data / Parameter	$COEF_{i,y}$
Unit	tCO2/mass or volume unit
Description	CO_2 emission coefficient of fuel type *i* in year *y*
Source of data	Refer to *Tool to calculate project or leakage CO2 emissions from fossil fuel combustion*
Value(s) applied	VALUE
Choice of data or Measurement methods and procedures	DESCRIBE IF NEEDED
Purpose of data	Calculation of project emissions
Additional comment	DESCRIBE IF NEEDED

AMS-I.C.

Data / Parameter	$EF_{FF,CO2}$
Unit	tCO_2/TJ
Description	The CO_2 emission factor of the fossil fuel that would have been used in the baseline plant obtained from reliable local or national data if available, alternatively, IPCC default emission factors can be used
Source of data	Reliable local or national data if available, alternatively, IPCC default emission factors can be used
Value(s) applied	VALUE
Choice of data or Measurement methods and procedures	As per type of type of reliable local or national data if available, alternatively, IPCC default emission factors can be used
Purpose of data	Calculation of baseline emissions
Additional comment	- (WHEN APPLICABLE). DESCRIBE TYPE OF FUEL CONSIDERED. - DESCRIBE SOURCE OF DATA SELECTED.

Data / Parameter	$\eta_{BL,thermal}$
Unit	-
Description	The efficiency of the plant using fossil fuel that would have been used in the absence of the project activity
Source of data	Historical data or, if not available, refer to relevant provisions of the *Tool to determine the baseline efficiency of thermal or electric energy generation systems*
Value(s) applied	VALUE
Choice of data or Measurement methods and procedures	DESCRIBE OPTION SELECTED FROM THE TOOL
Purpose of data	Calculation of baseline emissions
Additional comment	DESCRIBE IF NEEDED

D.6.3. Ex-ante calculation of emission reductions

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DEVELOP ACCORDING TO TYPE OF SSC-CPA SITUATION

D.6.4. Summary of the ex-ante estimates of emission reduction

Year	Baseline emissions (t CO_2e)	Project emissions (t CO_2e)	Leakage (t CO_2e)	Emission reductions (t CO_2e)
1	VALUE	VALUE	VALUE	VALUE
2	VALUE	VALUE	VALUE	VALUE
3	VALUE	VALUE	VALUE	VALUE
4	VALUE	VALUE	VALUE	VALUE
5	VALUE	VALUE	VALUE	VALUE
6	VALUE	VALUE	VALUE	VALUE
7	VALUE	VALUE	VALUE	VALUE
8	VALUE	VALUE	VALUE	VALUE
9	VALUE	VALUE	VALUE	VALUE
10	VALUE	VALUE	VALUE	VALUE
Total	VALUE	VALUE	VALUE	VALUE
Total number of crediting years	VALUE			
Annual average over the crediting period	VALUE	VALUE	VALUE	VALUE

D.7. Application of the monitoring methodology and description of the monitoring plan
D.7.1. Data and parameters to be monitored
(Copy this table for each data and parameter.)

AMS-III.H.

Data / Parameter	$Q_{ww,i,y}$
Unit	m³/month
Description	The flow of wastewater
Source of data	Monitored
Value(s) applied	VALUE
Measurement methods and procedures	Measurements are undertaken using flow meters
Monitoring frequency	It may be monitored continuously (at least hourly measurements are undertaken); alternatively, confidence/precision level of 90/10 shall be attained.
QA/QC procedures	Meter should be certified to national or IEC standards and calibrated according to the national standards and reference points or IEC standards and recalibrated at appropriate intervals according to manufacturer specifications, but at least once in three years
Purpose of data	Calculation of baseline emissions
Additional comments	

Data / Parameter	$COD_{ww,untreated,y}$
Unit	t COD/m³
Description	The chemical oxygen demand of the wastewater before the treatment system affected by the project activity
Source of data	Monitored
Value(s) applied	VALUE
Measurement methods and procedures	Measure the COD according to national or international standards.
Monitoring frequency	COD is measured through representative sampling. Samples and measurements shall ensure a 90/10 confidence/precision level.
QA/QC procedures	Measuring equipment should be certified to national or IEC standards and calibrated according to the national standards and reference points or IEC standards and recalibrated at appropriate intervals according to manufacturer specifications, but at least once in three years.
Purpose of data	Calculation of baseline emissions.
Additional comments	

Data / Parameter	$COD_{ww,treated,y}$
Unit	t COD/m³
Description	The chemical oxygen demand of the wastewater after the treatment system affected by the project activity
Source of data	Monitored
Value(s) applied	VALUE
Measurement methods and procedures	Measure the COD according to national or international standards.
Monitoring frequency	COD is measured through representative sampling. Samples and measurements shall ensure a 90/10 confidence/precision level.
QA/QC procedures	Measuring equipment should be certified to national or IEC standards and calibrated according to the national standards and reference points or IEC standards and recalibrated at appropriate intervals according to manufacturer specifications, but at least once in three years.
Purpose of data	Calculation of baseline emissions
Additional comments	

Data / Parameter	$BG_{burnt,y}$
Unit	Nm^3
Description	Biogas volume in year *y*
Source of data	Monitored
Value(s) applied	VALUE
Measurement methods and procedures	Measurements are undertaken using flow meters. Volume should be normalised automatically, or using measurements of T and P.
Monitoring frequency	Monitored continuously (at least hourly measurements are undertaken), if less, confidence/precision level of 90/10 shall be attained.
QA/QC procedures	Meter should be certified to national or IEC standards and calibrated according to the national standards and reference points or IEC standards and recalibrated at appropriate intervals according to manufacturer specifications, but at least once in three years
Purpose of data	Calculation of baseline emissions
Additional comments	

Data / Parameter	$w_{CH4,y}$
Unit	-
Description	Methane content in biogas in the year *y*
Source of data	Monitored
Value(s) applied	50%
Measurement methods and procedures	It shall 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 the location in the system where the biogas flow measurement takes place.
Monitoring frequency	The fraction of methane in the gas may be measured with a continuous analyser or, alternatively, with periodical measurements at a 90/10 confidence/precision level.
QA/QC procedures	Measuring equipment should be certified to national or IEC standards and calibrated according to the national standards and reference points or IEC standards and recalibrated at appropriate intervals according to manufacturer specifications, but at least once in three years;
Purpose of data	Calculation of baseline emissions
Additional comments	

Data / Parameter	T
Unit	^{o}C
Description	Temperature of the biogas
Source of data	Monitored
Value(s) applied	N/A
Measurement methods and procedures	The temperature of the gas is required to determine the density of the methane combusted. If the biogas flow meter employed measures flow, pressure and temperature and displays or outputs the normalised flow of biogas, then there is no need for separate monitoring of pressure and temperature of the biogas
Monitoring frequency	The temperature of methane in the gas may be measured continuously or, alternatively, with periodical measurements at a 90/10 confidence/precision level.
QA/QC procedures	Calibration of the instrument shall be followed according to the recommendations of the provider.
Purpose of data	Calculation of baseline emissions
Additional comments	Shall be measured at the same time when methane content in biogas ($w_{CH4,y}$) is measured

Data / Parameter	P
Unit	Pa
Description	Pressure of the biogas
Source of data	Monitored
Value(s) applied	N/A
Measurement methods and procedures	The pressure of the gas is required to determine the density of the methane combusted. If the biogas flow meter employed measures flow, pressure and temperature and displays or outputs the normalised flow of biogas, then there is no need for separate monitoring of pressure and temperature of the biogas
Monitoring frequency	The pressure of methane in the gas may be measured continuously or, alternatively, with periodical measurements at a 90/10 confidence/precision level.
QA/QC procedures	Calibration of the instrument shall be followed according to the recommendations of the provider.
Purpose of data	Calculation of baseline emissions
Additional comments	Shall be measured at the same time when methane content in biogas ($w_{CH4,y}$) is measured

Data / Parameter	Scrapping of replaced equipment
Unit	(units)
Description	Independent monitoring of scrapping of replaced equipment
Source of data	monitored
Value(s) applied	-
Measurement methods and procedures	The monitoring should include a check if the number of project activity equipment distributed by the project and the number of scrapped equipment correspond with each other. For this purpose scrapped equipment should be stored until such correspondence has been checked. The scrapping of replaced equipment should be documented and independently verified. This should be checked once only per SSC-CPA
Monitoring frequency	
QA/QC procedures	
Purpose of data	Calculation of leakage
Additional comments	The leakage effect of the use of the replaced equipment in another activity is neglected

Data / Parameter	FE / $\eta_{flare,h}$
Unit	-
Description	Flare efficiency
Source of data	Tool to determine project emissions from flaring gases containing methane Version 1, EB 28 annex 13
Value(s) applied	VALUE
Measurement methods and procedures	In case of enclosed flares and use of the default value for the flare efficiency, the flare efficiency in the hour h (ηflare,h) is: • 0% if the temperature in the exhaust gas of the flare (Tflare) is below 500 °C for more than 20 minutes during the hour h . • 50%, if the temperature in the exhaust gas of the flare (Tflare) 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 (Tflare) 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.
Monitoring frequency	This is a calculated value according to the Tool
QA/QC procedures	-
Purpose of data	Calculation of project emissions
Additional comment	Regular maintenance shall be carried out to ensure optimal operation of flares according to the recommendations of the manufacturer.

Data / Parameter	$TM_{RG,h}$
Unit	Kg/h
Description	Mass flow rate of methane in the biogas in the hour *h*
Source of data	Calculated
Value(s) applied	VALUE
Measurement methods and procedures	Calculated using measurements for $BG_{burnt,y}$, $w_{CH4,y}$ and the density of methane
Monitoring frequency	-
QA/QC procedures	-
Purpose of data	Calculation of project emissions
Additional comments	-

Data / Parameter	Other flare operation parameters
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 manufacturer's specifications, for example temperature of flare as well as its operation above 500° C in an hour.
Source of data	Monitored
Value(s) applied	
Measurement methods and procedures	
Monitoring frequency	Monitored continuously
QA/QC procedures	
Purpose of data	Calculation of project emissions
Additional comments	For application of the default flare efficiency

Tool to calculate baseline, project and/or leakage emissions from electricity consumption

Data / Parameter	$EC_{BL,k,y}$
Unit	MWh
Description	Quantity of electricity that would be consumed by the baseline electricity consumption source *k* in year *y*
Source of data	Calculated
Value(s) applied	Baseline electricity consumption is VALUE
Measurement methods and procedures	Calculated using the *ex-ante* determination of electricity consumption per m^3 of wastewater treated based on one year of historical data
Monitoring frequency	
QA/QC procedures	
Purpose of data	Calculation of baseline emissions
Additional comments	

Data / Parameter	$EC_{PJ,j,y}$
Unit	MWh
Description	Quantity of electricity consumed by the project electricity consumption source *j* in year *y*
Source of data	Monitored and/or calculated
Value(s) applied	VALUE
Measurement methods and procedures	If possible, monitored directly using a meter; alternatively calculated using operating hours and relevant equipment ratings.
Monitoring frequency	Annually.
QA/QC procedures	Meter should be certified to national or IEC standards and calibrated according to the national standards and reference points or IEC standards and recalibrated at appropriate intervals according to manufacturer specifications, but at least once in three years;
Purpose of data	Calculation of project emissions
Additional comments	

AMS-I.C.

Data / Parameter	$EG_{thermal,y}$
Unit	TJ
Description	The net quantity of steam/heat supplied by the project activity during the year *y*
Source of data	Calculated
Value(s) applied	VALUE
Measurement methods and procedures	Heat generation is determined as the difference of the enthalpy of the steam generated by the heat generation equipment and the sum of the enthalpies of the feed-fluid and if applicable any condensate returns. The respective enthalpies should be determined based on the mass (or volume) flows, the temperatures and, in case of superheated steam, the pressure. Steam tables or appropriate thermodynamic equations may be used to calculate the enthalpy as a function of temperature and pressure.
Monitoring frequency	Continuous monitoring, aggregated annually
QA/QC procedures	-
Purpose of data	Calculation of baseline emissions
Additional comments	- (WHEN APPLICABLE). DESCRIBE TYPE OF FUEL CONSIDERED. - DESCRIBE SOURCE OF DATA SELECTED.

Data / Parameter	**-**
Unit	Nm^3/hr
Description	The net quantity of steam/heat supplied by the project activity during the year *y*
Source of data	Measured
Value(s) applied	N/A
Measurement methods and procedures	Measured using calibrated meters.
Monitoring frequency	Continuous monitoring, integrated hourly and at least monthly recording
QA/QC procedures	Calibration shall be as per the relevant paragraphs of the “General guidelines to SSC CDM methodologies”.
Purpose of data	Calculation of baseline emissions
Additional comments	

Data / Parameter	*T*
Unit	°C
Description	Temperature of steam
Source of data	Measured
Value(s) applied	N/A
Measurement methods and procedures	Measured using calibrated meters (measuring device).
Monitoring frequency	Continuous monitoring, integrated hourly and at least monthly recording
QA/QC procedures	Calibration shall be as per the relevant paragraphs of the "General guidelines to SSC CDM methodologies"
Purpose of data	Calculation of baseline emissions
Additional comments	

Data / Parameter	*P*
Unit	Kg/cm^2
Description	Pressure of steam
Source of data	Measured
Value(s) applied	N/A
Measurement methods and procedures	Measured using calibrated meters (measuring device).
Monitoring frequency	Continuous monitoring, integrated hourly and at least monthly recording
QA/QC procedures	Calibration shall be as per the relevant paragraphs of the "General guidelines to SSC CDM methodologies"
Purpose of data	Calculation of baseline emissions
Additional comments	Monitored in the case of superheated steam

D.7.2. Description of the monitoring plan

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Operational and management structure

NAME will designate a CDM Manager to be responsible for operation and management of the SSC-CPA monitoring system.

Data collection and archiving

Data will be collected at the frequency described in the monitoring tables.

A data collection and archiving system under the responsibility of the CDM Manager will be put in place to record and maintain the required data as listed in the monitoring tables.

Data will be electronically archived as part of monitoring for a period of two years from the end of the crediting period.

Procedures
Procedures for collection of data required for SSC-CPA monitoring will be under the responsibility of the CDM Manager; procedures will comply or surpass the requirements described in the monitoring tables.

When measured data shows high levels of uncertainty, calibration is not in-line with requirements, or data is missing, affected data should be compared or substituted with location/national data and/or commercial data to ensure consistency.

SECTION E. Approval and authorization

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Indicate whether the letter(s) of approval from each Party that wishes to be involved in the CPA, is available at the time of submitting the CPA-DD to the validating DOE. If so, provide along with the CPA-DD the letter(s) of approval of the Party(ies).

Not applicable.

- - - -

Appendix 1: Contact information on entity/individual responsible for the CPA

Organization	{PROVIDE}
Street/P.O. Box	{PROVIDE}
Building	{PROVIDE}
City	{PROVIDE}
State/Region	{PROVIDE}
Postcode	{PROVIDE}
Country	{PROVIDE}
Telephone	{PROVIDE}
Fax	{PROVIDE}
E-mail	{PROVIDE}
Website	{PROVIDE}
Contact person	{PROVIDE}
Title	{PROVIDE}
Salutation	{PROVIDE}
Last name	{PROVIDE}
Middle name	{PROVIDE}
First name	{PROVIDE}
Department	{PROVIDE}
Mobile	{PROVIDE}
Direct fax	{PROVIDE}
Direct tel.	{PROVIDE}
Personal e-mail	{PROVIDE}

Appendix 2: Affirmation regarding public funding

There is no public funding from Parties included in Annex I of the UNFCCC in the sense of any deviation of funds for Official Development Assistance (ODA).

Appendix 3: Applicability of the selected methodology(ies)

- - - - or {PROVIDE}

Appendix 4: Further background information on ex ante calculation of emission reductions

- - - - or {PROVIDE}

Appendix 5: Further background information on monitoring plan

- - - - or {PROVIDE}

History of the document

Version	Date	Nature of revision(s)
02.0	EB 66 13 March 2012	Revision required to ensure consistency with the "Guidelines for completing the component project design document form for small-scale component project activities" (EB 66, Annex 17).
01	EB33, Annex44 27 July 2007	Initial adoption.
Decision Class: Regulatory **Document Type:** Form **Business Function:** Registration		