



**Component project activity design document form for  
small-scale CDM component project activities**

**(Version 04.0)**

*Complete this form in accordance with the Attachment "Instructions for filling out the component project activity design document form for CDM small-scale component project activities" at the end of this form.*

**COMPONENT PROJECT DESIGN DOCUMENT (CPA-DD)**

<b>Title of the CPA</b>	Renewable Energy Rural Electrification (RERE) Programme CPA-001
<b>Version number of the CPA-DD</b>	Version 1.0
<b>Completion date of the CPA-DD</b>	23/05/2015
<b>Title of the PoA to which the CPA is included</b>	Renewable Energy Rural Electrification (RERE) Programme
<b>Host Party</b>	Cameroon
<b>Estimated amount of annual average GHG emission reductions</b>	7128 tCO <sub>2</sub>

**SECTION A. General description of CPA**

**A.1. Title of the proposed or registered PoA**

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Renewable Energy Rural Electrification (RERE) Programme

**A.2. Title of the CPA**

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Renewable Energy Rural Electrification (RERE) Programme CPA-001

**A.3. Description of the CPA**

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The CPA is being implemented by AGES under the PoA Renewable Energy Rural Electrification (RERE) Programme in Cameroon by AGES (CME). Under this CPA, the CPA Implementer plans to install and operate 1MW hydro in CDC facilities in the South West Region of Cameroon.

The technology to be used is the refurbishment of a hydro site that was shut down during World War II

**Scope of CPA:**

Under this CPA being implemented by Africa Growth and Energy Solutions (AGES), the installed plant will provide electricity to facilities and energy consumers that do not have access to any electricity distribution system/network such as a national or regional grid before this project implementation. The end users will be limited to households/communities as mentioned which will use this electricity for applications such as lighting (interior, public street lighting), electrical appliances such as refrigerators, agricultural water pumps, mobile recharging etc. Few businesses could also benefit the electricity generated, but will not exceed 25% in numbers. The electricity generated from the project activity contributes to an average GHG reductions estimated at 7128 tCO<sub>2</sub>/year.

**A.4. Entity/individual responsible for the operation of CPA**

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AGES

**A.5. Technical description of the CPA**

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The feasibility study of the project is still ongoing to decide on the technology to be used.

From work done so far on the site, the observations are that the original turbine and generator were removed for refurbishing and never returned. Without use and maintenance the supporting infrastructure has become dilapidated and large parts of the penstock, fore-bay and supporting civil

engineering works are dilapidated, destroyed, removed or in complete disrepair. There do not seem to be any records of the equipment that existed before, and no photographs, or specifications have been found.

Measurements of what remains and the water resources have been made by our engineer during detailed survey work and clearance. The flow rate, likely head and penstock diameter have been measured, and condition of equipment carefully taken. From this information we have established a likely potential power output of 1MW and designed an example of the system with outline costings so that a pre-feasibility assessment can be completed and the project progressed. Several turbine and generator specifications have been explored with Gilbert Gilkes & Gordon Ltd.

**A.6. Party(ies)**

Name of Party involved (host) indicates 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)
Cameroon (host)	Private entity: AGES	No

**A.7. Geographic reference or other means of identification**

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The project is located in the South West Region of Cameroon

The GPS coordinates of the hydro site are going to be indicated as soon as they are collected

The maps below indicate the exact location of the project site

**A.8. Duration of the CPA**

**A.8.1. Start date of the CPA**

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01/01/2016 (date of first equipment ordered to start construction)

**A.8.2. Expected operational lifetime of the CPA**

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20 years

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

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Fixed crediting period

**A.9.1. Start date of the crediting period**

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30/06/2016 (Expected date of registration of the PoA or date of commissioning the project under this CPA, whichever is later)

**A.9.2. Length of the crediting period**

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10 years 00 months

**A.10. Estimated amount of GHG emission reductions**

Emission reductions during the crediting period	
Years	Annual GHG emission reductions (in tonnes of CO <sub>2</sub> e) for each year
Year 1	7128
Year 2	7128
Year 3	7128
Year 4	7128
Year 5	7128
Year 6	7128
Year 7	7128
Year 8	7128
Year 9	7128
Year 10	7128
Total number of crediting years	10 years
Annual average GHG emission reductions over the crediting period	7128
Total estimated reductions (tonnes of CO <sub>2</sub> e)	71280

**A.11. Public funding of the CPA**

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The proposed CPA will not received any public funding from Annex I country resulting in the diversion of ODA

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

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AGES (as CME and CPA Implementer) confirms that this CPA is the first ever renewable energy project in the South West region of Cameroon developed under the CDM and requesting inclusion under the PoA. There is no other PoA under development in Cameroon at the moment for renewable energy for rural electrification. This microscale CPA can therefore not be a debundled component of any small scale or large scale project activity.

**A.13. Confirmation for CPA**

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This CPA is neither registered as a standalone CDM project activity nor is it included in another PoA

**A.14. Contact information of responsible persons/ entities for completing the CDM-SSC-CPA-DD-FORM**

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S2 Services Ltd.  
Po. Box: 12218 Douala, Cameroon  
+237 243 17 75 58  
[info@s2-gmbh.com](mailto:info@s2-gmbh.com)

**SECTION B. Environmental analysis**

**B.1. Analysis of the environmental impacts**

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Ongoing

**SECTION C. Local stakeholder consultation**

**C.1. Solicitation of comments from local stakeholders**

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The local stakeholders' consultation was performed at PoA level

A wide range of stakeholders were invited to physically attend a local stakeholder consultation organized by Solar ERA or to express their concerns/contributions by email or telephone. Invitation were all physically dropped or sent by post. Further, an invitation was inserted in the local newspaper "The Detective" of February 5, 2015. The meeting was attended by more than 160 people, ranging from village chiefs, to local Government authorities, interested NGOs and Common Initiative Groups and the wider community. The DNA of Cameroon was represented by Mr. Patrick Forghab who is acting secretary of the National Committee on CDM.

**C.2. Summary of comments received**

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The stakeholders expressed issues, concerns and worries summarized as follow:

- Under what framework/contractual agreement is Solar ERA developing the project
- Does Solar ERA not interfere with ENEO<sup>1</sup>?
- Which type of renewable energy is suitable for Konye Sub-division?
- How do people benefit from carbon credits revenue?
- How can the people participate in the success of the program?

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<sup>1</sup> ENEO is the para-statal electricity company of Cameroon and for the moment, producing, transporting and distributing electricity where there is grid connection.

In paragraph C.3. below, summary of main questions raised is presented in a table with answers provided to questions during the meeting indicated in the same table. The full report of the meeting is available for the DOE.

**C.3. Report on consideration of comments received**

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#	Name/Function	Question	Answer provided
1	OBASE Rexion Farmer from Kokaka	Does Solar Era project interfere with Eneo?	Solar Era is an independent power producer (IPP), in such it cannot interfere with Eneo. It follows the Cameroonian laws and rules with regards to IPPs. For the moment Solar ERA is focusing on off-grid where there is no ENEO at all. But even if it was on-grid, Solar ERA will negotiate a tariff to feed the electricity produced in to the grid.
2	Chief Bomas Solar	Which type of renewable energy source would be suitable to Konye sub-division?	The prefeasibility study shows that there is potential for biomass (from agriculture waste, mostly waste from cocoa production), hydro (many mini hydro potential in the region) and solar energy to a lesser extent. Solar ERA will focus first on hydro and biomass but can also put in place hybrid systemsThe selected technologies per cluster will solely depend on the outcome of the ongoing feasibility study.
3	Chief Esono Joseph	Could Solar Era implement their projects simultaneously in 2 villages?	No, in order to meet the investment criteria, the 51 villages that have Konye Sub-Division have been grouped in 10 clusters; Solar ERAwill provide electricity in one cluster before going to another.
4	Counsellor Anastacia	Is the power that will be produced enough to meet all the demand in the location including households, businesses and public places like schools and hospitals?	Yes, the electricity produced in different clusters will be enough to meet the demand. Also, the technology used is sophisticated and will adjust automatically up or down depending on the fluctuation of the demand in different periods. And finally Solar ERA will introduce a “smart grid” and “smart meters” that people prepaid their energy before using it; and people could actually sell their energy to other users.
5	Deputy Mayor	Since Solar ERA want to sell carbon credit, what will be the farmer's benefit?	(Answer provided by the DNA representative, Mr. Patrick Forghab) Carbon credit prices have dropped from 12 000 FCFA to less than 500 FCFA for a carbon credit. It is better for the population to concentrate just on getting the energy instead of bothering with carbon credits that are not really bringing anything for the moment to investors. But if prices of carbon credits go up or if Solar ERA finds a good buyer using carbon credits for its compliance, then price of electricity will go down accordingly.

#	Name/Function	Question	Answer provided
6	Chief	Could it be to our disadvantage in the long run to engage in such privately run project? If for example the project is slow and the government has plans to electrify the region, will we not miss that opportunity?	No, the government works hand in hand with the council to check the priority needs of the population. Each council in Cameroon has a Community Development Plan and government looks at that plan to see what are priorities, what are ongoing projects and their status of development before starting new projects that will benefit the population.
7		You said the project is a BOT with an agreement of 25 years for the project to become property of the community. Why the project has to take 25 years before becoming Konye's property?	It is not too long; the project costs 6 billion FCFA (58 million EURO). It will take a lot of time to recover all the money. And having this long period means also that electricity will not be sold to expensive to end users  (Answer from the Lordmayor) Before signing the MoU, we also considered the time our people will need to fully understand different technologies put in place and be ready to operate after the project has been transferred to the council. The following 4 points were very well considered:  <ul style="list-style-type: none"> <li>a. Solar ERA will train people on the management and operation of the project</li> <li>b. There is a possibility to keep Solar ERA for the management of the project beyond 25 years if need be</li> <li>c. In-kind contribution of the community (like land for plants construction) will be very well valued</li> <li>d. Any arising specific situation will be well analyzed and addressed</li> </ul>
8		If my farm is far away from the power plant will I still have access to electricity?	Cables for electricity transport will be put underground to facilitate the transport with the idea to give electricity to all.
9		what contribution is expected from the population?	Population contribution is to buy the energy and use it. FEICOM (the governmental fund for councils) is also discussing to bring a financial contribution to the development of the projects. And this is also considered as contribution of the population
10		Who will be in charge of the project after the BOT of 25 years?	The project will go back to the council. The management committee will be put in place with representative from different clusters to manage the project under the supervision of the mayor (who is elected by the population and hence represents the latter)
11	Amade	When will the projects be operational?	In 2017 (first projects are starting construction soon) Clarification of Solar ERA: The MOU is a document putting in place a good framework for working together and not only showing 25 years BOT.
12		Is the project going beyond Konye Sub-Division	That is the plan of Solar ERA, but the idea is to start in Konye, build confidence before going to other places

**SECTION D. Eligibility of CPA and estimation of emissions reductions**

**D.1. Reference of methodology(ies) and standardized baseline(s)**

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The SSC-CDM methodology AMS-I.L: “Electrification of rural communities using renewable energy”, Version 3, EB 81, Annex 21, Valid from 28 November 2014 is used for the development of this CPA.

Reference: <https://cdm.unfccc.int/methodologies/DB/CCZKY3FSL1T28BNEGDRSCKS0CY0WVA>

**D.2. Applicability of methodology(ies) and standardized baseline(s)**

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The applicability criteria for the selected methodology to this CPA are described in the table below:

para	Applicability	Justification
3.	<p>This methodology is applicable to electrification of a community achieved through the installation of renewable electricity generation systems that displace fossil fuel use, such as in fuel-based lighting systems, stand-alone power generators, and fossil fuel based mini-grids. The two categories of applicable project activities are:</p> <ul style="list-style-type: none"> <li>(a) Implementation of individual, renewable energy systems such as roof top solar photovoltaic systems;</li> <li>(b) Installation or extension of an isolated mini-grid which distributes electricity generated only from renewable energy systems.</li> </ul>	<p>This CPA falls under paragraph 2 (b) of the methodology. There is an existing mini-grid that will be extended/improved to distribute electricity generated from hydro source</p>
4.	<p>This methodology is applicable to:</p> <ul style="list-style-type: none"> <li>(a) Greenfield individual, renewable energy system projects or mini-grid activities; and/or</li> <li>(b) Rehabilitation (or refurbishment) of individual, renewable energy systems if it can be demonstrated that the baseline system(s) are not part of another CDM activity and are non-operational and require a substantial investment for them to be rehabilitated to or above the original electricity generation capacity. Options for demonstrating compliance with this condition include providing documentation that: <ul style="list-style-type: none"> <li>(i) The existing system has not generated electricity, or that alternative fuels (e.g. kerosene) have been used, for at least six months prior to project design document (PDD) or component programme activity design document (CPA-DD) submittal; and/or</li> <li>(ii) Substantial investments are required to rehabilitate the existing systems, e.g. investments greater than half of the cost to install a new system with the same electricity generation capacity.</li> </ul> </li> </ul>	<p>This CPA falls under paragraph 4 (b). The project is a rehabilitation of an hydro site that has been shut down for more than six months and substantial investment is needed to rehabilitate the installations until electricity production and distribution</p>



5.	This methodology is applicable in situations where consumers that were not connected to a national/regional grid prior to project implementation are supplied with electricity from the project activity. It is also applicable to situations where a fraction of consumers that are supplied with electricity from a fossil fuel based mini-grid prior to the implementation of the project are now supplied with electricity from the project activity.	Beneficiaries of the electricity generated by this project are not connected to the national electricity grid of Cameroon, thus this applicability criteria is met
6.	At least 75 per cent (by number) of the consumers connected to the project renewable electricity generation system(s) shall be households.	Users of the electricity will be households and some communities/public places will also get electricity. This criteria is met
7.	Project equipment shall comply with applicable international standards or comparable national, regional or local standards/guidelines and the PDD or CPA-DD shall indicate the standard(s) applied.	The equipment is very high standard.
8.	The methodology is applicable to renewable electricity generation systems intended for permanent installation and is not applicable to portable systems, such as portable electricity generating systems or LED lanterns. The aggregate installed capacity of the renewable energy generating systems shall not exceed 15MW.	This CPA is a permanent installation of hydro plant of 1MW, thus this criteria is met
9.	For projects involving the installation of hydro power plants with reservoirs the requirements prescribed under “AMS-I.D.: Grid connected renewable electricity generation” shall be followed.	There is no reservoir involved

**D.3. Sources and GHGs**

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The sources and the GHGs included in the CPA boundary are presented in the table below:

Source		GHGs	Included? Yes/No	Justification/explanation
Baseline scenario	Emissions from actual energy sources	CO <sub>2</sub>	Yes	Main emission source
		CH <sub>4</sub>	No	Excluded
		N <sub>2</sub> O	No	Excluded
Project scenario	Emissions from hydro plant	CO <sub>2</sub>	No	Project emissions are considered zero per meth.
		CH <sub>4</sub>	No	Project emissions are considered zero per meth.
		N <sub>2</sub> O	No	Project emissions are considered zero per meth.

**D.4. Description of the baseline scenario**

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The CPA-001 will provide electricity to consumers around the CDC facilities in the South West Region of Cameroon which do not have any access to national or regional grid. The households/communities, benefiting from the electricity generated are using for electricity generation diesel generator prior to the project activity.

The project will be the installation of a 1MW hydro plant that will reduce GHG emissions associated with the baseline electricity generation system.

Baseline emissions will be calculated using the formulae indicated in paragraph D.6.1.

**D.5. Demonstration of eligibility for a CPA**

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No	Eligibility criteria		Means of proof	Confirmation
	Description	Conditions to be met		
1.	Boundary and location of the CPA	The CPA is located within the boundary of Cameroun.	Location is specified in the specific CPA-DD of each CPA and supported with GPS coordinates.	Yes CPA is located in Cameroon and GPS coordinates and map of the site are indicated in paragraph A.7 of this CPA-DD
2.	Avoiding double counting if applicable	The CPA includes a means of uniquely identifying the plant producing electricity and distributing to identified end-users	Location and GPS coordinates of the plant Location of end-users Agreement between CPA Implementer and CME CPA number	Yes CPA number and location and GPS are indicated No agreement is needed between CPA Implementer and CME since they are the same entity for this CPA
3.	Start date of CPA	The CPA start date shall be after the PoA validation start date and shall be earlier than the PoA end date which is 28 years after PoA registration.	The start date of the CPA will be specified in each CPA-DD and an appropriate proof will be provided (e.g. date financial closure for each CPA or date construction start for each CPA). The start date will be checked against end date of the PoA	Yes Start date is indicated in paragraph A.8.1 of this CPA-DD
4.	Applicability of Methodology AMS-I.L	All applicability criteria of the methodology AMS-I.L Version 3 “Electrification of rural communities using renewable energy” shall be met by individual CPAs	CPA Implementer will make sure applicability criteria are met and document this in the CPA-DD	Yes The CPA meets all applicability criteria of the methodology AMS-I.L as indicated in paragraph D.2 of this CPA-DD
5.	Additionality of CPAs	The CPA shall satisfy the latest version of the “guidelines for demonstrating additionality of microscale project activities” Especially, each CPA will: <ul style="list-style-type: none"> <li>- be less than or equal to 5MW</li> <li>- provide electricity to off-grid households and communities</li> </ul>	CPA Implementers will provide information on the additionality in the CPA-DD	Yes <i>According to the “Guidelines for demonstrating additionality of microscale project activities” EB 68, Annex 26:</i>  <i>Paragraph 2:</i> <i>Project activities up to five megawatts that employ renewable energy technology are additional if any one of the conditions below is satisfied:</i>  <i>Paragraph 2 (b)</i> <i>The project activity is an off-grid activity supplying energy to households/communities (less than 12 hours grid availability per 24 hrs</i>

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				<p><i>is also considered “off-grid” for this assessment);</i></p> <p>This CPA is 1MW, off-grid and supplying electricity to households/communities and is therefore automatically additional and the eligibility criteria is thus met</p>
6.	Official Development Assistance (ODA)	The CPA is either: a) not receiving any funding from Annex I parties; or b) the Annex I party funds do not result in a diversion of ODA.	Confirmation by CPA Implementers and information provided in the CPA-DD	<p>Yes</p> <p>The proposed CPA will not received any public funding from Annex I country resulting in the diversion of ODA, as confirmed in paragraph A.11 and by the letter emitted by AGES</p>
7.	End-user group	The CPA is either aimed at households or communities	The CPA-DD specifies the target end-user group(s)	<p>Yes</p> <p>The electricity is dedicated to households</p>
8.	Sampling	Sampling of end-users within each CPA must meet the requirements of AMS-I.L Version 3 and the “Standard on Sampling and Surveys for CDM Projects and Programmes of Activities”	<p>In the proposed PoA, the CME opts for a verification method that does not use sampling to verify each installation in the CPA</p> <p>A monitoring plan will be established such that each system under each CPA is monitored and verified. Only CPA Implementer willing to do this individual monitoring will be accepted to join the PoA.</p>	<p>Yes</p> <p>This CPA opts for verification method and sampling is not needed</p>
9.	Microscale Limit for CPAs	The installed capacity of each CPA is limited to 5MW.	The requirement to meet this criteria of 5MW limit will be indicated in each agreement between CPA Implementer and CME	<p>Yes</p> <p>The installed capacity is just 1MW, less than the 5MW limit</p>
10.	Local Stakeholder Consultation	A Local Stakeholder Consultation (LSC) must be conducted prior to inclusion of the CPA in the PoA. If a LSC has already been done at the national level for the first CPA in the country, and the LSC covered the issues relevant to this CPA, then the LSC does not need to be done again.	A national LSC was conducted and will hold for each CPA to be included in this PoA	<p>Yes</p> <p>The LSC was done already at PoA level as indicated in the PoA at Section F, paragraph F1</p>
11.	Environmental Analysis	An Environmental Impact Analysis must be conducted prior to inclusion of the CPA	A Certificate of Conformity and EIA reports or exemption from the government of	<p>Yes</p> <p>EIA is ongoing</p>

		in the PoA.	Cameroon will be provided for each CPA to be included	
12.	CPA crediting period does not exceed PoA life	The duration of the crediting period of each CPA to be included in the PoA shall not exceed the end date of the registered PoA.	CPA-DD shall indicate the duration of the CPA crediting period, either for a single 10 year crediting period or a 7 year renewable crediting period. The final date for which CERs can be credited shall be no later than 28 years after the date of registration of the PoA.	Yes, This CPA is the first one for the PoA. The crediting period starts with registration of the PoA and its duration is 10 years, which is less than the 28 years duration of the PoA. This criteria is thus met.

**D.6. Estimation of emission reductions**

**D.6.1. Explanation of methodological choices**

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As per the selected methodology AMS-I.L used for the development of this CPA and based on the reality of the project, emission reductions will be estimated for baseline, project and leakage as followed:

**Baseline emissions:**

Baseline emissions are calculated using the equation (12) in paragraph 30, section 5.2.2.2 of the methodology as indicated below:

**5.2.2.2. Approach 2. Simplified calculation based on average electricity consumption per consumer**

30. With this approach, baseline emissions of Type-I and Type-II consumers, are calculated as follows:

$$BE_{T1,y} + BE_{T2,y} = (ED_{tot,y} - ED_{exist,y}) \times (1 - TL_p) \times EF_{CO2,tot} \quad \text{Equation (12)}$$

Where:

$$EF_{CO2,tot} = 1.0 \text{ (t CO}_2\text{/MWh)}$$

Where:

$BE_{T1,y}$  = Baseline emissions for Type I consumers in year y (tCO<sub>2</sub>)

$BE_{T2,y}$  = Baseline emissions for Type II consumers in year y (tCO<sub>2</sub>)

$ED_{tot,y}$  = Total electricity delivered to the community of all Type I, Type II and existing consumers (MWh)

$ED_{exist,y}$  = Total electricity delivered to existing consumers (MWh)

$TL_p$  = Transmission and distribution losses within the project area (%), with 10% as default value. *For this CPA, the default value will be used*

$EF_{CO_2,tot}$  = Emissions factor for the mini-grid = *1.0 tCO<sub>2</sub>/MWh per methodology*

Type I consumers are households and are the majority for this project activity

Type II consumers are businesses and are the minority for this project activity

For this project, there are no existing consumers connected to the grid prior to the project activity, because the grid is new, i.e.  $ED_{exist,y} = 0$

### **Project emissions**

Project emissions are calculated based on the section 5.3 and paragraph 31 of the methodology as followed:

#### **5.3. Project emissions**

31. Project emissions are considered zero (i.e.  $PE_y = 0$ ) except in the cases below where method indicated in the most recent version of "AMS-I.D: Grid connected renewable electricity generation" is applied to calculate project emissions.
- (a) Emissions related to the operation of geothermal power plants (e.g. non-condensable gases, electricity/fossil fuel consumption);
  - (b) Emissions from water reservoirs of hydro power plants.

Project emissions are considered therefore zero for this project activity as it's not geothermal power and there is no water reservoirs involved in the hydro plant considered.

### **Leakage emissions**

Leakage emissions are calculated based on the section 5.4 and paragraph 32 of the methodology as followed:

#### **5.4. Leakage**

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

Leakage is zero for this project activity as there is no equipment transferred from another activity

### **Emission reductions**

Emission reduction for the CPA are finally calculated based on the section 5.5 and paragraph 33 of the methodology as followed

### 5.5. Emission reductions

33. Emission reductions on annual basis ( $ER_y$ ) are calculated as follows:

$$ER_y = BE_y - PE_y - LE_y \quad \text{Equation (13)}$$

Where:

$ER_y$  = Emission reductions in year  $y$  (t CO<sub>2</sub>e/y)

$BE_y$  = Baseline Emissions in year  $y$  (t CO<sub>2</sub>/y)

$PE_y$  = Project emissions in year  $y$  (t CO<sub>2</sub>/y)

$LE_y$  = Leakage emissions in year  $y$  (t CO<sub>2</sub>/y)

### D.6.2. Data and parameters fixed ex-ante

(Copy this table for each data and parameter.)

Data / Parameter	EF <sub>CO2,tot</sub>
Unit	tCO <sub>2</sub> /MWh
Description	Emissions factor of the mini-grid
Source of data	Default value from methodology
Value(s) applied	1
Choice of data or Measurement methods and procedures	The methodology provides a default value for this parameter
Purpose of data	This data is used to calculate emission reductions
Additional comment	This data is fixed for the entire crediting period

Data / Parameter	TL <sub>p</sub>
Unit	%
Description	Transmission losses of the mini-grid
Source of data	Default value from methodology
Value(s) applied	10
Choice of data or Measurement methods and procedures	The methodology provides a default value for this parameter
Purpose of data	This data is used to calculate the energy effectively consumed by end-users
Additional comment	This data is fixed for the entire crediting period

### D.6.3. Ex-ante calculation of emission reductions

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**Baseline emissions** are calculated using

$$BE_{T1,y} + BE_{T2,y} = (ED_{tot,y} - ED_{exist,y}) \times (1 - TL_p) \times EF_{CO2,tot}$$

The total baseline emissions are the sum of baseline emissions for Type I consumers (households) and Type II consumers (businesses).

**Project emissions** and **leakage emissions** are zero per methodology

**Emission reductions** are calculated using the formula

$$ER_y = BE_y - PE_y - LE_y$$

The table below indicate in details how ex-ante calculations are made:

Parameter	Values	Units	Comments
Power installed	1	MW	Feasibility study
Yearly operation	11	Month	Estimation of 1 month maintenance per year
	330	Days	calculated considering average month is 30 days
	7920	hours	Calculated considering a day is 24hours
Electricity generation (EDtot)	7920	MWh	Calculated
Transmission losses (TLp)	10%		default value
Electricity consumed	7128	MWh	
Emissions factor (EFco2)	1	tCO2/MWh	default value
Baseline emissions (BE)	7128	tCO2/year	
Project emissions (PE)	0	tCO2/year	default value
Leakage emissions (LE)	0	tCO2/year	default value
Emissions reductions (BE-PE-LE)	7128	tCO2/year	Calculated

**D.6.4. Summary of the ex-ante estimates of emission reductions**

Year	Baseline emissions (t CO <sub>2</sub> e)	Project emissions (t CO <sub>2</sub> e)	Leakage (t CO <sub>2</sub> e)	Emission reductions (t CO <sub>2</sub> e)
Year 1	7128	0	0	7128
Year 2	7128	0	0	7128
Year 3	7128	0	0	7128
Year 4	7128	0	0	7128
Year 5	7128	0	0	7128
Year 6	7128	0	0	7128
Year 7	7128	0	0	7128
Year 8	7128	0	0	7128
Year 9	7128	0	0	7128
Year 10	7128	0	0	7128
<b>Total</b>	<b>71280</b>	<b>0</b>	<b>0</b>	<b>71280</b>
Total number of crediting years	10			

Annual average over the crediting period	7128	0	0	7128
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**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.)*

Data / Parameter	EDtot,y
Unit	MWh
Description	Electricity generated by the power plant
Source of data	From the meter installed at the output of the power plant
Value(s) applied	7920
Measurement methods and procedures	Reading the meter
Monitoring frequency	The meter will be read frequently to ensure it's still in operation
QA/QC procedures	The meter will be well calibrated and tested before installation at the beginning of the project. Then it will be calibrated every year by a recognized institution.
Purpose of data	This data is needed for the estimation of emission reductions
Additional comment	NA

**D.7.2. Description of the monitoring plan**

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This CPA will follow the monitoring system put in place by the PoA

**Data recording**

The meter installed at the outlet of the hydro plant will be read every day and data recorded by the project manager on site on a physical sheet but also saved electronically. Data recorded will be monthly sent to the headquarters of AGES for archiving

**Roles/Responsibilities**

This CPA will have a permanent project manager on site ensuring all equipments are working properly.

The project manager has the role to read the meter every day and record the information.

On a monthly basis, the CME will receive data sent by the on-site project manager, then check against expectations to make sure all is working well

The project manager on-site has the responsibility to signal any malfunction of the meter (but also of the whole installations) to AGES who will take necessary measures.

**Maintenance**

All the operating equipments at the generation units will be regularly checked for maintenance and a monthly maintenance log shall be maintained.



**Calibration**

The meter at the consumption units involved in the proposed PoA shall be tested for calibration on an annual basis. CERs will not be claimed for any period for which the data could not be recorded for any emergency reason. The meter will be calibrated annually and the calibration certificate will be kept by the CME (photocopy will be kept on-site by the project manager).

**Data Archiving**

The responsibility of data archival will rest with the on-site project manager and CME. The monthly reports sent (in soft copy) by the on-site project manager to AGES for the whole crediting will be checked and archived till 2 years post the end of crediting period of the CPA.

**SECTION E. Approval and authorization**

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Letter of Approval for the PoA will be requested soon

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## Appendix 1. Contact information of CPA implementer(s) and responsible person(s)/ entity(ies) for completing the CDM-SSC-CPA-DD-FORM

<b>CPA implementer and/or responsible person/ entity</b>	<input checked="" type="checkbox"/> CPA implementer(s) <input type="checkbox"/> Responsible person/ entity for completing the CDM-SSC-CPA-DD-FORM
<b>Organization</b>	Africa Growth and Energy Solutions
<b>Street/P.O. Box</b>	
<b>Building</b>	
<b>City</b>	
<b>State/Region</b>	
<b>Postcode</b>	
<b>Country</b>	
<b>Telephone</b>	
<b>Fax</b>	
<b>E-mail</b>	<a href="mailto:royston@solarera.eu">royston@solarera.eu</a>
<b>Website</b>	<a href="http://www.solarera.eu">www.solarera.eu</a>
<b>Contact person</b>	Royston Dawkins
<b>Title</b>	Director
<b>Salutation</b>	
<b>Last name</b>	Dawkins
<b>Middle name</b>	
<b>First name</b>	Royston
<b>Department</b>	
<b>Mobile</b>	
<b>Direct fax</b>	
<b>Direct tel.</b>	
<b>Personal e-mail</b>	<a href="mailto:royston@solarera.eu">royston@solarera.eu</a>

## Appendix 2. Affirmation regarding public funding

The proposed CPA will not received any public funding from Annex I country resulting in the diversion of ODA

## Appendix 3. Applicability of methodology(ies) and standardized baseline(s)

Not applicable

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

Not applicable

**Appendix 5. Further background information on monitoring plan**

Not applicable

**Appendix 6. Summary of post registration changes**

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