



**Programme design document form for  
small-scale CDM programmes of activities  
(Version 05.0)**

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

**PROGRAMME DESIGN DOCUMENT (PoA-DD)**

<b>Title of the PoA</b>	Renewable Energy Rural Electrification (RERE) Programme
<b>Version number of the PoA-DD</b>	Version 3
<b>Completion date of the PoA-DD</b>	07/09/2016
<b>Coordinating/ managing entity</b>	Africa Growth and Energy Solutions (AGES)
<b>Host Party(ies)</b>	Cameroon
<b>Applied methodology(ies) and where applicable, selected standardized baseline(s)</b>	Selected methodology: AMS-I.L "Electrification of rural communities using renewable energy"
<b>Sectoral scope(s) linked to the applied methodology(ies)</b>	Sectoral scope 01

## PART I. Programme of activities (PoA)

### SECTION A. General description of PoA

#### A.1. Title of the PoA

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Renewable Energy Rural Electrification (RERE) Programme  
Version 3  
07/09/2016

#### A.2. Purpose and general description of the PoA

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##### **Policy/measure or stated goal of the PoA:**

According to data from the World Energy Outlook, the electrification rate of Cameroon is 54% overall, with 88% in urban areas and only 17% in rural areas<sup>1</sup>. Inhabitants of rural areas depend on diesel generators, kerosene lanterns, battery torches and fuel wood to satisfy their energy needs. However, Diesel generators as well as fuel wood also used by them can be broadly characterized as non-sustainable solutions with associated sound, air pollution, health and environmental risks, and most importantly greenhouse gas emissions associated to these technologies.

The overall goal of this PoA is to provide rural off-grid<sup>2</sup> population of Cameroon with renewable electricity using locally available resources like hydro, biomass, solar or wind. With this goal achieved, population living without electricity now shall have affordable electricity at their disposal to go up the energy-ladder, and Cameroon shall contribute overall to the reduction of greenhouse gas emissions emitted with existing technologies.

In addition, the PoA shall contribute to activities aimed at growing and strengthening the renewable energy industry in the Country. Cameroon signed and ratified the Kyoto Protocol in 2005. The government's policy seeks to get the country out of under-development, through the implementation of the long-term Energy Sector Development Plan (PDSE 2035) and the Poverty Reduction Strategy Paper (PRSP). Development of the energy sector is seen as a factor for attracting investment and strengthening growth. Moreover, Cameroon's development objectives under the Vision 2035 envisage significant investments in the energy sector, with the inclusion of renewable energy. There are some existing policies that highlight renewable energy in Cameroon. The renewable energy sector has been in consideration since 1996 as according to article 24 of law N° 96/12 of 5th August 1996, relating to Environmental management. According to this article,

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<sup>1</sup>Download the spreadsheet with data about Africa here <http://www.worldenergyoutlook.org/africa/>

<sup>2</sup> Off-grid here and overall in this PoA means not connected to the electricity grid as defined in different scenarios in the selected methodology AMS-I.L Version 03 that is used for the development of this PoA.

the competent ministry in collaboration with the ministry in charge of environment and the private sector are in charge of producing renewable energy so as to protect the atmosphere. Law N° 2011/022 of 14th December 2011 creates Department of Renewable energy. Article 59 (2) imposes the use of renewable energy in the implementation of the decentralized rural electrification program so as to encourage environmental protection<sup>3</sup>

**General operating and implementing framework of PoA:**

The PoA is implemented and operated by Africa Growth and Energy Solutions (AGES) trading as Solar ERA<sup>4</sup>. AGES is the “Coordinating/Managing Entity” (hereinafter referred to as “CME”). AGES shall introduce this program to several rural areas in Cameroon and shall act as the focal point with the CDM Executive Board in all the aspects relating to validation, verification, registration and issuance of carbon credits generated by the PoA. Each CPA developer (hereinafter referred to as “CPA Implementer” or “Project Implementer” or simply “Implementer” is in charge of constructing, operating and managing its off-grid energy generating plant/facility. AGES however shall also act in many cases as Implementer without any need of a specific agreement.

As CME, Africa Growth and Energy Solutions shall be responsible to:

- Design the overall program,
- Develop and manage an appropriate operational structure for the PoA
- Encourage the use of renewable and clean energy to reduce emissions from fossil fuels.
- Manage the sales of carbon credits generated by the program

CPA Implementers shall be responsible to:

- Install power plants to produce off-grid electricity available to rural populations of Cameroon using technologies and meeting the requirements described in this PoA
- Use the Generic CPA attached to this PoA to develop their CPA
- Monitor the installed power stations during the crediting period.
- Conduct a maintenance program during the crediting period.
- Train local engineers to ensure proper operation during the project cycle

For monitoring data recording and archiving system, Africa Growth and Energy Solutions as CME is responsible for collecting data from each CPA regularly and providing CPA Implementers with proper guidance for on-site monitoring. CPA Implementers shall report all the CDM relating data and documents to CME periodically or when it's necessary. Local authorities as well as private

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<sup>3</sup> [https://www.climateinvestmentfunds.org/cif/sites/climateinvestmentfunds.org/files/Cameroon\\_EOI.pdf](https://www.climateinvestmentfunds.org/cif/sites/climateinvestmentfunds.org/files/Cameroon_EOI.pdf)

<sup>4</sup>In this PoA-DD, AGES and Solar ERA mean all the same company.

entities that meet the criteria outlined in this PoA may also participate as a CPA implementer under the agreements with CME (like MoUs<sup>5</sup>). The agreements between CME and CPA implementer may include each party's responsibilities and duties. To avoid double counting and operate PoA effectively, each CPA shall be issued its own ID by CME, for example CPA001, CPA002 etc.

In this PoA, the first CPA is a project developed by Africa Growth and Energy Solutions in the council of Konye (Konye Sub-Division). The project is a Solar PV site of 1MW that shall produce electricity and distributed in the council. The Council of Konye has contributed 2.44ha of land that shall be used for the installation of the plant.

**Confirmation that the proposed PoA is a voluntary action by the coordinating/managing entity:**

The proposed PoA is a voluntary initiative by Africa Growth and Energy Solutions and is not mandated by any specific government regulation or scheme of Cameroon.

**Project contribution to sustainable development**

The implementation of this PoA would contribute to the sustainable development in the following ways:

**- Social Well Being**

This project shall provide renewable, clean, and affordable electricity to the rural communities.

The implementation as well as operation of projects under the proposed PoA shall provide employment opportunities for the local workforce.

The project shall dis-enclave and connect these rural communities to the entire national territory, as access to information and communication is improved (people shall be able to use TV and radios; also shall easily recharge their mobile phones).

The project shall equally improve the overall health situation of these communities. Medicines could easily be conserved with refrigerators when there is electricity. Also, the use of wood and kerosene produce fumes that are damaging to the health and this program shall avoid that.

With electricity available, the education level in communities shall increase as children shall be able to easily study their books.

**- Economic well being**

The proposed PoA fulfils the most important infrastructure need by providing electricity to the rural communities. This shall directly boost up the local economy. Availing the electricity generated using

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<sup>5</sup>For the moment for instance, there is already a MoU signed between Africa Growth and Energy Solutions with the Mayor of Konje, representing the population of this locality, but projects identified in Konje shall be developed by AGES

the technology considered in this proposed PoA is an economic option for the community households, as it is cheaper than the alternative source which is Kerosene/diesel and fuel wood.

The project shall have a strong positive impact on the rural economy as farmers' income shall be improved as they could use electricity for conservation and pre-transformation of their farming products.

New business opportunities shall also be created.

Africa Growth and Energy Solutions shall allow electricity to be paid in advance with pre-paid metering system to be installed by Africa Growth and Energy Solutions. This pre-paid system allows customers to manage and control their electricity costs.

**- Environmental well being**

All SSC-CPAs under the proposed PoA shall utilize hydro, biomass, wind or solar PV energy solutions for power generation process, which are clean fuel and are GHG-neutral. This shall certainly have a positive impact on the environment both at local and global level. The power supplied replaces the consumption of fossil fuels, thus resulting in overall emission reduction.

**- Technological transfer**

The proposed PoA involves renewable technology for power generation. The technology shall encourage the power producers/entrepreneurs across the country to develop new low cost solutions to the national energy problem.

None of the technologies used to produce electricity under this PoA is developed in Cameroon so far. This PoA is a good technology transfer between developed countries and Cameroon.

These contributions are in line with the national with strategic Cameroon documents like the Poverty Reduction Strategic Paper (PRSP) and most importantly the National Action Plan for Energy Development to Reduce Poverty (PANERP) developed in 2007 with emphasis on the Millennium Development Goals. Also, Cameroon just presented in end 2015 its INDC where it commits to the reduction of its GHG emissions by 32% by 2035. In this INDC, Cameroon insists that technology transfer will be key in achieving this goal.

**A.3. CME and participants of PoA**

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The entity that manages and oversees communication with the Designated Operational Entity, the Executive Board and the UNFCCC secretariat is AFRICA GROWTH AND ENERGY SOLUTIONS. There is no other project participant of the PoA. AFRICA GROWTH AND ENERGY SOLUTIONS shall be responsible for ensuring that all renewable energy CPA project activities are developed under correct CDM specifications as detailed by the program; as well as implementing and effectively executing the monitoring plan.

**A.4. Party(ies)**

Name of Party involved (host) indicates host Party	Private and/or public entity(ies) project participants, CME (as applicable)	Indicate if the Party involved wishes to be considered as project participant (Yes/No)
Cameroon (host)	Private entity: Africa Growth and Energy Solutions (AGES)	No

**A.5. Physical/ Geographical boundary of the PoA**

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The PoA shall be implemented within the Geographical boundary of Cameroon. National and sectoral policies in the electricity production sector are the same within the geographical boundaries of Cameroon. With regard to this PoA, there are no differences in the national or sectoral policies between different regions of the country.

**A.6. Technologies/measures**

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A typical CPA under the PoA shall be renewable electricity plant with a maximum installed capacity of 5MW. Each plant shall generate electricity using hydro, wind, biomass or solar technology to energy consumers that do not have access to any electricity distribution system/network such as a national grid, regional grid before project implementation.

Plants shall be greenfield mini-grid renewable energy systems.

The electricity produced shall be distributed only through installation of an isolated mini-grid by each CPA developer.

The installations in the CPA under the PoA shall include any of the technologies as described above. Full technology description and specifications shall be provided in each CPA-DD. The CPA developer will give detailed description of the technology provided it's wind, hydro, solar or biomass, not bigger than 5MW and connected to a mini-grid newly constructed by the CPA developer.

**A.7 Public funding of PoA**

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The proposed PoA shall not receive any public funding from Annex I country resulting in the diversion of ODA

**SECTION B. Demonstration of additionality and development of eligibility criteria****B.1. Demonstration of additionality for PoA**

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The PoA consists of CPAs within individual capacities capped at 5MW and supplying electricity to households and communities in off-grid areas of Cameroon.

According to the methodological tool “Demonstrating additionality of microscale project activities”  
Version 07.0 (EB 86, Annex 14):

*Paragraph 7: Project activities up to five megawatts that employ renewable energy technology are additional if any one of the conditions below is satisfied:*

*Paragraph 7 (b): The project activity is an off-grid activity supplying energy to households/communities (less than 12 hours grid availability per 24 hrs is also considered “off-grid” for this assessment);*

Each CPA to be added to this PoA shall meet the requirements of these guidelines and shall be automatically additional.

**B.2. Eligibility criteria for inclusion of a CPA in the PoA**

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AGES as CME shall verify that the following criteria are met for any CPA to be included in the PoA prior to accepting its inclusion:

No.	Eligibility criteria		Means of proof
	Description	Conditions to be met	
1.	Boundary and location of the CPA	The CPA is located within the boundary of Cameroon.	Location of the plant and villages served is specified in the specific CPA-DD of each CPA and supported with GPS coordinates. There is no time-induced boundary applicable to this PoA.
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 the end-users (customer ID and Name) CPA number
3.	Start date of CPA	The CPA start date shall be after the PoA start date and shall be earlier than the PoA end date which is 28 years after PoA registration.	The start date of the CPA shall be specified in each CPA-DD and an appropriate proof shall be provided (e.g. date financial closure for each CPA/expected signing of EPC contract/date construction start for each CPA). The start date shall be checked against end date of the PoA
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 shall make sure applicability criteria are met and document this in the CPA-DD Applicability of a CPA shall be demonstrated in the CPA-DD through the following documents provided to the DOE <ul style="list-style-type: none"> <li>• Undertaking</li> <li>• Technical specifications document</li> <li>• Electrification map</li> </ul>
5.	Additionality of CPAs	The CPA shall satisfy the latest version of the “guidelines for demonstrating additionality of microscale project activities” Especially, each CPA shall: <ul style="list-style-type: none"> <li>- be less than or equal to</li> </ul>	CPA Implementers shall provide information on the additionality in the CPA-DD Technical specifications document shall serve as means of proof of demonstration of additionality

		<p>5MW</p> <ul style="list-style-type: none"> <li>- provide electricity to off-grid households and communities</li> </ul>	
6.	Official Development Assistance (ODA)	<p>The CPA is either:</p> <ul style="list-style-type: none"> <li>a) not receiving any funding from Annex I parties; or</li> <li>b) the Annex I party funds do not result in a diversion of ODA.</li> </ul>	Confirmation by CPA Implementers and information provided in the CPA-DD
7.	End-user group	The CPA is aimed at households and communities.	<p>The CPA-DD specifies the target end-user group(s).</p> <p>The PP shall provide a signed undertaking which clearly declares that all CPAs within the PoA will be aimed at households and communities only. Furthermore, it shall be ensured that at least 75 per cent (by number) of the consumers connected to the project renewable electricity generation system(s) shall be households.</p>
8.	Sampling	<p>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 Programme of Activities (version 5)”</p>	<p>Option 1 para 34 of the methodology AMS-I.L version 3 will be used, and so no sampling is needed.</p> <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 shall be established such that each system under each CPA is monitored and verified. Only CPA Implementer willing to do this individual monitoring may be accepted to join the PoA.</p>
9.	Microscale Limit for CPAs	The installed capacity of each CPA is limited to 5MW.	<p>The CME shall neither include nor accept any project from a CPA Implementer with a size higher than 5MW.</p> <p>The requirement to meet this criteria of 5MW limit shall be indicated in each agreement between CPA Implementer and CME, and CPA will check that it's always met before CPA are included.</p> <p>However, in cases where the CME and CPA Implementer are the same the Technical specifications document shall be used as means of proof for this particular eligibility criterion.</p>
10.	Local Stakeholder Consultation	<p>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 PoA level in the country, and the LSC covered the issues relevant to this CPA, then the LSC does not need to be done again.</p>	A national PoA level LSC was conducted for Cameroon and shall hold for each CPA to be included in this PoA. The PoA level LSC report shall be provided as means of proof.
11.	Environmental Analysis	An Environmental Impact Analysis must be conducted prior to inclusion of the CPA in the PoA.	A Certificate of Conformity and EIA reports or exemption from the government of Cameroon shall 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	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



		registered PoA.	credited shall be no later than 28 years after the date of registration of the PoA.
13.	Technology	The specifications of technology/measure including the level and type of service, performance specifications including compliance with testing/certifications;	Each CPA-DD shall clearly indicate that the technology is hydro, solar, wind or biomass; that it's maximum of 5MW and is producing electricity for households/communities that are not connected to a national grid. As means of proof the PP shall provide a signed undertaking and an Electrification map of Cameroon. Also, performance specifications and certification of the technology shall also be indicated.
14.	De-bundling	Where applicable, the requirements for the debundling check, in case the CPA belongs to small-scale or microscale project categories. However, if a CPA solely consists of 'microscale CDM units', the requirement regarding debundling is not applicable.	Using the appropriate version of the Methodological tool "Assessment of debundling for small-scale projects activities", each CPA will have to demonstrate that it's not a de-bundled part of a larger PoA activity.

**B.3. Application of technologies/measures and methodologies**

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As described already, the overall goal of this PoA is to provide rural off-grid population of Cameroon with renewable electricity using hydro, wind, biomass or solar energy. The SSC-CDM methodology *AMS-I.L: "Electrification of rural communities using renewable energy", Version 3* has been selected for the development of this PoA. The applicability criteria for this selected methodology are described in the table below:

No	Paragraph of the methodology	Applicability	Justification
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1	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 twocategories 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 electricitygenerated only from renewable energy systems.</li> </ul>	<p>The program targets only rural households and communities without electricity connection to the national grid. In Cameroon, rural households and communities not connected to electricity grid use mostly kerosene (fossil fuel) for lighting<sup>6</sup> and standalone diesel generators for electrification<sup>7</sup> that shall be displaced in this program.</p> <p>The program falls under paragraph 3 (b) of the methodology. Mini-grids shall be installed and electricity produced shall be only from renewable energy sources (hydro, solar, wind, biomass)</p>
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<sup>6</sup>See Lighting Africa Policy Report Note (2012) and SNV’s report “Value Chain Analysis of Lighting and Telephone Recharging Options in Off-Grid Cameroon”.

<sup>7</sup> See UNDP Document (2011)- “African Micro hydro Initiative: Regional Micro/Mini-Hydropower Capacity Development and Investment for Rural Electricity Access in Sub-Saharan Africa” (pg. no. 18)

<p>2</p>	<p>4.</p>	<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>Greenfield (hydro, solar, wind, biomass) projects shall be accepted in this PoA and meet the requirements described in paragraph 3 (b) above.</p> <p>The PoA will only involve Greenfield mini grid systems, thus para 4(a) is applicable.</p> <p>Thus, Individual, renewable energy rehabilitation systems are not covered under the PoA, so 4 (b) does not apply</p>
<p>3</p>	<p>5.</p>	<p>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.</p>	<p>The PoA shall target only regions that do not have any national/regional grid connection<sup>8</sup>.</p>
<p>4</p>	<p>6.</p>	<p>At least 75 per cent (by number) of the consumers connected to the project renewable electricity generation system(s) shall be households.</p>	<p>The program targets only households and communities without access to grid electricity and at least 75% of consumers connected to each individual CPA shall be households.</p>

<sup>8</sup>Page 26 of this document <http://hiq.diva-portal.org/smash/get/diva2:477398/FULLTEXT01.pdf> shows clearly that not all Cameroon has a transmission network and is therefore not electrified. Only those area without electricity will be targeted.

5	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.	Each individual CPA to be included in this program shall indicate the applicable standard(s) applied for the project equipment used. If the standard is not meeting international standards or comparable national, regional or local standards/guidelines the CPA will not be accepted.
6	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.	The only energy sources considered are renewable and only permanent power plants (at least 1MW) shall be considered. A maximum project plant however is 5MW meeting the 15MW small-scale requirement.
7	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.	Hydro power plants to be included in the program are only run-of-a-river and therefore there should be no need to follow methodology AMS-I.D
8	39.	The methodology is applicable to a programme of activities; no additional leakage estimations are necessary other than that indicated under leakage section above. Both -Option 1 and Option 2 under paragraph 34 for monitoring can be used for monitoring within one component project activity of a programme of activity and within the same rural community provided that the requirements specified for the use of each option are followed during the crediting period in a consistent manner.	The program is using Option 1 and shall follow all requirements associated to this option during the whole crediting period in a consistent manner

**B.4. Date of completion of application of methodology and standardized baseline and contact information of responsible person(s)/ entity(ies)**

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23/05/2015

By

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## SECTION C. Management system

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The operational and management arrangements established by the CME for the implementation of the PoA are presented below:

### **Roles and Responsibilities for CPA inclusion**

AGES (the CME) shall have overall operational and management responsibility for the implementation and monitoring of the proposed PoA. However, CPA Implementers shall play key roles in the monitoring and management of their CPAs. Different tasks, responsibilities and required competencies to fulfil different tasks are presented in the table below:

Task	Responsibility	Competencies required
Identifying the households/communities to be included in the CPA	CPA Implementer	<ul style="list-style-type: none"> <li>• Completely understand the technology used in the CPA</li> <li>• Understand the monitoring requirement and record keeping on the CPA</li> <li>• Follow the recommendations provided by Africa Growth and Energy Solutions (CME) in the PoA-DD and Generic CPA-DD</li> </ul>
Provisions of all necessary documents & records	CPA Implementer	
Performing eligibility assessment for inclusion of CPA	CPA Implementer	
Maintaining records and documentation control process for each CPA	CME	<ul style="list-style-type: none"> <li>• Understand the CDM modalities and protocol</li> <li>• Understand the eligibility criteria of the PoA</li> <li>• Implementing all monitoring control procedures and monthly performance report generation</li> </ul>
Following the procedures to avoid double accounting	CME	
Training and the capacity development of the personnel involved for CPA inclusion	CME	
Measures for continual improvements of the PoA management	CME	
To complete the CPA-DDs and submit the CPA inclusion request to the DOE	CME	
Monitoring and verification activities	CME	

### **Procedure for inclusion of CPA**

The following step-wise procedure below covers the process for the CPA inclusion by the CME:

- 1) The CPA Implementers shall identify the installations to be covered under the new proposed CPA.
- 2) All the details and the supporting documents shall be forwarded to the CME
- 3) The CME shall number the installations proposed as CPA-XXX, where XXX is the CPA's number. For the unique identification of each installation the geographical coordinates of the CPA shall be indicated.
- 4) The CPA shall be checked by the CPA Implementer and controlled by the CME against the eligibility criteria indicated in this PoA-DD.

- 5) The CPA Implementer shall prepare the CPA-DD based on the Generic CPA-DD provided to him by the CME.
- 6) DOE engagement and submission of CPA DD for inclusion shall be done by the CME. The side visit validation shall be done at PoA level, but if for any reason the DOE request to conduct a site visit for a specific CPA, the CME shall arrange together with the CPA Implementer for that to happen

**Training records and arrangements for training and capacity development of the personnel**

Training shall be provided by the CME to all the personnel involved in the CPA development and monitoring activities.

**Records and documentation control process for each CPA under the PoA**

In order to ensure the quality and assurance of the information, the CME will develop and manage a records and documentation control system (hereinafter referred as PoA database) using Excel software. The PoA database contains following information:

- CPA name
- Implementer name, address, phone, email
- Geographic coordinates
- Technical information of the CPA (type of renewable energy technology, installed capacity, etc.)
- CPA start date
- Registration status
- Issuance status

The CME will be responsible for regularly updating the PoA database. All the above data will be kept at least for 2 years after the end of the crediting period.

**Procedures for technical review of inclusion of CPAs**

The CME shall assess/cross-check the CPA(s) against the list of eligibility criteria above before accepting the CPA-DD and submitting to DOE for inclusion

**Measures for continuous improvements of the PoA management system**

The CME has developed a profound PoA management system which clearly defines the CPA inclusion criteria's, monitoring structure, data recording system, and roles and responsibilities of the PoA Manager and the CPA manager etc.

The length of the PoA being 28 years, the CME finds it appropriate to review the PoA management system frequently and take measures for improvement in the system. The following are the few

steps adopted by the CME to establish measures for further improvement in the management system:

- Necessary information and training of CPA Implementers to improve the monitoring process as required by the PoA.
- Ensure that people involved in the actual monitoring process for the CPA are suitably trained.
- Updating the monitoring or measurement procedures at the time of revision in the actual scenarios.
- Conduct internal meeting and workshops for the management of the CPAs

**Procedure to avoid double counting**

In order to avoid double counting, each unit to be installed in each CPA shall have unique identification based on the following information:

- Location and GPS coordinates of the plant
- Location of end-users
- Agreement between CPA Implementer and CME
- CPA number

**SECTION D. Duration of PoA**

**D.1. Start date of PoA**

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24/10/2015; date PoA-DD was published for Global Stakeholder Consultation on UNFCCC website.

**D.2. Duration of the PoA**

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28 years 00 months

**SECTION E. Environmental impacts**

**E.1. Level at which environmental analysis is undertaken**

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The environmental analysis shall be performed at the CPA level because the individual CPA's shall vary in their design and this shall enable the specific local impacts to be analysed. The environmental analysis shall be performed in accordance with the requirements of the government of Cameroon.

**E.2. Analysis of the environmental impacts**

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The analysis for the EIA shall be provided at the CPA level.

## **SECTION F. Local stakeholder consultation**

### **F.1. Solicitation of comments from local stakeholders**

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The Local Stakeholder Consultation has been done at PoA level for this program and was conducted on 17/02/2015 and shall cover all CPAs to be included in this PoA. The characteristics of rural off-grid areas of Cameroon are identical from one region to another and there is no need to conduct multiple stakeholders' consultations. In Cameroon, rural communities not connected to electricity grid use mostly kerosene (fossil fuel) for lighting<sup>9</sup> and stand-alone diesel generators for electrification<sup>10</sup>, that shall be displaced in this program.

Also, environmental impact assessment shall be done at CPA level and by the legislation of Cameroon, environmental impact assessments need to conduct stakeholder meetings. These meetings necessary for the EIE shall cover specific needs of local stakeholders for specific CPAs.

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.

### **F.2. Summary of comments received**

>>

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>11</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>9</sup>See Lighting Africa Policy Report Note (2012) and SNV's report "Value Chain Analysis of Lighting and Telephone Recharging Options in Off-Grid Cameroon".

<sup>10</sup> See UNDP Document (2011)- "African Micro hydro Initiative: Regional Micro/Mini-Hydropower Capacity Development and Investment for Rural Electricity Access in Sub-Saharan Africa" (pg. no. 18)

<sup>11</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 F.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.

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

>>

#	Name/Function	Question	Answer provided
1	OBASE Rixon 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 shall 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 shall focus first on hydro and biomass but can also put in place hybrid systems. The selected technologies per cluster shall 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 ERAs shall provide electricity in one cluster before going to another.
4	Counsellor Anastacia	Is the power that shall 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 shall be enough to meet the demand. Also, the technology used is sophisticated and shall adjust automatically up or down depending on the fluctuation of the demand in different periods. And finally Solar ERA shall 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 shall 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 shall 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, shall 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 shall 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 shall take a lot of time to recover all the money. And having this long period means also that electricity shall not be sold too expensive to end users  (a) (Answer from the Lordmayor) Before signing the MoU, we also considered the time our people shall 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:  (b) a. Solar ERA shall train people on the management and operation of the project b. There is a possibility to keep Solar ERA for the management of the project beyond 25 years if need be c. In-kind contribution of the community (like land for plants construction) shall be very well valued d. Any arising specific situation shall be well analyzed and addressed
8		If my farm is far away from the power plant shall I still have access to electricity?	Cables for electricity transport shall 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 shall be in charge of the project after the BOT of 25 years?	The project shall go back to the council. The management committee shall 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 shall 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.

#	Name/Function	Question	Answer provided
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 G. Approval and authorization

>>

The LoA dated 04/12/2015 has been received from the DNA of Cameroon and has been provided to the DOE for review.

## PART II. Generic component project activity(CPA)

The requirements of §207 of CDM Project Standard (version 09) states that:

*“For PoAs applying more than one technology/measure or more than one methodology, the coordinating/managing entity shall prepare a generic CPA for each technology/measure, each methodology and each combination thereof.”*

Since four different technologies are involved in this PoA, four generic CPAs will be prepared.

### Generic CPA for hydro technology

#### SECTION A. General description of a generic CPA

##### A.1. Purpose and general description of generic CPAs

>>

The CPA is being implemented by <name of the CPA Implementer> under the PoA Renewable Energy Rural Electrification (RERE) Programme in Cameroon by Africa Growth and Energy Solutions (CME). Under this CPA, the CPA Implementer plans to install and operate a run-of-a-river hydro power plant of total capacity <total capacity of the CPA> MW in <name of location> in the <name of region> region of Cameroon.

The technology to be used is <very brief description of the technology>

#### Scope of CPA:

Under this CPA being implemented by <name of the CPA Implementer>, the installed plant shall 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 shall be limited to households/communities as mentioned which shall use this electricity for applications such as lighting (interior, public street lighting), electrical appliances such as refrigerators, agricultural water pumps, and mobile recharging etc. The electricity generated from the project activity contributes to an average GHG reductions estimated as <average emission reductions of the CPA> tCO<sub>2</sub>/year.

**SECTION B. Application of a baseline and monitoring methodology and standardized baseline**

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

>>

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>

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

>>

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

No	para	Applicability	Justification
1	3.	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: (a) Implementation of individual, renewable energy systems such as roof top solar photovoltaic systems; (b) Installation or extension of an isolated mini-grid which distributes electricity generated only from renewable energy systems.	This CPA falls under paragraph 3(b) of the applied methodology and thus involves installation of isolated mini-grid systems which distributes electricity generated only from renewable energy systems. <i>&lt;provide the Technical specifications document as means of proof of the same&gt;</i> This criteria is met

<p>2</p>	<p>4.</p>	<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(a) of the applied methodology and involves installation of greenfield mini-grid activities only. No greenfield or rehabilitation (refurbishment) of individual or renewable energy system projects are covered under this CPA. &lt;provide the <i>Technical specifications document as means of proof of the same</i>&gt;</p> <p>This criteria is met</p>
<p>3</p>	<p>5.</p>	<p>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.</p>	<p>This CPA shall provide electricity to only those target consumers that were not connected to national/regional grid prior to project implementation. The CPA developer has provided electrification map of Cameroon as means of proof of the same.</p> <p>Moreover, consumers of the electricity generated by this project are households and communities. Furthermore, it shall be ensured that at least 75 per cent (by number) of the consumers connected to the project renewable electricity generation system(s) shall be households &lt;provide a signed <i>Undertaking as means of proof of the same</i>&gt;. This criteria is met</p>

4	6.	At least 75 per cent (by number) of the consumers connected to the project renewable electricity generation system(s) shall be households.	Consumers of the electricity generated by this CPA are households and communities. Furthermore, it shall be ensured that at least 75 per cent (by number) of the consumers connected to the project renewable electricity generation system(s) shall be households <provide a signed Undertaking as means of proof of the same >. This criteria is therefore met
5	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 from <indicate the supplier>. <indicate all the national/international standards the project equipment conform to> and therefore this criteria is met.
6	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 <indicate capacity> MW, thus this criteria is met.
7	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.	The project is a run-of-a-river type hydroplant and does not consist of a reservoir. <provide the technical specifications document as means of proof of the same>. Thus, this criterion is not applicable.
8	39.	The methodology is applicable to a programme of activities; no additional leakage estimations are necessary other than that indicated under leakage section above. Both -Option 1 and Option 2 under paragraph 34 for monitoring can be used for monitoring within one component project activity of a programme of activity and within the same rural community provided that the requirements specified for the use of each option are followed during the crediting period in a consistent manner.	The program is using Option 1 and shall follow all requirements associated to this option during the whole crediting period in a consistent manner

**Demonstration that the CPA qualifies as Type I, II and/or III**

The program is developed under the methodology AMS-I.L and therefore qualifies as Type I project.

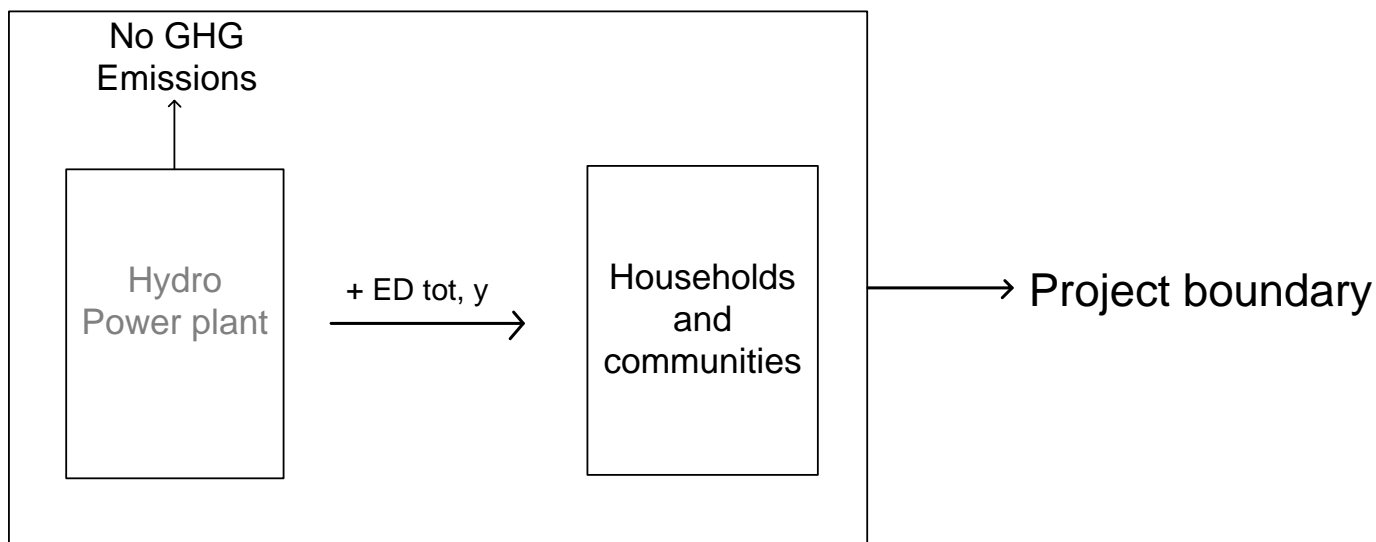
This Type I project shall be limited to 5MW to meet the eligibility criteria for microscale project as indicated in Paragraph B.2. of the PoA-DD.

The project shall be limited to Type I during every year of the crediting period

**B.3. Sources and GHGs**

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	No methane emissions involved
		N <sub>2</sub> O	No	No N <sub>2</sub> O emissions are involved in the baseline
Project scenario	Emissions from hydro plant	CO <sub>2</sub>	No	The project activity will not involve a reservoir and only run of the river hydro power plants will be installed. Thus, no CO <sub>2</sub> is emitted by the project activity. This is in conformance to the requirements of paragraph 31(b) of the applied methodology
		CH <sub>4</sub>	No	The project activity will not involve a reservoir and only run of the river hydro power plants will be installed. Thus, no CH <sub>4</sub> is emitted by the project activity. This is in conformance to the requirements of paragraph 31(b) of the applied methodology
		N <sub>2</sub> O	No	The project activity will not involve a reservoir and only run of the river hydro power plants will be installed. Thus, no N <sub>2</sub> O is emitted by the project activity. This is in conformance to the requirements of paragraph 31(b) of the applied methodology

The following diagram is an example of diagram representing GHG emissions for the CPA



**B.4. Description of baseline scenario**

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The CPA<CPA number> shall provide electricity to consumers in the <location> of the <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 <indicate baseline electricity production source if any>prior to the project activity.

The project shall be the installation of a <indicate capacity>MW run-of-a-river hydroplant that shall reduce GHG emissions associated with the baseline electricity generation system.

Baseline emissions shall be calculated using the formulae as indicated in paragraph D.6.1 of this CPA-DD.

**B.5. Demonstration of eligibility for a generic 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 of the plant and villages served is specified in the specific CPA-DD of each CPA and supported with GPS coordinates. There is no time-induced boundary applicable to this PoA.	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 (customer ID and Name)CPA number	Yes CPA number and location and GPS are indicated. <indicate if agreement between CPA Implementer and CME is necessary and signed>
3.	Start date of CPA	The CPA start date shall be after the PoA start date and shall be earlier than the PoA end date which is 28 years after PoA registration.	The start date of the CPA shall be specified in each CPA-DD and an appropriate proof shall be provided (e.g. date financial closure for each CPA or date construction start for each CPA). The start date shall 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 shall make sure applicability criteria are met and document this in the CPA-DD. Applicability of a CPA shall be demonstrated in the CPA-DD through the following documents provided to the DOE <ul style="list-style-type: none"> <li>• Undertaking</li> <li>• Technical specifications document</li> <li>• Electrification map</li> </ul>	Yes The CPA meets all applicability criteria of the methodology AMS-I.L as indicated in paragraph D.2 of this CPA-DD. The following documents were used as means of proof for meeting the applicability criteria: <ul style="list-style-type: none"> <li>• Undertaking</li> <li>• Technical specifications document</li> <li>• Electrification map</li> </ul>



5.	Additionality of CPAs	<p>The CPA shall satisfy the latest version of the “guidelines for demonstrating additionality of microscale project activities” Especially, each CPA shall:</p> <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>	<p>CPA Implementers shall provide information on the additionality in the CPA-DD. Technical specifications document shall serve as means of proof of demonstration of additionality</p>	<p>Yes  <i>According to the methodological tool for “demonstrating additionality of microscale project activities” Version 07.0 (EB 86, Annex 14):</i></p> <p><i>Paragraph 7:</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></p> <p><i>Paragraph 7 (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 is also considered “off-grid” for this assessment);</i></p> <p>This CPA is &lt;indicate capacity&gt;MW, off-grid and supplying electricity to households/communities and is therefore automatically additional and the eligibility criteria is thus met. The technical specifications document was used as means of proof to provide confirmation of the same.</p>
6.	Official Development Assistance (ODA)	<p>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.</p>	<p>Confirmation by CPA Implementers and information provided in the CPA-DD.</p>	<p>Yes  The proposed CPA shall not receive 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	<p>The CPA is aimed at households and communities</p>	<p>The CPA-DD specifies the target end-user group(s). The PP shall provide a signed undertaking which clearly declares that all CPAs within the PoA will be aimed at households and communities only. Furthermore, it shall be ensured that at least 75 per cent (by number) of the consumers connected to the project renewable electricity generation system(s) shall be households</p>	<p>Yes  The electricity is dedicated to households. This was confirmed based on signed undertaking provided by the PP.</p>
8.	Sampling	<p>Sampling of end-users within each CPA must meet the requirements of AMS-I.L Version 3 and the</p>	<p>In the proposed PoA, the CME opts for a verification method that does not use sampling to</p>	<p>Yes  This CPA opts for verification method and sampling is not</p>

		“Standard on Sampling and Surveys for CDM Projects and Programmes of Activities”	verify each installation in the CPA.  A monitoring plan shall be established such that each system under each CPA is monitored and verified. Only CPA Implementer willing to do this individual monitoring shall be accepted to join the PoA.	needed (Option 1 for Paragraph 34 of the methodology AMS-I.L version 3 is used).  In fact, this Option 1 says “ Measure the net amount of renewable electricity delivered to <u>each consumer</u> connected to the project renewable electricity generation system(s). Such measurements shall be made continuously and recorded at least on a monthly basis”. Since the electricity consumed by EACH CONSUMER will be known, there is no need for sampling (which is selection of part of consumers in the midst of all consumers).
9.	Microscale Limit for CPAs	The installed capacity of each CPA is limited to 5MW.	The requirement to meet this criteria of 5MW limit shall be indicated in each agreement between CPA Implementer and CME. However, in cases where the CME and CPA Implementer are the same the Technical specifications document shall be used as means of proof for this particular eligibility criteria	Yes The installed capacity is just <indicate capacity>MW, less than or equal to the 5MW limit. As applicable, agreement between CPA Implementer and CME or technical specifications document shall be used as means of proof to provide confirmation of the same.
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 PoA 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 PoA level LSC was conducted and shall hold for each CPA to be included in this PoA The PoA level LSC report shall be provided as means of proof	Yes The LSC was done already at PoA level as indicated in section F of the PoA-DD. LSC report was used as means of proof to provide confirmation of the same.
11.	Environmental Analysis	An Environmental Impact Analysis must be conducted prior to inclusion of the CPA in the PoA.	A Certificate of Conformity and EIA reports or exemption from the government of Cameroon shall be provided for each CPA to be included.	Yes EIA has been done and the corresponding Certificate of Conformity and EIA reports or exemption from the government of Cameroon (<indicate as applicable>) has been provided to DOE.
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	Yes, <indicate the crediting period and say why the criteria is met>. The CPA-DD was used as means of proof to provide confirmation of the same.

			which CERs can be credited shall be no later than 28 years after the date of registration of the PoA.	
13.	Technology	The specifications of technology/measure including the level and type of service, performance specifications including compliance with testing/certifications;	Each CPA-DD shall clearly indicate that the technology is for hydro, solar, wind or biomass; that it's maximum of 5MW and is producing electricity for households/communities that are not connected to a national grid. As means of proof the PP shall provide a signed undertaking and an Electrification map of Cameroon. Also, performance specifications and certification of the technology shall also be indicated.	<Provide brief description of the renewable energy technology applied and where also include the type of end users> Technical specifications document, signed undertaking and an Electrification map of Cameroon were used as means of proof to provide confirmation of the same.
14.	De-bundling	Where applicable, the requirements for the debundling check, in case the CPA belongs to small-scale or microscale project categories. However, if a CPA solely consists of 'microscale CDM units', the requirement regarding debundling is not applicable.	Using the appropriate version of the Methodological tool "Assessment of debundling for small-scale projects activities", each CPA will have to demonstrate that it's not a de-bundled part of a larger PoA activity.	<Using the latest available debundling tool, include a description of how the CPA is not a debundled component of a large scale activity.>

**B.6. Estimation of emission reductions of a generic CPA**

**B.6.1. Explanation of methodological choices**

>>

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 shall 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*

$EF_{CO2,tot}$  = 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.  $PE_v = 0$ )

The project activity will not involve a reservoir and only run of the river hydro power plants will be installed. Thus, no CH<sub>4</sub>, CO<sub>2</sub> and N<sub>2</sub>O is emitted by the project activity. This is in conformance to the requirements of paragraph 31(b) of the applied methodology

**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 emissions associated with the CPA will be zero as no energy generating equipment will be transferred from another project activity.

Thus, LE<sub>y</sub> = 0

**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<sub>y</sub>) are calculated as follows:

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

Where:

- ER<sub>y</sub> = Emission reductions in year y (t CO<sub>2</sub>e/y)
- BE<sub>y</sub> = Baseline Emissions in year y (t CO<sub>2</sub>/y)
- PE<sub>y</sub> = Project emissions in year y (t CO<sub>2</sub>/y)
- LE<sub>y</sub> = Leakage emissions in year y (t CO<sub>2</sub>/y)

**B.6.2. Data and parameters fixed ex-ante**

>>

<Indicate parameter(s) fixed ex-ante in the table(s) below and delete unnecessary table(s)>

(Copy this table for each data and parameter.)

<b>Data / Parameter:</b>	EF <sub>CO<sub>2</sub>,tot</sub>
<b>Data Unit:</b>	tCO <sub>2</sub> /MWh
<b>Description:</b>	Emissions factor of the mini-grid
<b>Source of data:</b>	Default value from methodology
<b>Value(s) applied:</b>	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:	<Indicate any useful additional comment>

<b>Data / Parameter:</b>	TL <sub>p</sub>
Data 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:	<Indicate any useful additional comment>

**B.6.3. Ex-ante calculations of emission reductions**

>>

**Baseline emissions** are calculated using the formula

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

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
Installed capacity	<Indicate value>	MW	Project document data
Yearly operation	<Indicate value>	Days	<Indicate reason for selection of yearly days of operation>
	<Indicate value>	Hours/day	<Indicate reason for selection of hours/day of operation>
	<Indicate value>	hours	Calculated
Electricity generation (ED <sub>tot</sub> )	<Indicate value>	MWh	Calculated

Transmission losses (TLp)	10%		default value
Emissions factor (EF <sub>CO2</sub> )	1	tCO <sub>2</sub> /MWh	default value
Baseline emissions (BE)	<Indicate value>	tCO <sub>2</sub> /year	
Project emissions (PE)	0	tCO <sub>2</sub> /year	
Leakage emissions (LE)	0	tCO <sub>2</sub> /year	
Emissions reductions (BE-PE-LE)	<Indicate value>	tCO <sub>2</sub> /year	Calculated

## B.7. Application of the monitoring methodology and description of the monitoring plan

### B.7.1. Data and parameters to be monitored by each generic CPA

Data / Parameter:	ED <sub>tot,y</sub>
Data 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:	<Indicate the value>
Measurement methods and procedures:	Reading the meter
Monitoring frequency:	The meter shall be read frequently to ensure it's still in operation
QA/QC procedures:	The meter shall be well calibrated and tested before installation at the beginning of the project. Then it shall be calibrated every year by a recognized institution.
Purpose of data:	This data is needed for the estimation of emission reductions
Additional comment:	NA

### B.7.2. Description of the monitoring plan for a generic CPA

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

There shall be no sampling as the program is opting for Option 1 for Paragraph 34 of the methodology AMS-I.L version 3.

#### Data recording

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

#### Roles/Responsibilities

This CPA shall 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 shall 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 Africa Growth and Energy Solutions who shall take necessary measures.

**Maintenance**

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

**Calibration**

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

**Data Archiving**

The responsibility of data archival shall rest with the on-site project manager and CME. The monthly reports sent (in softcopy) by the on-site project manager to Africa Growth and Energy Solutions for the whole crediting shall be checked and archived till 2 years post the endof crediting period of the CPA.

**Generic CPA for solar technology**

**SECTION A. General description of a generic CPA**

**A.1. Purpose and general description of generic CPAs**

>>

The CPA is being implemented by<name of the CPA Implementer>under the PoA Renewable Energy Rural Electrification (RERE) Programme in Cameroon byAfrica Growth and Energy Solutions (CME). Under this CPA, the CPA Implementer plans to install and operate<total capacity of theCPA>MWsolar PVin<name of location>inthe<name of region>region of Cameroon.

The technology to be used is <very brief description of the technology>

**Scope of CPA:**

Under this CPA being implemented by<name of the CPA Implementer>, the installed plant shall provide electricity to facilities and energy consumers that do nothave access to any electricity distribution system/network such as a national or regional grid before this project implementation. The end users shall be limited to households/communities asmentioned which shall use this



electricity for applications such as lighting (interior, public street lighting), electrical appliances such as refrigerators, agricultural waterpumps, and mobile recharging etc. The electricity generated from the project activity contributes to an average GHG reductions estimated as *<average emission reductions of the CPA>* tCO<sub>2</sub>/year.

**SECTION B. Application of a baseline and monitoring methodology and standardized baseline**

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

>>

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>

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

>>

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

No	para	Applicability	Justification
1	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 3(b) of the applied methodology and thus involves installation of isolated mini-grid system which distributes electricity generated only from renewable energy systems. <i>&lt;provide the Technical specifications document as means of proof of the same&gt;</i> This criteria is met</p>

<p>2</p>	<p>4.</p>	<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(a) of the applied methodology and involves installation of greenfield mini-grid activities only. No greenfield or rehabilitation (refurbishment) of individual or renewable energy system projects are covered under this CPA. <i>&lt;provide the Technical specifications document as means of proof of the same&gt;</i></p> <p>This criteria is met</p>
<p>3</p>	<p>5.</p>	<p>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.</p>	<p>This CPA shall provide electricity to only those target consumers that were not connected to national/regional grid prior to project implementation. The CPA developer has provided electrification map of Cameroon as means of proof of the same.</p> <p>Moreover, consumers of the electricity generated by this project are households and communities. Furthermore, it shall be ensured that at least 75 per cent (by number) of the consumers connected to the project renewable electricity generation system(s) shall be households <i>&lt;provide a signed Undertaking as means of proof of the same &gt;</i>. This criteria is met</p>

4	6.	At least 75 per cent (by number) of the consumers connected to the project renewable electricity generation system(s) shall be households.	Consumers of the electricity generated by this CPA are households and communities. Furthermore, it shall be ensured that at least 75 per cent (by number) of the consumers connected to the project renewable electricity generation system(s) shall be households <provide a signed Undertaking as means of proof of the same >.This criteria is therefore met
5	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 from <indicate the supplier>.<indicate all the national/international standards the project equipment conform to>and therefore this criteria is met.
6	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 solar plant of <indicate capacity>MW, thus this criteria is met
7	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.	The project is solar PV plant and does not consist of a reservoir. <provide the technical specifications document as means of proof of the same>. Thus, this criterion is not applicable.
8	39.	The methodology is applicable to a programme of activities; no additional leakage estimations are necessary other than that indicated under leakage section above. Both -Option 1 and Option 2 under paragraph 34 for monitoring can be used for monitoring within one component project activity of a programme of activity and within the same rural community provided that the requirements specified for the use of each option are followed during the crediting period in a consistent manner.	The program is using Option 1 and shall follow all requirements associated to this option during the whole crediting period in a consistent manner.

**Demonstration that the CPA qualifies as Type I, II and/or III**

The program is developed under the methodology AMS-I.L and therefore qualifies as Type I project.

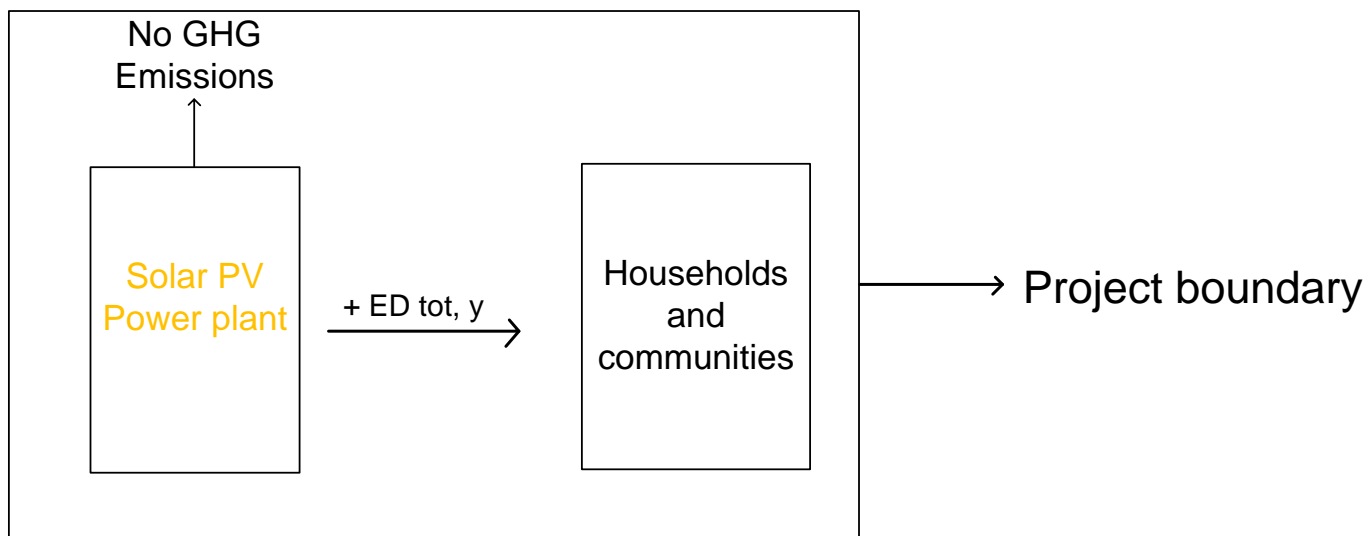
This Type I project shall be limited to 5MW to meet the eligibility criteria for microscale project as indicated in Paragraph B.2. of the PoA-DD.

The project shall be limited to Type I during every year of the crediting period

**B.3. Sources and GHGs**

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	No methane emissions involved
		N <sub>2</sub> O	No	No N <sub>2</sub> O emissions are involved in the baseline
Project scenario	Emissions from solar PV plant	CO <sub>2</sub>	No	The project consists of a solar PV plant. Thus, no CO <sub>2</sub> is emitted by the project activity. This is in conformance to the requirements of paragraph 31(b) of the applied methodology
		CH <sub>4</sub>	No	The project consists of a solar PV plant. Thus, no CH <sub>4</sub> is emitted by the project activity. This is in conformance to the requirements of paragraph 31(b) of the applied methodology
		N <sub>2</sub> O	No	The project consists of a solar PV plant. Thus, no N <sub>2</sub> O is emitted by the project activity. This is in conformance to the requirements of paragraph 31(b) of the applied methodology

The following diagram is an example of diagram representing GHG emissions for the CPA



**B.4. Description of baseline scenario**

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The CPA<CPA number>shall provide electricity to consumers in the <location>of the<region> of Cameroonwhich do not have any access to national orregional grid. The households/communities, benefiting from the electricity generated are using for electricity generation <indicate baseline electricity production source if any>prior to the project activity.

The project shall be the installation of a <indicate capacity>MW <solar>plant that shall reduce GHG emissions associated with the baseline electricity generation system.

Baseline emissions shall be calculated using the formulae as indicated in paragraph D.6.1 of this CPA-DD.

**B.5. Demonstration of eligibility for a generic CPA**

>>

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 of the plant and villages served is specified in the specific CPA-DD of each CPA and supported with GPS coordinates. There is no time-induced boundary applicable to this PoA.	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 (customer ID and Name) CPA number	Yes CPA number and location and GPS are indicated <i>&lt;indicate if agreement between CPA Implementer and CME is necessary and signed&gt;</i>
3.	Start date of CPA	The CPA start date shall be after the PoA start date and shall be earlier than the PoA end date which is 28 years after PoA registration.	The start date of the CPA shall be specified in each CPA-DD and an appropriate proof shall be provided (e.g. date financial closure for each CPA or date construction start for each CPA). The start date shall 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 shall make sure applicability criteria are met and document this in the CPA-DD Applicability of a CPA shall be demonstrate in the CPA-DD through the following documents provided to the DOE <ul style="list-style-type: none"> <li>• Undertaking</li> <li>• Technical specifications document</li> <li>• Electrification map</li> </ul>	Yes The CPA meets all applicability criteria of the methodology AMS-I.L as indicated in paragraph D.2 of this CPA-DD. The following documents were used as means of proof for meeting the applicability criteria: <ul style="list-style-type: none"> <li>• Undertaking</li> <li>• Technical specifications document</li> <li>• Electrification map</li> </ul>
5.	Additionality of CPAs	The CPA shall satisfy the latest version of the “guidelines for demonstrating additionality of microscale project activities” Especially, each CPA shall:	CPA Implementers shall provide information on the additionality in the CPA-DD Technical specifications document shall serve as means of proof of demonstration of additionality	Yes <i>According to the methodological tool for “demonstrating additionality of microscale project activities” Version 07.0 (EB 86, Annex 14):</i> <i>Paragraph 7:</i> <i>Project activities up to five</i>

		<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>		<p><i>megawatts that employ renewable energy technology are additional if any one of the conditions below is satisfied:</i></p> <p><i>Paragraph 7 (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 is also considered "off-grid" for this assessment);</i></p> <p>This CPA is <i>&lt;indicate capacity&gt;</i>MW, off-grid and supplying electricity to households/communities and is therefore automatically additional and the eligibility criteria is thus met. The technical specifications document was used as means of proof to provide confirmation of the same.</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	Yes The proposed CPA shall not receive 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
7.	End-user group	The CPA is either aimed at households or communities	The CPA-DD specifies the target end-user group(s) The PP shall provide a signed undertaking which clearly declares that all CPAs within the PoA will be aimed at households and communities only. Furthermore, it shall be ensured that at least 75 per cent (by number) of the consumers connected to the project renewable electricity generation system(s) shall be households	Yes The electricity is dedicated to households. This was confirmed based on signed undertaking provided by the PP.
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"	In the proposed PoA, the CME opts for a verification method that does not use sampling to verify each installation in the CPA  A monitoring plan shall be established such that each system under each CPA is monitored and verified. Only CPA	Yes This CPA opts for verification method and sampling is not needed (Option 1 for Paragraph 34 of the methodology AMS-I.L version 3 is used).  In fact, this Option 1 says "Measure the net amount of renewable electricity delivered to <u>each consumer</u> connected to the project renewable electricity

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			Implementer willing to do this individual monitoring shall be accepted to join the PoA.	generation system(s). Such measurements shall be made continuously and recorded at least on a monthly basis". Since the electricity consumed by EACH CONSUMER will be known, there is no need for sampling (which is selection of part of consumers in the midst of all consumers).
9.	Microscale Limit for CPAs	The installed capacity of each CPA is limited to 5MW.	The requirement to meet this criteria of 5MW limit shall be indicated in each agreement between CPA Implementer and CME However, in cases where the CME and CPA Implementer are the same the Technical specifications document shall be used as means of proof for this particular eligibility criteria	Yes The installed capacity is just <i>&lt;indicate capacity&gt;</i> MW, less than or equal to the 5MW limit. As applicable, agreement between CPA Implementer and CME or technical specifications document shall be used as means of proof to provide confirmation of the same.
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 PoA 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 PoA level LSC was conducted and shall hold for each CPA to be included in this PoA The PoA level LSC report shall be provided as means of proof	Yes The LSC was done already at PoA level as indicated in section F of the PoA-DD. LSC report was used as means of proof to provide confirmation of the same.
11.	Environmental Analysis	An Environmental Impact Analysis must be conducted prior to inclusion of the CPA in the PoA.	A Certificate of Conformity and EIA reports or exemption from the government of Cameroon shall be provided for each CPA to be included	Yes EIA has been done and the corresponding Certificate of Conformity and EIA reports or exemption from the government of Cameroon ( <i>indicate as applicable</i> ) has been provided to DOE.
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, <i>&lt;indicate the crediting period and say why the criteria is met&gt;</i> . The CPA-DD was used as means of proof to provide confirmation of the same.
13.	Technology	The specifications of technology/measure including the level and type of service,	Each CPA-DD shall clearly indicate that the technology is for hydro, solar, wind or biomass;	<i>&lt;Provide brief description of the renewable energy technology applied and where also include the type of end users&gt;</i>

		performance specifications including compliance with testing/certifications;	that it's maximum of 5MW and is producing electricity for households/communities that are not connected to a national grid. As means of proof the PP shall provide a signed undertaking and an Electrification map of Cameroon. Also, performance specifications and certification of the technology shall also be indicated.	Technical specifications document, signed undertaking and an Electrification map of Cameroon were used as means of proof to provide confirmation of the same.
14.	De-bundling	Where applicable, the requirements for the debundling check, in case the CPA belongs to small-scale or microscale project categories. However, if a CPA solely consists of 'microscale CDM units', the requirement regarding debundling is not applicable.	Using the appropriate version of the Methodological tool "Assessment of debundling for small-scale projects activities", each CPA will have to demonstrate that it's not a de-bundled part of a larger PoA activity.	<Using the latest available debundling tool, include a description of how the CPA is not a debundled component of a large scale activity.>

**B.6. Estimation of emission reductions of a generic CPA**

**B.6.1. Explanation of methodological choices**

>>

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 shall 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 ( $tCO_2$ )
- $BE_{T2,y}$  = Baseline emissions for Type II consumers in year y ( $tCO_2$ )
- $ED_{tot,y}$  = 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 =  $1.0 tCO_2/MWh$  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.  $PE_v = 0$ )

Being a solar PV plant the project activity will not involve a reservoir. Thus, no  $CH_4$ ,  $CO_2$  and  $N_2O$  is emitted by the project activity. This is in conformance to the requirements of paragraph 31(b) of the applied methodology

### **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 emissions associated with the CPA will be zero as no energy generating equipment will be transferred from another project activity.

Thus,  $LE_y = 0$

**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:

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

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)

**B.6.2. Data and parameters fixed ex-ante**

>>

<Indicate parameter(s) fixed ex-ante in the table(s) below and delete unnecessary table(s)>

(Copy this table for each data and parameter.)

<b>Data / Parameter:</b>	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:	<Indicate any useful additional comment>

<b>Data / Parameter:</b>	TL <sub>p</sub>
Data 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:	<Indicate any useful additional comment>

**B.6.3. Ex-ante calculations of emission reductions**

>>

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

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
Installed capacity	<Indicate value>	MW	Project document data
Performance Ratio	<Indicate value>	%	Project document data
Yearly operation	<Indicate value>	Days	<Indicate reason for selection of yearly days of operation>
	<Indicate value>	Hours/day	<Indicate reason for selection of hours/day of operation>
	<Indicate value>	hours	Calculated
Electricity generation (ED <sub>tot</sub> )	<Indicate value>	MWh	Calculated
Transmission losses (TL <sub>p</sub> )	10%		default value
Emissions factor (EF <sub>co2</sub> )	1	tCO2/MWh	default value
Baseline emissions (BE)	<Indicate value>	tCO2/year	
Project emissions (PE)	0	tCO2/year	
Leakage emissions (LE)	0	tCO2/year	
Emissions reductions (BE-PE-LE)	<Indicate value>	tCO2/year	Calculated

>

**B.7. Application of the monitoring methodology and description of the monitoring plan****B.7.1. Data and parameters to be monitored by each generic CPA**

<Indicate parameter(s) to be monitored in the table(s) below and delete unnecessary table(s)>

(Copy this table for each data and parameter).

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

**B.7.2. Description of the monitoring plan for a generic CPA**

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

There shall be no sampling as the program is opting for Option 1 for Paragraph 34 of the methodology AMS-I.L version 3.

**Data recording**

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

**Roles/Responsibilities**

This CPA shall 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 shall 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 Africa Growth and Energy Solutions who shall take necessary measures.

**Maintenance**

All the operating equipments at the generation units shall 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 shall not be claimed for any period for which the data could not be recorded for any emergency reason. The meter shall be calibrated annually and the calibration certificate shall be kept by the CME (photocopy shall be kept on-site by the project manager).

**Data Archiving**

The responsibility of data archival shall rest with the on-site project manager and CME. The monthly reports sent (in softcopy) by the on-site project manager to Africa Growth and Energy Solutions for the whole crediting shall be checked and archived till 2 years post the end of crediting period of the CPA.

**Generic CPA for wind technology****SECTION A. General description of a generic CPA****A.1. Purpose and general description of generic CPAs**

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The CPA is being implemented by <name of the CPA Implementer> under the PoA Renewable Energy Rural Electrification (RERE) Programme in Cameroon by Africa Growth and Energy Solutions (CME). Under this CPA, the CPA Implementer plans to install and operate <total capacity of the CPA> MW wind in <name of location> in the <name of region> region of Cameroon.

The technology to be used is <very brief description of the technology>

**Scope of CPA:**

Under this CPA being implemented by <name of the CPA Implementer>, the installed plant shall 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 shall be limited to households/communities as mentioned which shall use this electricity for applications such as lighting (interior, public street lighting), electrical appliances such as refrigerators, agricultural water pumps, and mobile recharging etc. The electricity generated from the project activity contributes to an average GHG reductions estimated as <average emission reductions of the CPA> tCO<sub>2</sub>/year.

## SECTION B. Application of a baseline and monitoring methodology and standardized baseline

### B.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>

### B.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:

No	para	Applicability	Justification
1	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 3(b) of the applied methodology and thus involves installation of isolate mini-grid system which distributes electricity generated only from renewable energy systems. <i>&lt;provide the Technical specifications document as means of proof of the same&gt;</i></p> <p>This criteria is met.</p>
2	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(a) of the applied methodology and involves installation of greenfield mini-grid activities only. No greenfield or rehabilitation (refurbishment) of individual or renewable energy system projects are covered under this CPA. <i>&lt;provide the Technical specifications document as means of proof of the same&gt;</i></p> <p>This criteria is met.</p>

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3	5.	<p>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.</p>	<p>This CPA shall provide electricity to only those target consumers that were not connected to national/regional grid prior to project implementation. The CPA developer has provided electrification map of Cameroon as means of proof of the same. Moreover, consumers of the electricity generated by this project are households and communities. Furthermore, it shall be ensured that at least 75 per cent (by number) of the consumers connected to the project renewable electricity generation system(s) shall be households &lt;provide a signed Undertaking as means of proof of the same &gt;. This criteria is met</p>
4	6.	<p>At least 75 per cent (by number) of the consumers connected to the project renewable electricity generation system(s) shall be households.</p>	<p>Consumers of the electricity generated by this CPA are households and communities. Furthermore, it shall be ensured that at least 75 per cent (by number) of the consumers connected to the project renewable electricity generation system(s) shall be households &lt;provide a signed Undertaking as means of proof of the same &gt;. This criteria is therefore met</p>
5	7.	<p>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.</p>	<p>The equipment is very high standard from &lt;indicate the supplier&gt;. &lt;indicate all the national/international standards the project equipment conform to&gt; and therefore this criteria is met.</p>
6	8.	<p>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.</p>	<p>This CPA is a permanent installation of wind plant of &lt;indicate capacity&gt;MW, thus this criteria is met</p>
7	9.	<p>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.</p>	<p>The project is a wind power plant and does not consist of a reservoir. &lt;provide the technical specifications document as means of proof of the same&gt;. Thus, this criterion is not applicable.</p>

8	39.	The methodology is applicable to a programme of activities; no additional leakage estimations are necessary other than that indicated under leakage section above. Both -Option 1 and Option 2 under paragraph 34 for monitoring can be used for monitoring within one component project activity of a programme of activity and within the same rural community provided that the requirements specified for the use of each option are followed during the crediting period in a consistent manner.	The program is using Option 1 and shall follow all requirements associated to this option during the whole crediting period in a consistent manner
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**Demonstration that the CPA qualifies as Type I, II and/or III**

The program is developed under the methodology AMS-I.L and therefore qualifies as Type I project.

This Type I project shall be limited to 5MW to meet the eligibility criteria for microscale project as indicated in Paragraph B.2. of the PoA-DD.

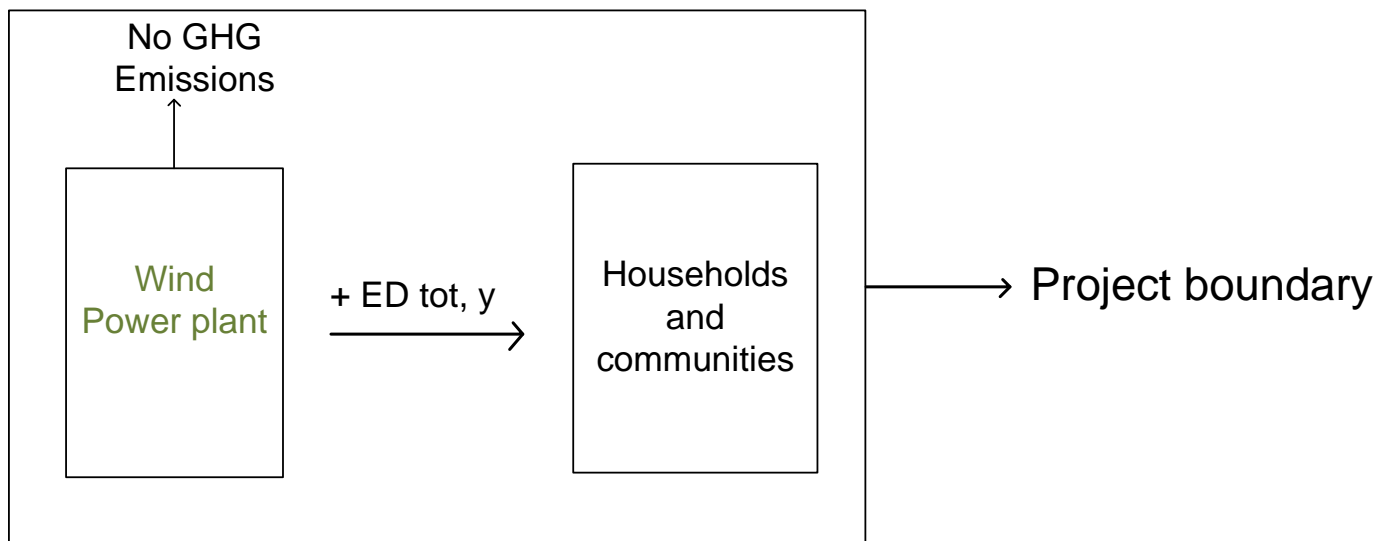
The project shall be limited to Type I during every year of the crediting period

**B.3. Sources and GHGs**

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	No methane emissions involved
		N <sub>2</sub> O	No	No N <sub>2</sub> O emissions are involved in the baseline
Project scenario	Emissions from wind plant	CO <sub>2</sub>	No	The project activity is the installation of wind plant. Thus, no CO <sub>2</sub> is emitted by the project activity. This is in conformance to the requirements of paragraph 31(b) of the applied methodology
		CH <sub>4</sub>	No	The project activity is the installation of wind plant. Thus, no CH <sub>4</sub> is emitted by the project activity. This is in conformance to the requirements of paragraph 31(b) of the applied methodology
		N <sub>2</sub> O	No	The project activity is the installation of wind plant. Thus, no N <sub>2</sub> O is emitted by the project activity. This is in conformance to the requirements of paragraph 31(b) of the applied methodology



The following diagram is an example of diagram representing GHG emissions for the CPA



**B.4. Description of baseline scenario**

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The CPA<CPA number>shall provide electricity to consumers in the <location>of the<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 <indicate baseline electricity production source if any>prior to the project activity.

The project shall be the installation of a <indicate capacity>MW wind plant that shall reduce GHG emissions associated with the baseline electricity generation system.

Baseline emissions shall be calculated using the formulae as indicated in paragraph D.6.1 of this CPA-DD.

**B.5. Demonstration of eligibility for a generic CPA**

>>

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 Cameroon.	Location is specified in the specific CPA-DD of each CPA and supported with GPS coordinates. There is no time-induced boundary applicable to this PoA.	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 (customer ID and Name) CPA number	Yes CPA number and location and GPS are indicated. <indicate if agreement between CPA Implementer and CME is necessary and signed>

3.	Start date of CPA	The CPA start date shall be after the PoA start date and shall be earlier than the PoA end date which is 28 years after PoA registration.	The start date of the CPA shall be specified in each CPA-DD and an appropriate proof shall be provided (e.g. date financial closure for each CPA or date construction start for each CPA). The start date shall 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 shall make sure applicability criteria are met and document this in the CPA-DD Applicability of a CPA shall be demonstrated in the CPA-DD through the following documents provided to the DOE <ul style="list-style-type: none"> <li>• Undertaking</li> <li>• Technical specifications document</li> <li>• Electrification map</li> </ul>	Yes The CPA meets all applicability criteria of the methodology AMS-I.L as indicated in paragraph D.2 of this CPA-DD. The following documents shall be presented as means of proof for meeting the applicability criteria: <ul style="list-style-type: none"> <li>• Undertaking</li> <li>• Technical specifications document</li> <li>• Electrification map</li> </ul>
5.	Additionality of CPAs	The CPA shall satisfy the latest version of the “guidelines for demonstrating additionality of microscale project activities” Especially, each CPA shall: <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 shall provide information on the additionality in the CPA-DD Technical specifications document shall serve as means of proof of demonstration of additionality	Yes <i>According to the methodological tool for “demonstrating additionality of microscale project activities” Version 07.0 (EB 86, Annex 14):</i> <i>Paragraph 7:</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 7 (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 is also considered “off-grid” for this assessment);</i>  This CPA is <i>&lt;indicate capacity&gt;</i> MW, off-grid and supplying electricity to households/communities and is therefore automatically additional and the eligibility criteria is thus met. The technical specifications document was used as means of proof to provide confirmation of the same.
6.	Official	The CPA is either:	Confirmation by CPA	Yes

	Development Assistance (ODA)	a) not receiving any funding from Annex I parties; or b) the Annex I party funds do not result in a diversion of ODA.	Implementers and information provided in the CPA-DD	The proposed CPA shall not receive 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.
7.	End-user group	The CPA is aimed at households and communities	The CPA-DD specifies the target end-user group(s) The PP shall provide a signed undertaking which clearly declares that all CPAs within the PoA will be aimed at households and communities only. Furthermore, it shall be ensured that at least 75 per cent (by number) of the consumers connected to the project renewable electricity generation system(s) shall be households	Yes The electricity is dedicated to households. This was confirmed based on signed undertaking provided by the PP.
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”	In the proposed PoA, the CME opts for a verification method that does not use sampling to verify each installation in the CPA  A monitoring plan shall be established such that each system under each CPA is monitored and verified. Only CPA Implementer willing to do this individual monitoring shall be accepted to join the PoA.	Yes This CPA opts for verification method and sampling is not needed (Option 1 for Paragraph 34 of the methodology AMS-I.L version 3 is used).  In fact, this Option 1 says “Measure the net amount of renewable electricity delivered to each consumer connected to the project renewable electricity generation system(s). Such measurements shall be made continuously and recorded at least on a monthly basis”. Since the electricity consumed by EACH CONSUMER will be known, there is no need for sampling (which is selection of part of consumers in the midst of all consumers).
9.	Microscale Limit for CPAs	The installed capacity of each CPA is limited to 5MW.	The requirement to meet this criteria of 5MW limit shall be indicated in each agreement between CPA Implementer and CME. However, in cases where the CME and CPA Implementer are the same the Technical specifications document shall be used as means of proof for this particular eligibility	Yes The installed capacity is just <indicate capacity>MW, less than or equal to the 5MW limit. As applicable, agreement between CPA Implementer and CME or technical specifications document shall be used as means of proof to provide confirmation of the same.

			criteria.	
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 PoA 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 PoA level LSC was conducted and shall hold for each CPA to be included in this PoA The PoA level LSC report shall be provided as means of proof.	Yes The LSC was done already at PoA level as indicated in section F of the PoA-DD. LSC report was used as means of proof to provide confirmation of the same.
11.	Environmental Analysis	An Environmental Impact Analysis must be conducted prior to inclusion of the CPA in the PoA.	A Certificate of Conformity and EIA reports or exemption from the government of Cameroon shall be provided for each CPA to be included	Yes EIA has been done and the corresponding Certificate of Conformity and EIA reports or exemption from the government of Cameroon ( <i>indicate as applicable</i> ) has been provided to DOE
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, < <i>indicate the crediting period and say why the criteria is met</i> >. The CPA-DD was used as means of proof to provide confirmation of the same.
13.	Technology	The specifications of technology/measure including the level and type of service, performance specifications including compliance with testing/certifications;	Each CPA-DD shall clearly indicate that the technology is for hydro, solar, wind or biomass; that it's maximum of 5MW and is producing electricity for households/communities that are not connected to a national grid. As means of proof the PP shall provide a signed undertaking and an Electrification map of Cameroon. Also, performance specifications and certification of the technology shall also be indicated.	< <i>Provide brief description of the renewable energy technology applied and where also include the type of end users</i> > Technical specifications document, signed undertaking and an Electrification map of Cameroon were used as means of proof to provide confirmation of the same
14.	De-bundling	Where applicable, the requirements for the debundling check, in case the CPA belongs to small-scale or microscale project categories.	Using the appropriate version of the Methodological tool "Assessment of debundling for small-scale projects activities", each CPA will have to	< <i>Using the latest available debundling tool, include a description of how the CPA is not a debundled component of a large scale activity.</i> >

		<p>However, if a CPA solely consists of 'microscale CDM units', the requirement regarding debundling is not applicable.</p>	<p>demonstrate that it's not a de-bundled part of a larger PoA activity.</p>	
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**B.6. Estimation of emission reductions of a generic CPA**

**B.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 shall 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*

$EF_{CO2,tot}$  = 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.  $ED_{\text{exist},y} = 0$

### **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.  $PE_v = 0$ )

The project activity is a wind plant. Thus, no  $\text{CH}_4$ ,  $\text{CO}_2$  and  $\text{N}_2\text{O}$  is emitted by the project activity. This is in conformance to the requirements of paragraph 31(b) of the applied methodology

### **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 emissions associated with the CPA will be zero as no energy generating equipment will be transferred from another project activity.

Thus,  $LE_y = 0$

### **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)

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

>>

<Indicate parameter(s) fixed ex-ante in the table(s) below and delete unnecessary table(s)>

(Copy this table for each data and parameter.)

<b>Data / Parameter:</b>	EF <sub>CO<sub>2</sub>,tot</sub>
Data 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:	<Indicate any useful additional comment>

<b>Data / Parameter:</b>	TL <sub>p</sub>
Data 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:	<Indicate any useful additional comment>

### B.6.3. Ex-ante calculations of emission reductions

>>

**Baseline emissions** are calculated using the formula

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

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
Installed capacity	<Indicate value>	MW	Project document data
PLF	<Indicate value>	%	Project document data
Yearly operation	<Indicate value>	Days	<Indicate reason for selection of yearly days of operation>
	<Indicate value>	Hours/day	<Indicate reason for selection of hours/day of operation>
	<Indicate value>	hours	Calculated
Electricity generation (ED <sub>tot</sub> )	<Indicate value>	MWh	Calculated
Transmission losses (TL <sub>p</sub> )	10%		default value
Emissions factor (EF <sub>co2</sub> )	1	tCO <sub>2</sub> /MWh	default value
Baseline emissions (BE)	<Indicate value>	tCO <sub>2</sub> /year	
Project emissions (PE)	0	tCO <sub>2</sub> /year	
Leakage emissions (LE)	0	tCO <sub>2</sub> /year	
Emissions reductions (BE-PE-LE)	<Indicate value>	tCO <sub>2</sub> /year	Calculated

## B.7. Application of the monitoring methodology and description of the monitoring plan

### B.7.1. Data and parameters to be monitored by each generic CPA

<Indicate parameter(s) to be monitored in the table(s) below and delete unnecessary table(s)>

(Copy this table for each data and parameter).

<b>Data / Parameter</b>	ED <sub>tot,y</sub>
Data 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:	<Indicate the value>
Measurement methods and procedures:	Reading the meter
Monitoring frequency:	The meter shall be read frequently to ensure it's still in operation
QA/QC procedures:	The meter shall be well calibrated and tested before installation at the beginning of the project. Then it shall be calibrated every year by a recognized institution.
Purpose of data:	This data is needed for the estimation of emission reductions
Additional comment:	NA

### **B.7.2. Description of the monitoring plan for a generic CPA**

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

There shall be no sampling as the program is opting for Option 1 for Paragraph 34 of the methodology AMS-I.L version 3.

#### **Data recording**

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

#### **Roles/Responsibilities**

This CPA shall 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 shall 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 Africa Growth and Energy Solutions who shall take necessary measures.

#### **Maintenance**

All the operating equipments at the generation units shall be regularly checked for maintenance and amonthly 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 shall not be claimed for any period for which the data could not be recorded for any emergency reason. The meter shall be calibrated annually and the calibration certificate shall be kept by the CME (photocopy shall be kept on-site by the project manager).

**Data Archiving**

The responsibility of data archival shall rest with the on-site project manager and CME. The monthly reports sent (in softcopy) by the on-site project manager to Africa Growth and Energy Solutions for the whole crediting shall be checked and archived till 2 years post the end of crediting period of the CPA.

**Generic CPA for biomass technology****SECTION A. General description of a generic CPA****A.1. Purpose and general description of generic CPAs**

&gt;&gt;

The CPA is being implemented by <name of the CPA Implementer> under the PoA Renewable Energy Rural Electrification (RERE) Programme in Cameroon by Africa Growth and Energy Solutions (CME). Under this CPA, the CPA Implementer plans to install and operate <total capacity of the CPA> MW biomass power plant in <name of location> in the <name of region> region of Cameroon.

The technology to be used is <very brief description of the technology>

**Scope of CPA:**

Under this CPA being implemented by <name of the CPA Implementer>, the installed plant shall 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 shall be limited to households/communities as mentioned which shall use this electricity for applications such as lighting (interior, public street lighting), electrical appliances such as refrigerators, agricultural water pumps, and mobile recharging etc. The electricity generated from the project activity contributes to an average GHG reductions estimated as <average emission reductions of the CPA> tCO<sub>2</sub>/year.

**SECTION B. Application of a baseline and monitoring methodology and standardized baseline****B.1. Reference of methodology(ies) and standardized baseline(s)**

&gt;&gt;

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>

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

&gt;&gt;

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

No	para	Applicability	Justification
1	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 3(b) of the applied methodology and thus involves installation of isolate mini-grid system which distributes electricity generated only from renewable energy systems. <i>&lt;provide the Technical specifications document as means of proof of the same&gt;</i></p> <p>This criteria is met</p>
2	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(a) of the applied methodology and involves installation of greenfield mini-grid activities only. No greenfield or rehabilitation (refurbishment) of individual or renewable energy system projects are covered under this CPA. <i>&lt;provide the Technical specifications document as means of proof of the same&gt;</i></p> <p>This criteria is met</p>

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3	5.	<p>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.</p>	<p>This CPA shall provide electricity to only those target consumers that were not connected to national/regional grid prior to project implementation. The CPA developer has provided electrification map of Cameroon as means of proof of the same. Moreover, consumers of the electricity generated by this project are households and communities. Furthermore, it shall be ensured that at least 75 per cent (by number) of the consumers connected to the project renewable electricity generation system(s) shall be households &lt;provide a signed Undertaking as means of proof of the same &gt;. This criteria is met</p>
4	6.	<p>At least 75 per cent (by number) of the consumers connected to the project renewable electricity generation system(s) shall be households.</p>	<p>Consumers of the electricity generated by this CPA are households and communities. Furthermore, it shall be ensured that at least 75 per cent (by number) of the consumers connected to the project renewable electricity generation system(s) shall be households &lt;provide a signed Undertaking as means of proof of the same &gt;. This criteria is therefore met</p>
5	7.	<p>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.</p>	<p>The equipment is very high standard from &lt;indicate the supplier&gt;. &lt;indicate all the 2-3 national/international standards the project equipment conform to&gt; and therefore this criteria is met.</p>
6	8.	<p>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.</p>	<p>This CPA is a permanent installation of biomass plant of &lt;indicate capacity&gt; MW, thus this criteria is met</p>
7	9.	<p>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.</p>	<p>The project is a biomass power plant and does not consist of a reservoir. &lt;provide the technical specifications document as means of proof of the same&gt;. Thus, this criterion is not applicable.</p>

8	39.	The methodology is applicable to a programme of activities; no additional leakage estimations are necessary other than that indicated under leakage section above. Both -Option 1 and Option 2 under paragraph 34 for monitoring can be used for monitoring within one component project activity of a programme of activity and within the same rural community provided that the requirements specified for the use of each option are followed during the crediting period in a consistent manner.	The program is using Option 1 and shall follow all requirements associated to this option during the whole crediting period in a consistent manner
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**Demonstration that the CPA qualifies as Type I, II and/or III**

The program is developed under the methodology AMS-I.L and therefore qualifies as Type I project.

This Type I project shall be limited to 5MW to meet the eligibility criteria for microscale project as indicated in Paragraph B.2. of the PoA-DD.

The project shall be limited to Type I during every year of the crediting period

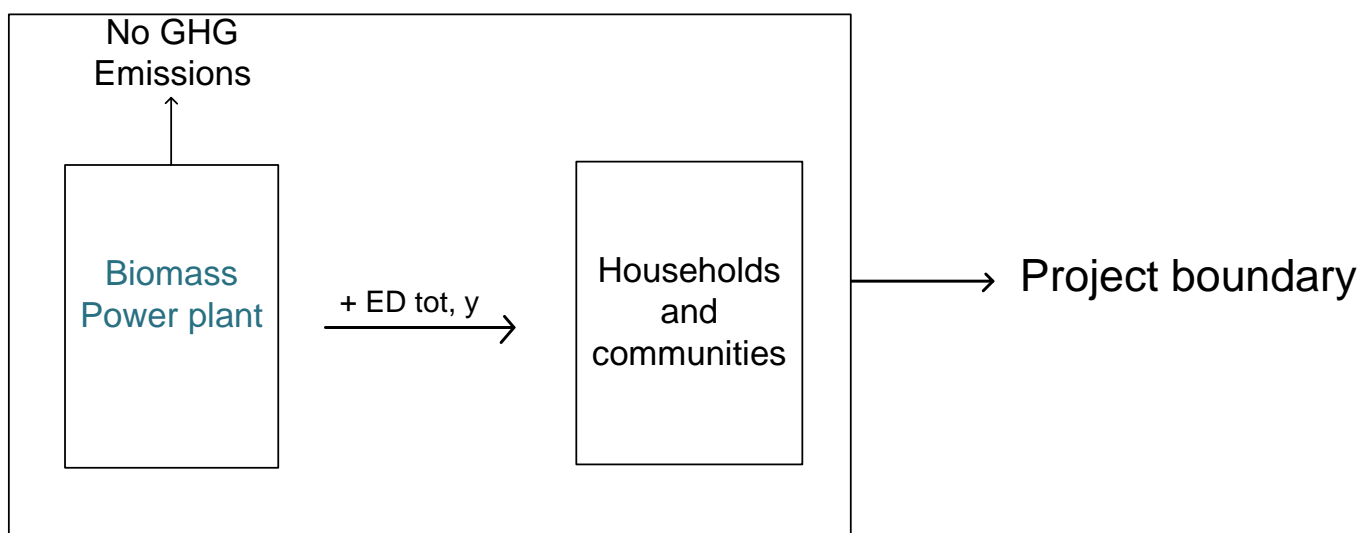
**B.3. Sources and GHGs**

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	No methane emissions involved
		N <sub>2</sub> O	No	No N <sub>2</sub> O emissions are involved in the baseline
Project scenario	Project emissions from cultivation of biomass	CO <sub>2</sub>	No	As demonstrated in section B.6.1, project emissions from the cultivation of biomass are considered to be zero. This is in conformance with the requirements of the methodological tool "Project and Leakage emissions from biomass (version 02.0)".
		CH <sub>4</sub>	No	As demonstrated in section B.6.1, project emissions from the cultivation of biomass are considered to be zero. This is in conformance with the requirements of the methodological tool "Project and Leakage emissions from biomass (version 02.0)".
		N <sub>2</sub> O	No	As demonstrated in section B.6.1, project emissions from the cultivation of biomass are considered to be zero. This is in conformance with the requirements of the methodological tool "Project and Leakage emissions from biomass (version 02.0)".
	Project emissions from energy consumption	CO <sub>2</sub>	No	As demonstrated in section B.6.1, project emissions from energy consumption due to utilization of biomass are considered to be zero. This is in conformance with the requirements of the methodological tool "Project and Leakage emissions from biomass (version 02.0)".
		CH <sub>4</sub>	No	As demonstrated in section B.6.1, project emissions from energy

				consumption due to utilization of biomass are considered to be zero. This is in conformance with the requirements of the methodological tool "Project and Leakage emissions from biomass (version 02.0)".
		N <sub>2</sub> O	No	As demonstrated in section B.6.1, project emissions from energy consumption due to utilization of biomass are considered to be zero. This is in conformance with the requirements of the methodological tool "Project and Leakage emissions from biomass (version 02.0)".
	Project emissions resulting from transportation of biomass	CO <sub>2</sub>	No	As demonstrated in section B.6.1, project emissions resulting from transportation of biomass are considered to be zero. This is in conformance with the requirements of the methodological tool "Project and Leakage emissions from biomass (version 02.0)".
		CH <sub>4</sub>	No	As demonstrated in section B.6.1, project emissions resulting from transportation of biomass are considered to be zero. This is in conformance with the requirements of the methodological tool "Project and Leakage emissions from biomass (version 02.0)".
N <sub>2</sub> O		No	As demonstrated in section B.6.1, project emissions resulting from transportation of biomass are considered to be zero. This is in conformance with the requirements of the methodological tool "Project and Leakage emissions from biomass (version 02.0)".	
Leakage Emissions	Leakage Emissions due to shift of pre project activities	CO <sub>2</sub>	No	As demonstrated in section B.6.1, Leakage Emissions due to shift of pre project activities are considered to be zero. This is in conformance with the requirements of the methodological tool "Project and Leakage emissions from biomass (version 02.0)".
		CH <sub>4</sub>	No	As demonstrated in section B.6.1, Leakage Emissions due to shift of pre project activities are considered to be zero. This is in conformance with the requirements of the methodological tool "Project and Leakage emissions from biomass (version 02.0)".
		N <sub>2</sub> O	No	As demonstrated in section B.6.1, Leakage Emissions due to shift of pre project activities are considered to be zero. This is in conformance with the requirements of the methodological tool "Project and

				Leakage emissions from biomass (version 02.0)".
	Leakage Emissions due to diversion of biomass residues from other applications	CO <sub>2</sub>	Yes	As per requirements of the methodological tool "Project and Leakage emissions from biomass (version 02.0)". Refer to section B.6.1 for more details.
		CH <sub>4</sub>	No	Excluded for simplification
		N <sub>2</sub> O	No	Excluded for simplification

The following diagram is an example of diagram representing GHG emissions for the CPA



**B.4. Description of baseline scenario**

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The CPA<CPA number>shall provide electricity to consumers in the <location>of the<region> of Cameroonwhich do not have any access to national orregional grid. The households/communities, benefiting from the electricity generated are using for electricity generation <indicate baseline electricity production source if any>prior to the project activity.

The project shall be the installation of a <indicate capacity>MW <biomass>plant that shall reduce GHG emissions associated with the baseline electricity generation system.

Baseline emissions shall be calculated using the formulae as indicated in paragraph D.6.1 of this CPA-DD.

**B.5. Demonstration of eligibility for a generic 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. There is no time-induced boundary applicable to this PoA.	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 (customer ID and Name) CPA number	Yes CPA number and location and GPS are indicated. <indicate if agreement between CPA Implementer and CME is necessary and signed>
3.	Start date of CPA	The CPA start date shall be after the PoA start date and shall be earlier than the PoA end date which is 28 years after PoA registration.	The start date of the CPA shall be specified in each CPA-DD and an appropriate proof shall be provided (e.g. date financial closure for each CPA or date construction start for each CPA). The start date shall 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 shall make sure applicability criteria are met and document this in the CPA-DD Applicability of a CPA shall be demonstrate in the CPA-DD through the following documents provided to the DOE <ul style="list-style-type: none"> <li>• Undertaking</li> <li>• Technical specifications document</li> <li>• Electrification map</li> </ul>	Yes The CPA meets all applicability criteria of the methodology AMS-I.L as indicated in paragraph D.2 of this CPA-DD. The following documents shall be presented as means of proof for meeting the applicability criteria: <ul style="list-style-type: none"> <li>• Undertaking</li> <li>• Technical specifications document</li> <li>• Electrification map</li> </ul>
5.	Additionality of CPAs	The CPA shall satisfy the latest version of the “guidelines for demonstrating additionality of microscale project activities” Especially, each CPA shall: <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 shall provide information on the additionality in the CPA-DD Technical specifications document shall serve as means of proof of demonstration of additionality	Yes <i>According to the methodological tool for “demonstrating additionality of microscale project activities” Version 07.0 (EB 86, Annex 14):</i> <i>Paragraph 7:</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 7 (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 is also considered “off-grid” for this assessment);</i>  This CPA is <indicate capacity>MW, off-grid and supplying electricity to households/communities and is



				therefore automatically additional and the eligibility criteria is thus met. The technical specifications document was used as means of proof to provide confirmation of the same.
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	Yes The proposed CPA shall not receive 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
7.	End-user group	The CPA is either aimed at households or communities	The CPA-DD specifies the target end-user group(s) The PP shall provide a signed undertaking which clearly declares that all CPAs within the PoA will be aimed at households and communities only. Furthermore, it shall be ensured that at least 75 per cent (by number) of the consumers connected to the project renewable electricity generation system(s) shall be households	Yes The electricity is dedicated to households. This was confirmed based on signed undertaking provided by the PP.
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"	In the proposed PoA, the CME opts for a verification method that does not use sampling to verify each installation in the CPA  A monitoring plan shall be established such that each system under each CPA is monitored and verified. Only CPA Implementer willing to do this individual monitoring shall be accepted to join the PoA.	Yes This CPA opts for verification method and sampling is not needed (Option 1 for Paragraph 34 of the methodology AMS-I.L version 3 is used).  In fact, this Option 1 says "Measure the net amount of renewable electricity delivered to <u>each consumer</u> connected to the project renewable electricity generation system(s). Such measurements shall be made continuously and recorded at least on a monthly basis". Since the electricity consumed by EACH CONSUMER will be known, there is no need for sampling (which is selection of part of consumers in the midst of all consumers).
9.	Microscale Limit for CPAs	The installed capacity of each CPA is limited to 5MW.	The requirement to meet this criteria of 5MW limit shall be indicated in each agreement between CPA Implementer and CME However, in cases where the CME and	Yes The installed capacity is just <indicate capacity>MW, less than or equal to the 5MW limit. As applicable, agreement between CPA Implementer and CME or technical specifications document shall be used as means of proof to

			CPA Implementer are the same the Technical specifications document shall be used as means of proof for this particular eligibility criteria	provide confirmation of the same.
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 PoA 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 PoA level LSC was conducted and shall hold for each CPA to be included in this PoA The PoA level LSC report shall be provided as means of proof	Yes The LSC was done already at PoA level as indicated in section F of the PoA-DD.
11.	Environmental Analysis	An Environmental Impact Analysis must be conducted prior to inclusion of the CPA in the PoA.	A Certificate of Conformity and EIA reports or exemption from the government of Cameroon shall be provided for each CPA to be included	Yes EIA has been done and the corresponding Certificate of Conformity and EIA reports or exemption from the government of Cameroon ( <i>indicate as applicable</i> ) has been provided to DOE
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, < <i>indicate the crediting period and say why the criteria is met</i> >. The CPA-DD was used as means of proof to provide confirmation of the same.
13.	Technology	The specifications of technology/measure including the level and type of service, performance specifications including compliance with testing/certifications;	Each CPA-DD shall clearly indicate that the technology is for hydro, solar, wind or biomass; that it's maximum of 5MW and is producing electricity for households/communities that are not connected to a national grid. As means of proof the PP shall provide a signed undertaking and an Electrification map of Cameroon. Also, performance specifications and certification of the technology shall also be indicated.	< <i>Provide brief description of the renewable energy technology applied and where also include the type of end users</i> > Technical specifications document, signed undertaking and an Electrification map of Cameroon were used as means of proof to provide confirmation of the same.
14.	De-	Where applicable, the	Using the appropriate	< <i>Using the latest available</i>

	bundling	requirements for the debundling check, in case the CPA belongs to small-scale or microscale project categories. However, if a CPA solely consists of 'microscale CDM units', the requirement regarding debundling is not applicable.	version of the Methodological tool "Assessment of debundling for small-scale projects activities", each CPA will have to demonstrate that it's not a de-bundled part of a larger PoA activity.	<i>debundling tool, include a description of how the CPAs not a debundled component of a large scale activity.&gt;</i>
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**B.6. Estimation of emission reductions of a generic CPA**

**B.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 shall 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 resulting from the CPAs will be taken to be zero, as demonstrated below:

As per the methodological tool "Project and Leakage emissions from biomass (version 02.0)", Project Emissions from biomass occur from the following two situations:

- PE from cultivation of biomass
- PE from Utilization of biomass residues

#### **PE from cultivation of biomass:**

CPAs to be included under this generic CPA will not involve biomass that is sourced from cultivation of biomass from a dedicated plantation.

Thus, project emissions from cultivation of biomass will be zero.

#### **PE from Utilization of biomass residues:**

As per the tool, the PE from biomass arise from the following two components:

- i. Emissions resulting from energy consumption
- ii. Emissions resulting from transport

The project emissions from both the two components described above shall be considered to be zero as demonstrated below:

As the CPAs to be included under the generic CPA will be of small scale type only, the project emissions from energy consumption of biomass residue shall be neglected. This is as per the requirements of paragraph 29 of the tool.

Using appropriate documentary evidences, it shall be demonstrated that the distance of transportation of biomass residue will be less than 200 km. Thus, project emissions resulting from transport of biomass will be considered to be zero. This is as per the requirements of paragraph 31 of the tool.

Thus, PE from utilization of biomass will be zero.

So, the overall project emissions from biomass will be zero.

### **Leakage emissions**

Where applicable, the methodological tool “**Project and leakage emissions from biomass (version 02.0)**” will be applied if relevant for a specific CPA. LE from biomass occurs from the following two situations:

- Leakage Emissions due to shift of pre project activities
- Leakage Emissions due to diversion of biomass residues from other applications

#### **Leakage Emissions due to shift of pre project activities:**

CPAs to be included under this generic CPA will not involve biomass that is sourced from cultivation of biomass from a dedicated plantation.

Thus, leakage emissions from cultivation of biomass will be zero. This is in conformance to the requirements of paragraph 32 of the tool.

#### **Leakage Emissions due to diversion of biomass residues from other applications:**

This section is applicable for project activities which utilize biomass residues. It quantifies leakage due to diversion of biomass residues to the project to be used as either fuel or feedstock. These biomass residues could have been used outside the project boundary in competing applications, and due to the implementation of the project activity these competing application might be forced to use inputs, which are not carbon neutral.

#### **Determination of the alternative scenario of the biomass residues in absence of the project activity:**

The alternative scenario for the “use”, in absence of the project activity, of biomass residues that will be used in the underlying CDM project activity shall include:

- (a) B1: The biomass residues are dumped or left to decay mainly under aerobic conditions. This applies, for example, to dumping and decay of biomass residues on fields;
- (b) B2: The biomass residues are dumped or left to decay under clearly anaerobic conditions.

This applies, for example, to landfills which are deeper than five meters. This does not apply to biomass residues that are stock-piled or left to decay on fields;

- (c) B3: The biomass residues are burnt in an uncontrolled manner without utilizing it for energy purposes;
- (d) B4: The biomass residues are used for energy or non-energy applications, or the primary source of the biomass residues and/or their fate in the absence of the project activity cannot be clearly identified.<sup>12</sup>

Project proponents may choose to combine some or all relevant biomass types into one category when determining the fate of biomass residues, and treat the combined types as one, for instance in the biomass availability determination. This combinations shall be documented transparently in the CDM-PDD and remain consistent throughout the crediting period.

When defining plausible and credible alternative scenarios for the use of biomass residues, the guidance below shall be followed:

- (a) If the biomass residues processing (drying, pelletisation, shredding, briquetting, etc.) is not included in the project boundary, the processed biomass obtained from that plant should be considered as B4 above;
- (b) The alternative scenario for the categories of biomass residues identified according to the two paragraphs above should be separately identified, covering the whole amount of biomass residues supposed to be used in the project activity along the crediting period;
- (c) A category of biomass residues is defined by three attributes: (1) its type or types (i.e. bagasse, rice husks, empty fruit bunches, etc.); (2) its source (e.g. produced on-site, obtained from an identified biomass residues producer, obtained from a biomass residues market, etc.); and (3) its alternative scenario in the absence of the project activity (Scenarios B above);
- (d) Explain and document transparently in the CDM-PDD, using a table similar to Table 1 in 0, what quantities of which biomass residues categories are used in which installation(s) under the project activity and what is their alternative scenario;
- (e) For biomass residues categories for which scenarios B1, B2 or B3 are deemed a plausible alternative scenario, project participants shall demonstrate that this is a realistic and credible alternative scenario. Towards this end one of the following procedures should be applied for the combined amount of biomass identified:
  - (i) Demonstrate that there is an abundant surplus of the biomass residue in the project region, which is not utilized. For this purpose, demonstrate that the total quantity of

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<sup>12</sup>For example, this scenario can be used if biomass residues are purchased from a market, or biomass residues retailers, or if processed biomass is purchased from biomass processing plants which are not included in the project boundary.

that type of biomass residues annually available in the project region is at least 25 per cent larger than the quantity of biomass residues which is utilized annually in the project region (e.g. for energy generation or as feedstock), including the project facility;

- (ii) Demonstrate for the sites from where biomass residues are sourced that the biomass residues have not been collected or utilized (e.g. as fuel, fertilizer or feedstock) but have been dumped and left to decay, land-filled, left in the field to decay after harvest,<sup>13</sup> or burnt without energy generation (e.g. field burning). This approach is only applicable to biomass residues categories for which project participants can clearly identify the site from where the biomass residues are sourced;
- (iii) In case abundance of biomass in the project region cannot be demonstrated, the alternative use of the biomass shall be considered unknown (B4) and result in leakage emissions.

If during the crediting period, new categories of biomass residues of the type B1, B2 or B3 are used in the project activity which were not listed at the validation stage, for example due to new sources of biomass residues, the alternative scenario for those types of biomass residues should be assessed using the procedures outlined in this tool for each new category of biomass residues.

**Calculation of Leakage due to diversion of biomass residues:**

The main potential source of leakage due to biomass residues is an increase in emissions from fossil fuel combustion or other sources due to diversion of biomass residues from other uses to the project plant as a result of the project activity. The alternative scenario for biomass residues for which this potential leakage is relevant is B4.

The actual leakage emissions in each of these cases may differ significantly and depend on the specific situation of each project activity. For that reason, a simplified approach is used in this tool: it is assumed that an equivalent amount of fossil fuels, on energy basis, would be used if biomass residues are diverted from other users, no matter what the use of biomass residues would be in the alternative scenario.

Therefore, for the categories of biomass residues whose alternative scenario has been identified as B4, project participants shall calculate leakage emissions as follows:

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<sup>13</sup>Project proponents shall demonstrate the fraction of biomass, which exceeds the function of refertilising the soil, as only this part of the biomass may be considered unutilized.

$$LE_{BR,y} = EF_{CO_2,LE} \times \sum_n BR_{PJ,n,y} \times NCV_{n,y} \quad \text{Equation (9)}$$

Where:

- $LE_{BR,y}$  = Leakage emissions in year  $y$  (t CO<sub>2</sub>e)
- $EF_{CO_2,LE}$  = CO<sub>2</sub> emission factor of the most carbon intensive fossil fuel used in the country (t CO<sub>2</sub>/GJ)
- $BR_{PJ,n,y}$  = Quantity of biomass residues used in the project site and included in the project boundary in year  $y$  (tonnes on dry-basis)
- $NCV_{n,y}$  = Net calorific value of the biomass residues of category  $n$  in year  $y$  (GJ/tonne of dry matter)
- $n$  = Categories of biomass residues for which B4 has been identified as the alternative scenario

The determination of  $BR_{PJ,n,y}$  shall be based on the monitored amounts of biomass residues used in facilities included in the project boundary.

### **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)

#### **B.6.2. Data and parameters fixed ex-ante**

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<Indicate parameter(s) fixed ex-ante in the table(s) below and delete unnecessary table(s)>



(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	<Indicate any useful additional comment>

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	<Indicate any useful additional comment>

### B.6.3. Ex-ante calculations of emission reductions

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**Baseline emissions** are calculated using the formula

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

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

**Project emissions** 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
Installed capacity	<Indicate value>	MW	Project document data
PLF	<Indicate value>	%	Project document data

	<i>value&gt;</i>		
Yearly operation	<i>&lt;Indicate value&gt;</i>	Days	<i>&lt;Indicate reason for selection of yearly days of operation&gt;</i>
	<i>&lt;Indicate value&gt;</i>	Hours/day	<i>&lt;Indicate reason for selection of hours/day of operation&gt;</i>
	<i>&lt;Indicate value&gt;</i>	hours	Calculated
Electricity generation (ED <sub>tot</sub> )	<i>&lt;Indicate value&gt;</i>	MWh	Calculated
Transmission losses (TL <sub>p</sub> )	10%		default value
Emissions factor (EF <sub>co2</sub> )	1	tCO <sub>2</sub> /MWh	default value
Baseline emissions (BE)	<i>&lt;Indicate value&gt;</i>	tCO <sub>2</sub> /year	
Project emissions (PE)	0	tCO <sub>2</sub> /year	
Leakage emissions (LE)	<i>&lt;Indicate value&gt;</i>	tCO <sub>2</sub> /year	Calculated
Emissions reductions (BE-PE-LE)	<i>&lt;Indicate value&gt;</i>	tCO <sub>2</sub> /year	Calculated

**B.7. Application of the monitoring methodology and description of the monitoring plan**

**B.7.1. Data and parameters to be monitored by each generic CPA**

*<Indicate parameter(s) to be monitored in the table(s) below and delete unnecessary table(s)>*

*(Copy this table for each data and parameter).*

<b>Data / Parameter:</b>	ED <sub>tot,y</sub>
Data 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:	<i>&lt;Indicate the value&gt;</i>
Measurement methods and procedures:	Reading the meter
Monitoring frequency:	The meter shall be read frequently to ensure it's still in operation
QA/QC procedures:	The meter shall be well calibrated and tested before installation at the beginning of the project. Then it shall be calibrated every year by a recognized institution.
Purpose of data:	This data is needed for the estimation of emission reductions
Additional comment:	NA

<b>Data / Parameter:</b>	BR <sub>PJ,n,y</sub>
Data Unit:	Tonnes on dry basis
Description:	Quantity of biomass residues of category n used in facilities which are located at the project site and included in the project boundary in year y
Source of data:	On-site measurements
Value(s) applied:	<i>&lt;Indicate the value&gt;</i>
Measurement methods and procedures:	Use weight meters. Adjust for the moisture content in order to determine the quantity of dry biomass

Monitoring frequency:	Data monitored continuously and aggregated as appropriate, to calculate emissions reductions
QA/QC procedures:	Cross-check the measurements with an annual energy balance that is based on purchased quantities and stock changes
Purpose of data:	This data is needed for the estimation of leakage emissions
Additional comment:	The biomass residue quantities used should be monitored separately for (a) each type of biomass residue (e.g.) and each source (e.g. produced on-site, obtained from biomass residues suppliers, obtained from a biomass residues market, obtained from an identified biomass residues producer, etc.)

<b>Data / Parameter:</b>	NCV <sub>n,y</sub>
Data Unit:	GJ/tonnes on dry-basis
Description:	Net calorific value of biomass residues of category n in year y
Source of data:	On-site measurements
Value(s) applied:	<Indicate the value>
Measurement methods and procedures:	Measurements shall be carried out at reputed laboratories and according to relevant international standards. Measure the NCV on dry-basis
Monitoring frequency:	At least every six months, taking at least three samples for each measurement
QA/QC procedures:	Check the consistency of the measurements by comparing the measurement results with measurements from previous years, relevant data sources (e.g. values in the literature, values used in the national GHG inventory) and default values by the IPCC. If the measurement results differ significantly from previous measurements or other relevant data sources, conduct additional measurements. Ensure that the NCV is determined on the basis of dry biomass
Purpose of data:	This data is needed for the estimation of leakage emissions.
Additional comment:	NA

<b>Data / Parameter:</b>	EF <sub>CO<sub>2</sub>,LE</sub>
Data Unit:	tCO <sub>2</sub> /GJ
Description:	CO <sub>2</sub> emission factor of the most carbon intensive fuel used in the country
Source of data:	Identify the most carbon intensive fuel type from the national communication, other literature sources (e.g. IEA). Possibly consult with the national agency responsible for the national communication/GHG inventory. If available, use national default values for the CO <sub>2</sub> emission factor. Otherwise, IPCC default values may be used
Value(s) applied:	<Indicate the value>
Measurement methods and procedures:	-
Monitoring frequency:	Annually
QA/QC procedures:	-
Purpose of data:	This data is needed for the estimation of leakage emissions
Additional comment:	NA

**B.7.2. Description of the monitoring plan for a generic CPA**

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

There shall be no sampling as the program is opting for Option 1 for Paragraph 34 of the methodology AMS-I.L version 3.

**Data recording**

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

**Roles/Responsibilities**

This CPA shall 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 shall 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 Africa Growth and Energy Solutions who shall take necessary measures.

**Maintenance**

All the operating equipments at the generation units shall 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 shall not be claimed for any period for which the data could not be recorded for any emergency reason. The meter shall be calibrated annually and the calibration certificate shall be kept by the CME (photocopy shall be kept on-site by the project manager).

**Data Archiving**

The responsibility of data archival shall rest with the on-site project manager and CME. The monthly reports sent (in softcopy) by the on-site project manager to Africa Growth and Energy Solutions for the whole crediting shall be checked and archived till 2 years post the end of crediting period of the CPA.

## Appendix 1. Contact information of coordinating/managing entity and responsible person(s)/ entity(ies)

<b>CME and/or responsible person/ entity</b>	<input checked="" type="checkbox"/> CME <input type="checkbox"/> Responsible person/ entity for application of the selected methodology(ies) and, where applicable, the selected standardized baseline(s) to the PoA
<b>Organization</b>	Africa Growth and Energy Solutions
<b>Street/P.O. Box</b>	Oakleigh Road South
<b>Building</b>	Building 3 North London
<b>City</b>	London
<b>State/Region</b>	London
<b>Postcode</b>	N11 1GN
<b>Country</b>	United Kingdom
<b>Telephone</b>	+44 20 3002 7957
<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>	Mr.
<b>Last name</b>	Dawkins
<b>Middle name</b>	-

<b>CME and/or responsible person/ entity</b>	<input type="checkbox"/> CME <input checked="" type="checkbox"/> Responsible person/ entity for application of the selected methodology(ies) and, where applicable, the selected standardized baseline(s) to the PoA
<b>Organization</b>	S2 Services Ltd.
<b>Street/P.O. Box</b>	Rue Drouot
<b>Building</b>	Carrefour Collège la Conquête, Malanguè.
<b>City</b>	Douala
<b>State/Region</b>	Littoral region
<b>Postcode</b>	BP 12218
<b>Country</b>	Cameroon
<b>Telephone</b>	+237 243 17 75 58
<b>Fax</b>	-
<b>E-mail</b>	<a href="mailto:d.ndongsok@s2-gmbh.com">d.ndongsok@s2-gmbh.com</a>
<b>Website</b>	<a href="http://www.s2-gmbh.com/">http://www.s2-gmbh.com/</a>
<b>Contact person</b>	Durando Ndongsok
<b>Title</b>	Managing Director
<b>Salutation</b>	Mr.
<b>Last name</b>	Ndongsok
<b>Middle name</b>	-

## **Appendix 2. Affirmation regarding public funding**

The proposed PoA shall not receive 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 the monitoring plan**

Not applicable

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

Not applicable

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