Programme of activities design document form
(Version 09.0)

Complete this form in accordance with the instructions attached at the end of this form.

BASIC INFORMATION	
Title of the PoA	Multi-country Renewable Energy Programme of Activities
Version number of the PoA-DD	03
Completion date of the PoA-DD	24/12/2020
Coordinating/managing entity	ALLCOT AG
Host Parties	Colombia; Chile;
Applied methodologies and standardized baselines	AMS.I-D “Grid connected renewable electricity generation” (Version 18.0) ACM0002 “Grid-connected electricity generation from renewable sources” (Version 20.0) AMS-I.F “Renewable electricity generation for captive use and mini-grid “ (Version 3.0)
Sectoral scopes	1: Energy industries (renewable/non-renewable) sources

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PART I. Programme of activities (PoA)

SECTION A. Description of PoA

A.1. Purpose and general description of PoA

The policy/measure or stated goal that the PoA seeks to achieve

The "Multi-country Renewable Energy Programme of Activities" aims to support the development of renewable energy projects by simplifying CDM access to those projects that are economically or financially unattractive or that faces barriers for its implementation.

The stated goal of the PoA is to displace fossil fuel-based electricity generation through the promotion of renewable energy-based power generation in the countries, which leads to greenhouse gas (GHG) emission reductions

A framework for the implementation of the PoA

This PoA will consist of project activities that install a new renewable project activity where there was no renewable energy power plant operation prior to the implementation of the project activities (Greenfield plant),. Private companies or any government or semi government agencies that meet the criteria outlined in this PoA can participate in this PoA as a CPA implementer. The PoA is organized in six generic CPAs:

- Category 1 - Generic CPA-1: Large scale solar projects: Between 15 - 900 MW. Additionality analysis using TOOL 01 "Tool for the demonstration and assessment of additionality" Version 07.0.0.
- Category 2 - Generic CPA-2: Large solar projects: Between 15 – 900 MW. Additionality analysis using TOOL 32 "Positive lists of technologies" Version 02.0.
- Category 3 - Generic CPA-3: Large scale wind projects: 1 – 900 MW.
- Category 4 - Generic CPA-4: Small scale solar projects: up to 15 MW.
- Category 5 - Generic CPA-5: Small scale hydro projects: up to 15 MW.
- Category 6 - Generic CPA-6: Micro scale solar projects: up to 5 MW.

A confirmation that the PoA is a voluntary action by the coordinating/managing entity

The proposed PoA is a voluntary initiative to encourage investments in renewable energy projects in view of increasing electricity access in the different countries. This voluntary action will contribute to achieve the national energy objectives.

The policy measures and normative framework in renewable energies sector for each country included in the geographical scope of this Programme of Activities is the following:

<u>Chile:</u>

Although there is legislation of non-conventional renewable energy (NCRE) in Chile, and specifically to promote use of renewable energy since 2008 (Law 20.257), it has not contributed enough, and the causes are essentially attributable to:

- Promotion is not an active liquid that can be used as part of the funding.
- The promotion does not relieve the projects of the need to use their energy or have some other mechanism of prices stabilization to obtain funding.
- The volatility of energy price is a significant barrier when financially developing an NCRE project.

- Although the promotion of specific NCRE laws, the slowness in processing environmental permits, the fact of the existing regulatory deficiencies with negative implications for new entry companies and the very limited access to finance due to the third point above, are making it difficult for the real promotion of renewable energies in Chile.

The mechanism has not a high enough value to make an attractive financing only based on this.

Neither of these legislations constitutes an obligation to the CME to implement the measures included in the PoA. Nor do these laws constitute any obligation to the implementing entities of any of the CPAs under the PoA. Hence, in Chile any private company can choose to develop an electricity generation project, and they can choose which technologies apply as long as they comply with environmental regulations and construction/operation permits.

Colombia:

In the Colombian sector related to renewable energies, a distinction is made between conventional and unconventional renewable energies, with hydraulic energy being the most widespread in the first group, and geothermal, solar, wind, biomass and mini-hydraulic energies in the second.

In recent years, energy and environmental policy alignments have been developed, aimed at reducing greenhouse gas emissions, through the rational and efficient use of electrical energy, establishing for this purpose a series of incentives that allow the promotion of the diversification of the energy matrix in the country. Among them, Law 1715 of 2014 stands out, which enhances the development of projects based on renewable energy through a series of certain incentives.

The projects comply with the different technical regulations regarding permits, environmental requirements and municipal planning (RETIE; NSR 10; NTC 20520 and RETILAP). In the case of micro-scale projects, they comply with the different decrees and resolutions published by the country's Ministry of Mines and Energy.

However, given the existence of great barriers, both contractual and economic, as well as technical difficulties, further growth and development are necessary, therefore it could be determined that neither of these legislations constitutes an obligation to the CME to implement the measures included in the PoA. Nor do these laws constitute any obligation to the implementing entities of any of the CPAs under the PoA.

How the PoA contributes to the sustainable development of the host Party

The PoA increase and improve energy supply in the rural areas through the implementation of renewable energy projects, achieving an improvement of the livelihoods and the attainment of sustainable economic growth of the countries. More specifically, the successful implementation will contribute to:

- Social well-being: The implementation will provide renewable, clean and affordable electricity. In general, it will provide important employment opportunities, which give an increase in local community’s income in general.

  Thus, the PoA contributes to poverty alleviation and improved living and health conditions through the use of clean energy by households.

- Economic well-being: The implementation will help to the increasing commercial activity through clean and renewable source of power. It will facilitate the economic development process through the provision of modern energy sources and enhances the local investment environment and thereby improves the local economies.

  New business opportunities shall also be created.

- Environmental well-being: The proposed PoA shall utilize hydro, wind or solar PV energy solutions for power generation process, which will 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 of GHG emissions. Fact that will entail to get satisfy the demand of electricity reducing the reliance of imported fossil sources diversifying sources of electricity generation, important for meeting the growing energy demand.

Another important benefit that the countries will achieve will be the improvement of their hydrocarbon trade balance through reduction of oil derivate of consumption to be used for electricity generation.

- Technological transfer: This PoA is a good technology transfer between developed countries and host countries by implementing activities involving the adoption of more efficient technologies and new equipment, which in absence of the project would not be adopted in the region.

A.2. Physical/geographical boundary of PoA

The “Multi-country Renewable Energy Programme of Activities” will be developed in Colombia and Chile.

Colombia

Chile

A.3. Technologies/measures

The PoA is developed to include the following renewable energy technologies: hydro, photovoltaic, and wind.

- Hydro Power: Hydropower project activity is to use the energy of the falling water for electricity generation. The accumulative reservoir type and run-of-river type hydropower project are both included in the PoA.
- Solar Photovoltaic Power: The Solar Photovoltaic power project activity is to use solar energy to generate direct current from photo voltaic modules that will be converted into alternating current by inverters.
- Wind power: Is the use of wind to provide the mechanical power through wind turbines to turn electric generators.

The PoA will be organized in six generic CPAs depending on the scale of the project:

- **Micro-scale:** A typical CPA under this category comprises on one or more microscale solar projects up to 5 MW.

- **Small scale**: A typical CPA under this PoA comprises of one or more grid-based (national grid or mini-grid) hydro and solar energy power plants with a total installed capacity not exceeding 15MW. Hydro projects and solar are separated in a different generic CPA.
- **Large scale:** A typical CPA under this PoA comprises activities based in solar or wind energy power plants with a total installed capacity defined for each generic CPA.

The CPAs will displace electricity from an electricity distribution system that is or would have been supplied by at least one fossil fuel fired generating unit i.e., in the absence of the project activity, the users would have been supplied electricity from the national grid or isolated mini-grids.

The host parties will receive different benefits, including the transfer of technology / know-how through training and practical work experience (because most of the equipment and know-how cannot be secured locally, the bulk of the equipment required will be imported from abroad). In addition, the implementation of these projects will encourage local production of spare parts in the region due to the need for spare parts that guarantee the proper functioning of the facilities.

A.4. Coordinating/managing entity

The coordinating entity of this PoA is ALLCOT AG.

A.5. Parties and project participants

Parties involved	Project participants	Indicate if the Party involved wishes to be considered as project participant (Yes/No)
Chile (host Party)	N/A	No
Colombia (host Party)	ALLCOT AG (private)	No

A.6. Public funding of PoA

No public funding will be used for this activity. The financing scheme encourages private investments.

SECTION B. Management system

For the operation and management of this PoA the CME will develop procedures and operational activities in order to implement and manage CPAs in accordance with the CDM project standard for programmes of activities Version 02.0. Thus, the CME will include operational and management arrangements for the implementation of the PoA, including:

a) A record keeping system for each CPA under the PoA. The coordinating entity will maintain a database with the following information for each CPA:
    a. Name of the CPA and CDM ID number
    b. Implementing entity of the CPA (name and contact details)
    c. Location of the project: Region, Province, Commune.
    d. Specific Location of the power plant (coordinates of the power house)
    e. Type of renewable energy source and installed capacity of the CPA
    f. Commissioning date
    g. Description of the connection to the grid (national, existing isolated grid, new isolated grid)
    h. The record of technical specification of each renewable energy plant participating in the PoA

i. Location of electricity meter (s).

j. Control of the monitoring parameters of each CPA

k. Meter calibration

l. Verification status for each monitoring period

m. Environmental Approval status and reference to the relevant documentation, if applicable.

b) The provisions to ensure that those operating the CPA are aware and have agreed that their activity is being subscribed to the PoA;

For the inclusion of a CPA under the PoA, the CPA Operator shall provide a notarized letter of consent, stating that:

- They are aware and have agreed that their activity is being subscribed to the PoA “Multi-Country Renewable Energy”
- The CPA will not be registered as a single CDM project activity or as a CPA under another PoA.

The electronic database described above shall be used to determine that a CPA is not a de-bundled component of another CDM project activity. Every new renewable energy power plant included as a CPA will be compared to the already existing database and the list of project activities under-validation or registered at the UNFCCC. Further, the project proponents will be made aware of the de-bundling rules and will certify that the proposed CPA is not a de-bundled part of a project. Should such a case occur then the coordinating entity would not proceed with inclusion of the corresponding CPA in the proposed PoA.

c) A system to determine the status of verification at any time for each CPA. Monitoring will be carried out individually for each CPA added to the proposed PoA. The monitoring reports will be prepared and submitted to the DOE for verification. The CPAs included in a monitoring report shall have an identical verification period. To avoid double accounting, it will have a control spreadsheet to register for each CPA the verification period covered by every monitoring report.

In accordance with the manual, CME implements the management system of each CPAs including environmental and social impact mitigation, baseline and project emission monitoring process, all the data collection, storage and retrieval system. Since this manual is subject to continuous improvement by CME or CPA implementer's request or observations from validation and verification processes, its content or even structure can be expected to vary over the time. Nevertheless, any changes that a Designated Operational Entity (DOE) might observe at inclusion of CPAs after validation of the PoA will be documented through the procedure for continuous improvement.

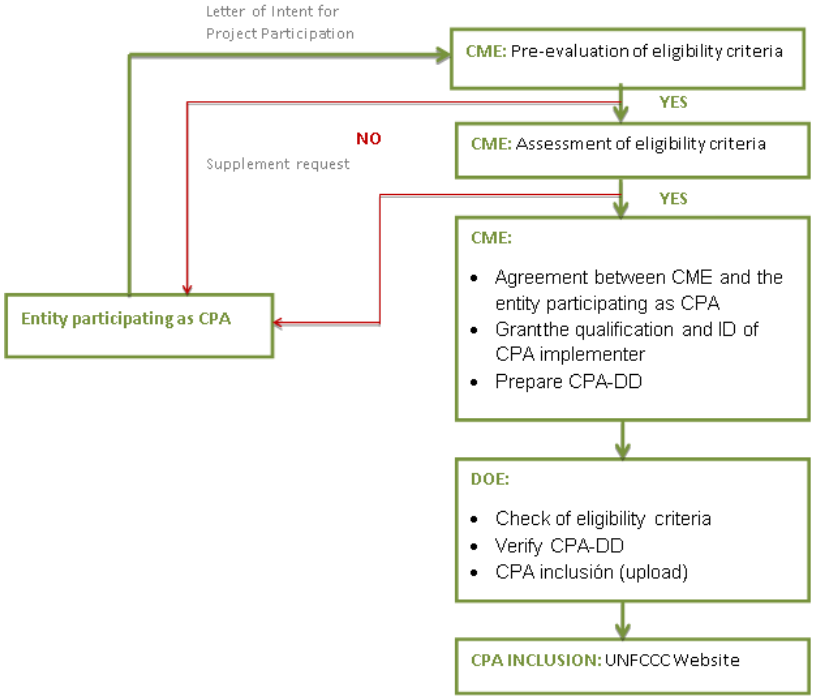


Figure 1. Procedure for inclusion of new CPAs

A clear definition of roles and responsibilities of personnel involved in the process of inclusion of CPAs, including a review of their competencies.

The operational and management structure set up a clear information and data flow channel between the CME and the CPA implementer.

At CPA level, CME will ensure the actual involvement of field personnel (power plant operators/technicians) in the monitoring and data collection and record keeping activities. CME will request each CPA to designate a CPA manager at the project developer head office and an engineer in-charge of the power plant operation. However, the structure could vary slightly depending on the operation mode of the power plant. The structure and responsibilities of each actor are presented in the following chart and table:

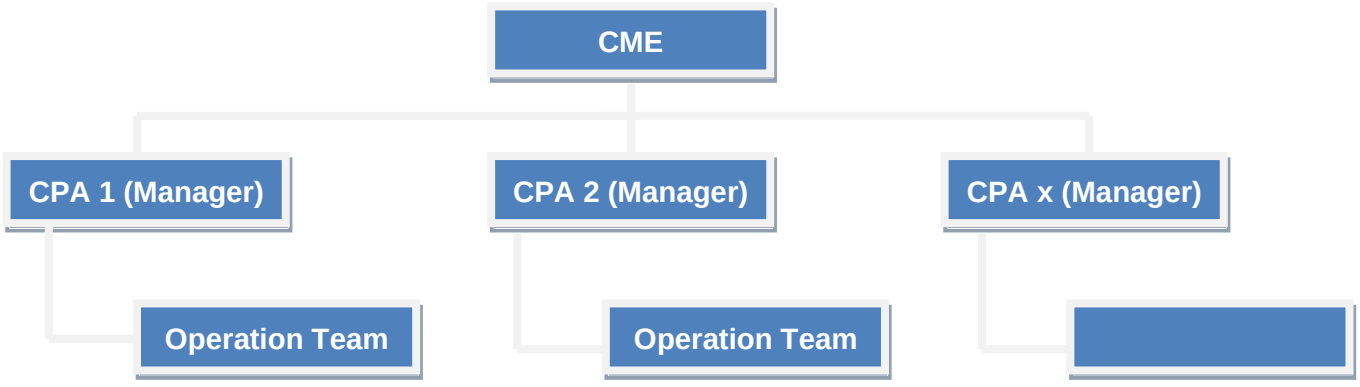


Figure 2. Internal organization of the POA

Table 1: Team and responsibilities

Team		Responsibilities
CME		▪ Supervise all activities under the PoA ▪ Develop data recording formats and provide them to the CPA implementer in each region ▪ Manage a centralised database system and maintain the data of each CPA. ▪ Carry out quality control and quality assurance of data and CPA operation. ▪ Supervise the data gathering process after project implementation to document emission reductions according to the Monitoring Plan. ▪ Calculate the emission reduction based on monitored parameters ▪ Prepare periodically monitoring reports ▪ Responsible for reviewing the monitoring parameters on a quarterly basis ▪ Maintain and manage PoA database.
CPA Implementer	CPA Manager	▪ Responsible for all activities under the CPA ▪ Management, overall standard setting and supervision. ▪ In charge of suggesting immediate corrective actions and preparing a summary of the monthly data ▪ Manage database for CPA in line with CDM requirements under the supervision of REA. ▪ Report CPA data and monitoring information to REA (Quarterly reports). ▪ Database maintenance and management of the power plant in accordance with the monitoring plan. ▪ Ensure all relevant personnel are continuously trained on data recording and monitoring parameters.
	Operation Team	▪ Responsible for power plant operation and field data record ▪ Check data record and compilation ▪ Send power plant data to CPA Manager ▪ Carry out operation and maintenance of the power plant. ▪ Capture hard copy data as per the data recording format (logbook), every month.

Records of arrangements for training and capacity development for personnel

Training shall be provided by the CME to all the personnel involved in the CPA development and monitoring activities. It will be carried out to ensure the CME personnel is qualified to implement the PoA and is familiar with the EB latest guidelines related to PoA development, CPA inclusion, monitoring, verification and issuance.

The training and capacity building activities include seminars, webinars, and other courses carried-out by specialized entities. The frequency of such activities is subject to the outcomes of the periodic evaluation of the CME operation and management, carried-out as result of its policies on continuous improvements.

The CME Staff will be qualified to perform the below activities:

- Eligibility check
- Additionality tests

- Baseline estimations
- Monitoring requirements

The training and capacity development activities will ensure the correct monitoring procedures as established in the CPA-DD, so for this purpose, each CPA implementer will receive specific training adapted to the technical requirements of each CPA according to the installed technology of each power plant.

The CME will be responsible for keeping the record of training and capacity development activities provided to relevant personnel. Example of the record includes:

- Date, time, and venue of each training and capacity development events;
- Attendee records of each event;
- Agenda and content of each training and capacity development events

A procedure 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.

A procedure to avoid double counting

A system/procedure to avoid double accounting: avoid the case of including a new CPA that has been already registered either as CDM project activity or as a CPA of another PoA.

For this purpose, prior to the inclusion of a new CPA the UNFCCC database will be checked to identify CDM project activities located in the same Region. If the projects are identified, the specific locations and technical characteristics of the specific CPA will be compared. If the new CPA corresponds to another CDM project activity or a CPA included into another PoA, it will not proceed with its inclusion in the PoA.

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

The managing entity is the one having the rights to claim and own emission reductions under the Clean Development Mechanism of the UNFCCC.

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. Also, it 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.

The Senior Development & Management Specialist will be responsible for managing and recording data associated to each SSC-CPA. The Excel database will be updated using data supplied by the CPA implementer; which will be the basis for the verification of SSC-CPAs and which will be available for inspection by the DOE at any point in time.

Measures for continuous improvements of the PoA management system

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

Those are the steps adopted to establish measures for improvement:

- 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

The Project Manager of PoA will organize a meeting with all his/her staff and CPA personnel to review the performance of the PoA management system on a semi-annual basis to identify issues that needs to be addressed in order to obtain continuous improvements of the PoA management system.

An evaluation of the monitoring control of the CPA site will also be done in order to identify deviations and/or non-conformities to the monitoring plan, and to take corrective and prevention actions. In a first stage, the CME will check (along with the responsible personnel at the CPA site), the procedures related to registration and measurements of raw data, as well as recording and documentation measurements. If during this revision the CME identifies a deviation, potential deviation, or a non-conformity of the monitoring plan, the CME will communicate the situation by written notification.

The CPA owner (or CPA implementer, as applicable), shall implement corrective and preventing action in order to correct the situation in a timely manner. If there no errors or non-conformities are observed during the checking process, the CME will inform by written notification that there is no need for further corrections.

SECTION C. Demonstration of additionality of PoA

The coordinating/managing entity shall demonstrate additionality of the proposed CDM PoA by establishing that in the absence of the PoA, none of the CPAs that will be implemented under the PoA would occur.

There is no incentives for implementation of CPAs foreseen in this PoA in the host countries and therefore, no CPA would be implemented in the absence of this PoA. The additionality of each CPA will be demonstrated as follows:

CPAs category 1: Large- scale solar projects (>15MW): Solar photovoltaic CPAs with an installed capacity between 15 - 900 MW.

- CPAs that will include one or more large-scale projects will include eligibility criteria derived from all the relevant requirements of the TOOL01 “Tool for the demonstration and assessment of additionality”, Version 07.0.0. CPA generic of this category that consist of one or more large-scale projects as CPAs includes eligibility criteria derived from all the relevant requirements contained in the additionality section of the large-scale methodologies applied to the CPAs.

CPAs category 2: Large- scale solar projects (>15MW): Solar photovoltaic CPAs with an installed capacity between 15 - 900 MW.

- CPAs that will include one or more large-scale projects and includes eligibility criteria derived from all the relevant requirements contained in the additionality section of the large-scale methodologies applied to the CPAs which will demonstrate the additionality using the simplified procedure (Tool 32).

CPAs category 3: Wind projects: Wind CPAs.

- CPAs that will include one or more large-scale projects will include eligibility criteria derived from all the relevant requirements of the TOOL01 “Tool for the demonstration and assessment of additionality”, Version 07.0.0. CPA generic of this category that consist of one or more large-scale projects as CPAs includes eligibility criteria derived from all the relevant requirements contained in the additionality section of the large-scale methodologies applied to the CPAs.

CPAs category 4: Small- scale solar projects (up to ≤15MW): Solar photovoltaic CPAs with an installed capacity up to 15MW.

- CPAs that will include one or more small-scale projects will apply eligibility criteria derived from all the relevant requirements of TOOL21 “Demonstration of additionality of small-scale project activities”, Version 13.0 and the TOOL 32.

CPAs category 5: Small- scale hydro projects (up to ≤15MW): Hydro CPAs with an installed capacity up to 15MW.

- CPAs that will include one or more hydro small-scale projects will apply eligibility criteria derived from all the relevant requirements of TOOL21 “Demonstration of additionality of small-scale project activities”, Version 13.0.

CPAs category 6 - **Microscale projects (up to 5MW) :** The project activity consists of solar photovoltaic technology for distributed energy generation (not connected to a national or regional grid) connected to carbon intensive mini-grid. . Thus, any project activity (up to 5 MW) included in this generic CPA is additional.

- CPAs that will include one or more microscale projects will apply eligibility criteria derived from all the relevant requirements of the TOOL19 “Demonstration of additionality of microscale project activities”, Version 09. If the CPA is microscale in accordance with the thresholds referred to in paragraph 128 of the CDM Project Standard for Programme of Activities, and applies the “Methodological tool: Demonstrating additionality of microscale project activities” regardless of the scale of methodologies applied (i.e. large-scale methodologies, small-scale methodologies or combination thereof), the conditions will derive from this tool.

SECTION D. Start date and duration of PoA

D.1. Start date of PoA

03/02/2020 (corresponding to the date when the coordinating/managing entity notified both designated national authorities (DNA) of the host Party(ies) of the proposed CDM PoA, and the UNFCCC secretariat (hereinafter referred to as the secretariat) of the intention to seek the CDM status for the PoA in accordance with the “CDM project cycle procedure for programmes of activities” for the purpose of determining the start date of the PoA.

D.2. Duration of PoA

The length of the PoA is 28 years and 0 months or 336 months.

SECTION E. Environmental impacts

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

The Environmental Analysis will be done at CPA level. Individual CPAs under this PoA will be implemented at different geographical locations involving uniquely identified separate technological measures. Environmental impacts, if any, associated with the implementation of each CPA is, therefore, expected to occur at individual CPA level. Hence, the environmental analysis will be conducted at individual CPA levels as and when a new CPA is intended to be added to this PoA

E.2. Analysis of environmental impacts

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

E.3. Environmental impact assessment

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

SECTION F. Local stakeholder consultation

F.1. Level at which local stakeholder consultation is undertaken

The Local stakeholder consultations will be held at the CPA level, taking into consideration the differences of circumstances and opinions of each and every community in which each CPA is located. It is essential to capture each community's view on the impact of the CPA implemented in the surrounding. As every CPA might present different circumstances and opinions of the relevant communities the local stakeholder comments will be invited separately for each CPA and not at PoA level.

In the case of CPAs including projects which must analyse its environmental impacts through an Environmental Impact Assessment (EIA), a formal stakeholder consultation needs to be included as part of the assessment process by the environmental authority.

F.2. Modalities for local stakeholder consultation

The stakeholder consultation will be conducted at a CPA level. The purpose will be to give opportunity to the stakeholders to understand the project, its role in GHGs emission reduction and to comment on the CDM initiative taken by the CPA implementer, and the modalities chosen for that consultation will be reported and justified in the specific consultation document.

F.3. Summary of comments received

Comments from the stakeholders will be summarized for each CPA. The comments will be received in the form of filled in questionnaire. CME/CPA implementer will carry out the assessment of the comments by each filled in questionnaire and prepare an assessment summary of comments.

F.4. Consideration of comments received

A summary of how due account was taken on the comments received will be provided for each CPA-DD.

SECTION G. Approval and authorization

The CME applied a letter of approval from DNA of Chile as host party on 10/12/2020. The DNA of Chile has confirmed that the Party is a Party to the Kyoto Protocol and participation to CDM PoA is voluntary.

And DNA of Chile refers the precise title of programme of Activities and also, authorizes that ALLCOT AG coordinates the PoA.

The CME obtained a letter of approval from DNA of Colombia as host party on 27/10/2020. The DNA of Colombia has confirmed that the Party is a Party to the Kyoto Protocol and participation to CDM PoA is voluntary.

And DNA of Colombia refers the precise title of programme of Activities and also, authorizes ALLCOT AG to coordinate this PoA. In addition, on 23/12/2020 the DNA of Colombia authorized ALLCOT AG to be a project participant.

Therefore, participation of project participant and coordination of CME are authorized by DNA of host party.

PART II. Generic component project activity (CPA)

SECTION H. Description of generic CPA

H.1. Title of generic CPA

Large Scale Generic CPA 01

H.2. Reference number of generic CPA

CPA 01

H.3. Purpose and general description of generic CPA

The purpose of the PoA is to promote the development of new power plants with solar photovoltaic technology connected to the national grid of each country in order to pour the electricity obtained to it avoiding generation from mix of fuels. Under this CPA being implemented the installed plant will provide electricity to a national or regional grid.

The proposed generic CPA will include large scale project activities, whose total installed capacity will be between 15 and 900 MW .

The electricity generated from the project activity contributes to an average GHG reductions estimated as tCO_2/year.

H.4. Technologies/measures

The detailed technical description and technical details will be given in the specific CPA-DD.

Technology	Large scale solar photovoltaic solar photovoltaic generation
Installed Capacity	15 – 900 MW
Applicability	Greenfield project activities
Use of the produced electricity	The CPAs will displace electricity from an electricity distribution system that is or would have been supplied by at least one fossil fuel fired generating unit i.e., in the absence of the project activity, the users would have been supplied electricity from the national grid.
Facilities, systems and equipment that will be installed	Solar panels, inverters, transformers and electric meters
Lifetime of main equipment	At least 20 years according manufacturer specifications
Capacity Factor	At least 15- 40 %, based on projects developed in the region
Monitoring equipment	Electric meters at the grid interface.

As the Generic CPA only includes Greenfield project activities, prior to the implementation of the corresponding CPAs there were no existing technologies at the same sites.

In addition, the baseline scenario is that the electricity delivered to the grid by the project activity would have otherwise been generated by the operation of grid-connected power plants and by the addition of new generation sources into the grid.

SECTION I. Application of methodologies and standardized baselines

I.1. References to methodologies and standardized baselines

The methodology ACM0002 "Grid-connected electricity generation from renewable sources" (Version 20.0) includes the use of the following tools:

- TOOL01 - Tool for the demonstration and assessment of additionality (Version 7.0.0)
- TOOL07 - Tool to calculate the emission factor for an electricity system (Version 07.0.0)

I.2. Applicability of methodologies and standardized baselines

Each Large Scale CPA under this generic category will meet the applicability conditions of the approved consolidated baseline and monitoring methodology ACM0002, Version 20.0, Sectoral Scope, as described below:

Id.	Applicability	Project activity vis-à-vis applicability Conditions
1	This methodology is applicable to grid-connected renewable power generation project activities that: • install a Greenfield power plant; • involve a capacity addition to (an) existing plant(s); • involve a retrofit of (an) existing operating plants/units; • involve a rehabilitation of (an) existing plant(s)/unit(s) or • involve a replacement of (an) existing plant(s)/unit(s).	The CPA-XXX under this generic CPA will be the installation of a new grid connected renewable energy power plant at a site where no renewable power plant was operated prior to the implementation of the project activity (Greenfield plant) and hence this criterion is applicable.
2	The methodology is applicable under the following conditions: a) The project activity may include renewable energy power plant/unit of one of the following types plant/unit with or without reservoir, wind-solar power-wave-tidal plant/unit b) In the case of capacity additions, retrofits, rehabilitations or replacements the existing plant/unit started commercial operation prior to the start of a minimum historical reference period of five years and no capacity expansion, retrofit, or rehabilitation of the plant/unit has been undertaken between the start of this minimum historical reference period and the implementation of the project activity.	The proposed CPA XXX XXX under this generic CPA will be an installation of solar plant/unit. The proposed CPA XXX under PoA does not involve capacity additions, retrofits or replacements and therefore this second condition is not applicable.
3	In case of hydro-power project activities following conditions apply: a) The project activity is implemented in an existing reservoir with no change in the volume of reservoir; b) The project activity is implemented in an existing reservoir, where the volume of reservoir is increased and the power density of the project activity, calculating using equation 7 of the methodology, is greater than 4 W/m^2	This condition is not applicable since hydro-power project activities are not included in this generic CPA category.

	c) The project activity results in new reservoirs and the power density of the power plant, calculating using equation 7 of the methodology, is greater than 4 W/m^2 d) The project activity results is an integrated hydro power involving multiple reservoirs, where density of the power plant, calculating using equation 7 of the methodology, is equal or lower to 4 W/m^2 apply to all the following conditions: (i) The power density calculated using the total installed capacity of the integrated project, as per equation (8), is greater than 4 W/m^2; (ii) Water flow between reservoirs is not used by any other hydropower unit which is not a part of the project activity; (iii) Installed capacity of the power plant(s) with power density lower than or equal to 4 W/m^2 shall be: a. Lower than or equal to 15 MW; and b. Less than 10 per cent of the total installed capacity of integrated hydro power project.	
4	In the case of integrated hydro power project: a) Demonstrate that water flow from upstream power plants/units spill directly to the downstream reservoir and that collectively constitute to the generation capacity of the integrated hydro power project. b) Provide an analysis of the water balance covering the water fed to power units, with all possible combinations of reservoirs and without the construction of reservoirs, demonstrating the requirement of specific combination of reservoirs constructed under CDM project activity for the optimization of power output	This condition is not applicable since hydro-power project activities are not included in this generic CPA.
5	In the case of retrofits, rehabilitations, replacements, or capacity additions, this methodology is only applicable if the most plausible baseline scenario, as a result of the identification of baseline scenario, is "the continuation of the current situation, that is to use the power generation equipment that was already in use prior to the implementation of the project activity and undertaking business as usual maintenance".	Not applicable for the generic CPA, since the project activity does not include retrofits, rehabilitations, replacements, or capacity additions.
6	Is not applicable to: a) Project activities that involve switching from fossil fuels to renewable energy sources at the site of the project activity, since in this case the baseline may be the continued use of fossil fuels at the site. b) Biomass fired power plants/units.	The CPAs of this category will demonstrate that the project activity does not involve switching from fossil fuels to renewable energy sources
7	The "Tool to calculate the emission factor of an electricity system Version 07.0" will be applicable if the following applicability criteria are accomplished: • "This tool may be applied to estimate the OM, BM and/or CM when calculating baseline emissions for a project activity that substitutes grid electricity,	The CPAs will supply electricity to a grid. The electricity system will not be located partially or totally in an Annex I country. The CPAs will not involve biofuels.

	that is where a project activity supplies electricity to a grid or a project activity that results in savings of electricity that would have been provided by the grid (e.g., demand-side energy efficiency projects)". • Under this tool, the emission factor for the project electricity system can be calculated either for grid power plants only or, as an option, can include off-grid power plants. In the latter case, two sub-options under the step 2 of the tool are available to the project participants, i.e., option IIa and option IIb. If option IIa is chosen, the conditions specified in "Appendix 1: Procedures related to off-grid power generation" should be met. Namely, the total capacity of off-grid power plants (in MW) should be at least 10 per cent of the total capacity of grid power plants in the electricity system; or the total electricity generation by off-grid power plants (in MWh) should be at least 10 per cent of the total electricity generation by grid power plants in the electricity system; and that factors which negatively affect the reliability and stability of the grid are primarily due to constraints in generation and not to other aspects such as transmission capacity. • In case of CDM projects the tool is not applicable if the project electricity system is located partially or totally in Annex I country. • Under this tool, the value applied to the CO2 emission factor of biofuels is zero.	
8	The "Tool for the demonstration and assessment of additionality. Version 07.0.0" will be applicable if the following applicability criteria is accomplished: • Once the additionally tool is included in an approved methodology, its application by project participants using this methodology is mandatory.	The CPA does include an approved methodology, ACM0002, that includes the additionally tool.
9	The "Tool to calculate project or leakage CO2 emissions from fossil fuel combustion. Version 03.0.0" will be applicable if the following applicability criteria is accomplished: • This tool provides procedures to calculate project and/or leakage CO2 emissions from the combustion of fossil fuels. It can be used in cases where CO2 emissions from fossil fuel combustion are calculated based on the quantity of fuel combusted and its properties. Methodologies using this tool should specify to which combustion process j this tool is being applied.	The CPA will not include the procedures of the tool since the combustion of fossil fuels is neglected.

I.3. Application of multiple methodologies

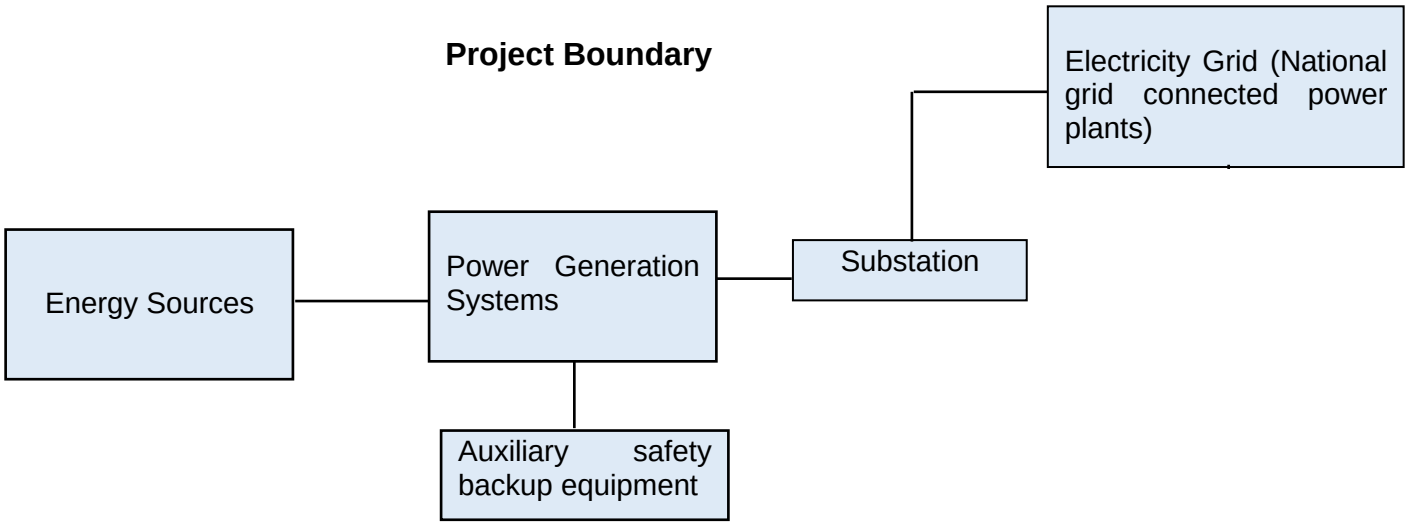
The organization of the PoA is done in line with the methodologies used for the emission reductions calculation and monitoring in each category. Thus, in each Large-scale CPA does not apply multiple methodologies, instead, only one methodology is applied, and this section is therefore, not applicable.

I.4. Project boundary, sources and greenhouse gases (GHGs)

	Source	GHG	Included?	Justification/Explanation
Baseline	CO_2 emissions from electricity generation in fossil fuel fired power plants that are displaced due to the project activity	CO_2	Yes	Main emissions source
		CH_4	No	Minor emissions source
		N_2O	No	Minor emission source
Project activity	For dry or flash steam geothermal power plants, emissions of CH_4 and CO_2 from non-condensable gases contained in geothermal steam	CO_2	No	Geothermal project activities are not included in this CPA category.
		CH_4	No	
		N_2O	No	
	For binary geothermal power plants, fugitive emissions of CH_4 and CO_2 from non-condensable gases contained in geothermal steam	CO_2	No	Geothermal project activities are not included in this CPA category.
		CH_4	No	
		N_2O	No	
	For binary geothermal power plants, fugitive emissions of hydrocarbons such as n-butane and isopentane (working fluid) contained in the heat exchangers	Low GWP hydrocarbon/ refrigerant	No	Geothermal project activities are not included in this CPA category.
	CO_2 emissions from combustion of fossil fuels for electricity generation in solar thermal power plants and geothermal power plants	CO_2	No	Not applicable since solar thermal power plants and geothermal power plants are not included in this generic CPA
		CH_4	No	
		N_2O	No	
	For hydro power plants, emissions of CH_4 from the reservoir	CO_2	No	Hydro power project activities are not included in this CPA category.
		CH_4	No	
		N_2O	No	

The greenhouse gases emissions within the project activity boundaries are associated to the baseline, produces from electricity generation in fossil fuel-fired power plants connected to the national grid.

The project activity will supply zero-emissions electricity to the grid, thus avoiding greenhouse gases emissions by displacing the dispatch of thermoelectric power plants. As it is shown in the following diagram blow, there are no greenhouse gas emissions associated with the project activity.



I.5. Establishment and description of baseline scenario

According to methodology ACM0002 version 20.0, the baseline scenario will be:

Baseline scenario for Greenfield power plant: the baseline scenario is electricity delivered to the grid by the project activity would have otherwise been generated by the operation of grid-connected power plants and by the addition of new generation sources, as reflected in the combined margin (CM) calculations described in "TOOL07: Tool to calculate the emission factor for an electricity system".

I.6. Estimation of emission reductions

I.6.1. Explanation of methodological choices

Baseline emissions

Baseline emissions include only CO_2 emissions from electricity generation in power plants that are displaced due to the project activity. The methodology assumes that all project electricity generation above baseline levels would have been generated by existing grid-connected power plants and the addition of new grid-connected power plants. The baseline emissions are to be calculated as follows:

$$BE_y = EG_{PJ,y} \times EF_{grid,y} \qquad \text{Equation (1)}$$

Where:

BE_y	=	Baseline emissions in year *y* (t CO_2)
$EG_{PJ,y}$	=	Quantity of net electricity generation that is produced and fed into the grid as a result of the implementation of the CDM project activity in year *y* (MWh)
$EF_{grid,y}$	=	Combined margin CO_2 emission factor for grid connected power generation in year *y* calculated using the latest version of the "Tool to calculate the emission factor for an electricity system (tCO_2/MWh)

The procedures prescribed in the "Tool to calculate the emission factor for an electricity system" will be used to calculate $EF_{grid,y}$ parameter.

The emission factor will be calculated in a transparent and conservative manner as follows: A combined margin (CM), consisting of the combination of operating margin (OM) and build margin (BM) according to the procedures prescribed in the "Tool to calculate the emission factor for an electricity system". The steps for calculate the emission factor, will be the following ones:

Step 1. Identify the relevant electricity systems;

Step 2. Choose whether to include off-grid power plants in the project electricity system (optional);

Step 3. Select a method to determine the operating margin (OM);

Step 4. Calculate the operating margin emission factor according to the selected method;

Step 5. Calculate the build margin (BM) emission factor;

Step 6. Calculate the combined margin (CM) emission factor.

Step 1. Identify the relevant electricity systems

For determining the electricity emission factors, the project participants shall identify the relevant project electricity system. Project participants may delineate the project electricity system using any of the following options:

(a) Option 1. A delineation of the project electricity system and connected electricity systems published by the DNA or the group of the DNAs of the host country(ies), In case a delineation is provided by a group of DNAs, the same delineation should be used by all the project participants applying the tool in these countries;

(b) Option 2. A delineation of the project electricity system defined by the dispatch area of the dispatch centre responsible for scheduling and dispatching electricity generated by the project activity. Where the dispatch area is controlled by more than one dispatch centre, i.e., layered dispatch area, the higher-level area shall be used as a delineation of the project electricity system (e.g., where regional dispatch centres are required to comply with dispatch orders of the national dispatch centre then area controlled by the national dispatch centre shall be used);

(c) Option 3. A delineation of the project electricity system defined by more than one independent dispatch areas, e.g., multi-national power pools.

In the case of this generic CPA the electricity system is defined by the Option 2 "*the project electricity system defined by the dispatch area of the dispatch centre responsible for scheduling and dispatching electricity generated by the project activity.*

Step 2. Choose whether to include off-grid power plants in the project electricity system (optional).

In the Step 2**,** Option I will be chosen to calculate the operating margin and build margin emission factor because there is no off-grid power plant to be included in the project electricity system.

Step 3. Select a method to determine the operating margin (OM)

The calculation of the operating margin emission factor ($EF_{grid,OM,y}$) will be based on one of the following methods:

(a) Simple OM; or

(b) Simple adjusted OM; or

The simple OM method (Option a in paragraph 38) will be used if Low-cost/must-run resources constitute less than 50 per cent of total grid generation (excluding electricity generated by off-grid power plants) in average of the five most recent years, and the average of the five most recent years will be determined by using one of the approaches described below; or

$$\text{Share}_{LCMR} = \text{average}\left[\frac{EG_{LCMR_{y-4}}}{total_{y-4}}, \ldots, \frac{EG_{LCMR_y}}{total_y}\right]$$

$$\text{Share}_{LCMR} = \frac{average\left(EG_{LCMR_{y-4}}, \ldots, EG_{LCMR_y}\right)}{average\left(total_{y-4}, \ldots, total_y\right)}$$

Where:

- Share_{LCMR} = Share of the low cost/must run resources (per cent)
- EG_{LCMRy} = Electricity generation supplied to the project electricity system by the low cost/must run resources in year y (MWh)
- $total_y$ = Total electricity generation supplied to the project electricity system in year y (MWh)
- Y = The most recent year for which data is available

If the grid does not meet this requirement, the simple adjusted OM will be used.

Step 4. Calculate the operating margin emission factor according to the selected method

In addition, the OM emissions factor will be calculated using the ex-ante option. Thus, the emission factor will be determined once at the validation stage, thus no monitoring and recalculation of the emissions factor during the crediting period is required. A 3-year generation-weighted average will be used, based on the most recent data available at the time of submission of the CPA-DD to the DOE for validation.

If the simple OM will be used, the following equation applies:

$$EF_{grid,OMsimple,y} = \frac{\sum_m EG_{m,y} \times EF_{EL,m,y}}{\sum_m EG_{m,y}}$$

Where:

$EF_{grid,OM\ simple,y}$	= Simple operating margin CO_2 emission factor in year y (tCO_2/MWh)
$EG_{m,y}$	= Net quantity of electricity generated and delivered to the grid by power unit *m* in year *y* (MWh)
$EF_{EL,m,y}$	= CO_2 emission factor of power unit *m* in year *y* (tCO_2/MWh)
m	= All grid power units serving the grid in year *y* except low-cost/must-run power units
y	= The relevant year as per the data vintage chosen

Whereas if the simple adjusted OM will be used, the following equation applies:

$$EF_{grid,OM-adj,y} = (1-\lambda_y) \times \frac{\sum_m EG_{m,y} \times EF_{EL,m,y}}{\sum_m EG_{m,y}} + \lambda_y \times \frac{\sum_k EG_{k,y} \times EF_{EL,k,y}}{\sum_k EG_{k,y}}$$

$EF_{grid,OM\text{-}adj,y}$	= Simple adjusted operating margin CO_2 emission factor in year y (tCO_2/MWh)
λ_y:	= Factor expressing the percentage of time when low-cost/must-run power units are on the margin in year *y*.
$EG_{m,y}$	= Net quantity of electricity generated and delivered to the grid by power unit *m* in year *y* (MWh)
$EG_{k,y}$	= Net quantity of electricity generated and delivered to the grid by power unit *k* in year *y* (MWh)
$EF_{EL,m,y}$	= CO_2 emission factor of power unit *m* in year *y* (tCO2/MWh)
$EF_{EL,k,y}$	= CO_2 emission factor of power unit *k* in year *y* (tCO2/MWh)
m	= All grid power units serving the grid in year *y* except low-cost/must-run power units
k	= All low-cost/must-run grid power units serving the grid in year *y*
y	= The relevant year as per the data vintage chosen in Step 3

The parameter $EG_{m,y}$ is determined as per the provision in the monitoring tables.

The following equations are used to calculate $EF_{EL,m,y}$ according to Option A1 of the simple OM method.

$$EF_{EL,m,y} = \frac{\sum_i FC_{i,m,y} \times NCV_{i,y} \times EF_{CO2,i,y}}{EG_{m,y}}$$

Where:

$EF_{EL,m,y}$	= CO_2 emission factor of power unit *m* in year *y* (tCO_2/MWh)
$FC_{i,m,y}$	= Amount of fossil fuel type *i* consumed by power unit *m* in the year *y* (Mass or volume unit)
$NCV_{i,y}$	= Net calorific value (energy content) of fossil fuel type *i* in the year *y* (GJ/mass or volume unit)
$EF_{CO2,i,y}$	= CO_2 emission factor of fossil fuel type *i* in the year *y* (tCO_2/GJ)
$EG_{m,y}$	= Net quantity of electricity generated and delivered to the grid by power plant *m* in the year y (MWh). For grid power plants, it was determined as per the provisions in the monitoring tables.
m	= All power units serving the grid in year *y* except low-cost/must-run power units
i	= All fossil fuel types combusted in power unit *m* in year *y*
y	= The relevant year.

The following equations are used to calculate $EF_{EL,m,y}$ and $EF_{EL,k,y}$ according to Option A2 of the simple adjusted OM method.

$$EF_{EL,m,y} = \frac{EF_{co2,m,i,y} \times 3.6}{\eta_{m,y}}$$

$$EF_{EL,k,y} = \frac{\sum_i FC_{i,k,y} \times NCV_{i,y} \times EF_{CO2,i,y}}{EG_{k,y}}$$

Where:

$EF_{EL,m,y}$	= CO_2 emission factor of power unit *m* in year *y* (tCO_2/MWh)
$EF_{EL,k,y}$	= CO_2 emission factor of power unit *k* in year *y* (tCO_2/MWh)
$FC_{i,m,y}$	= Amount of fossil fuel type *i* consumed by power unit *m* in the year *y* (Mass or volume unit)
$FC_{i,k,y}$	= Amount of fossil fuel type *i* consumed by power unit *k* in the year *y* (Mass or volume unit)
$NCV_{i,y}$	= Net calorific value (energy content) of fossil fuel type *i* in the year *y* (GJ/mass or volume unit)
$EF_{CO2,i,y}$	= CO_2 emission factor of fossil fuel type *i* in the year *y* (tCO_2/GJ)
$EG_{m,y}$	= Net quantity of electricity generated and delivered to the grid by power plant *m* in the year *y* (MWh)
$EG_{k,y}$	= Net quantity of electricity generated and delivered to the grid by power plant *k* in the year *y* (MWh)
$\eta_{m,y}$	= Average net energy conversion efficiency of power unit *m* in year *y* (ratio)
m	= All power units serving the grid in year *y* except low-cost/must-run power units
y	= The relevant year as per the data vintage chosen in Step 3
3.6	= Conversion factor (GJ/MWh)
k	= All low-cost/must run grid power units serving the grid in year *y*
i	= All fossil fuel types combusted in power unit *m* in year

If the simple adjusted OM will be used, the λ_y is defined as follows:

λ_y (%)= (number of hours low-cost/must-run sources are on margin in year y)/8,760 hours per year

According to methodology Lambda (λy) should be calculated as follows:

- Step i) Plot a load duration curve. Collect load data (typically in MW) for each hour of the year y, and sort and plot the load data from the highest to the lowest annual system load.
- Step ii) Collect the electricity generation data from each low-cost/must-run power plant/unit. Calculate the total annual generation (in MWh) from low-cost/must-run power plants/units.
- Step iii) – Find out the intersection on the load duration curve in order to determine a period LCMR sources are on the margin. To find the intersection, fill the area under the load duration curve by the total generation (in MWh) from LCMR power plants/units. To fill the area, plot a horizontal line across the load duration curve such that the area under horizontal line and the curve right from the intersection point (MW times hours) equals the total generation (in MWh) from low-cost/must-run power plants/units.
- Step iv) - Determine the “Number of hours for which low-cost/must-run sources are on the margin in year y. At the step where cumulative electricity generation reaches the level of the total generation (in MWh) from low-cost/must-run power plants/units. This is the number of hours for which low-cost/must-run sources are on the margin in year y If the lines do not intersect, then one may conclude that low-cost/must-run sources do not appear on the margin and λ_y is equal to zero.

Step 5. Calculate the build margin (BM) emission factor.

The BM factor will be calculated using ex ante option (Option 1), based on the most recent information available on units already built for sample group m at the time of CPA-DD submission to the DOE for

validation. For the second crediting period, the build margin emission factor will be updated based on the most recent information available on units already built at the time of submission of the request for renewal of the crediting period to the DOE. For the third crediting period, the build margin emission factor calculated for the second crediting period will be used. This option does not require monitoring the emission factor during the crediting period.

The build margin emission factor (BM) will be calculated using the following equation:

$$EF_{grid,BM,y} = \frac{\sum_m EG_{m,y} \times EF_{EL,m,y}}{\sum_m EG_{m,y}}$$

Where:

$EF_{grid,BM,y}$	=	Build margin CO_2 emission factor in year *y* (t CO_2/MWh)
$EG_{m,y}$	=	Net quantity of electricity generated and delivered to the grid by power unit *m* in year *y* (MWh)
$EF_{EL,m,y}$	=	CO_2 emission factor of power unit *m* in year *y* (t CO_2/MWh)
m	=	Power units included in the build margin
y	=	Most recent historical year for which electricity generation data is available

Step 6. Calculate the combined margin emissions factor.

The combined margin emission factor (CM) is based on one of the following:

(a) Weighted Average CM; or

(b) Simplified CM

The (a) option (Weighted average CM) should be used as the preferred option, and those conditions required to use (b) option do not occur, so (a) option is the chosen method to calculate de CM.

Using the weighted average CM, the emission factor is calculated as follows:

$$EF_{grid,CM,y} = EF_{grid,OM,y} \times w_{OM} + EF_{grid,BM,y} \times w_{BM}$$

Where:

$EF_{grid,BM,y}$	=	Build margin CO_2 emission factor in year *y* (t CO_2/MWh)
$EF_{grid,OM,y}$	=	Operating margin CO_2 emission factor in year *y* (t CO_2/MWh)
w_{OM}	=	Weighting of operating margin emissions factor (per cent)
w_{BM}	=	Weighting of build margin emissions factor (per cent)

The default values for w_{OM} and w_{BM} for the first crediting period and type of source used are:

Solar-wind power generation	Hydroelectric power generation
w_{OM} = 0.75	w_{OM} = 0.50
w_{BM} = 0.25	w_{BM} = 0.50

These values are applicable for the first crediting period being different for the subsequent, as stated in the TOOL 07.

Calculations shall be based on data from an official source and made publicly available. Data for the Colombian national grid (SIN) will be provided by XM[1] and for Chile from the CNE (Comisión Nacional de Energía).

Calculation of $EG_{PJ,y}$

a. Greenfield power plants

If the project activity is the installation of a greenfield power plant, then:

$$EG_{PJ,} = EG_{PJ,\text{facility},y} \qquad \text{Equation (2)}$$

Where:

$EG_{PJ,\text{facility},y}$ = Quantity of net electricity generation supplied by the project plant/unit to the grid in year *y* (MWh)

Project Emissions

For most renewable energy power generation project activities, PE_y = 0. However, some project activities may involve project emissions that can be significant. These emissions shall be accounted for as project emissions by using the following equation:

$$PE_y = PE_{FF,y} + PE_{GP,y} + PE_{HP,y} \qquad \text{Equation (7)}$$

Where:

PE_y = Project emissions in year *y* (t CO_2e/yr)
$PE_{FF,y}$ = Project emissions from fossil fuel consumption in year *y* (t CO_2/yr)
$PE_{GP,y}$ = Project emissions from the operation of dry, flash steam or binary geothermal power plants in year *y* (t CO_2e/yr)
$PE_{HP,y}$ = Project emissions from water reservoirs of hydro power plants in year *y* (t CO_2e/yr)

In this CPA category the only applicable project emissions the emissions associated to the fossil fuel combustion, due to the fact that geothermal and hydro power plants are not included. Nevertheless, for all renewable energy power generation project activities, emissions due to the use of fossil fuels for the backup generator can be neglected. Therefore, project emissions will be equal to zero in this CPA.

Leakage

No other leakage emissions are considered. The emissions potentially arising due to activities such as power plant construction and upstream emissions from fossil fuel use (e.g. extraction, processing, transport etc.) are neglected.

[1] Company that manages the wholesale energy market and the development of energy and information solutions and services.

Emission reductions

Emission reductions are calculated as follows:

$ER_y = BE_y - PE_y - LE_y$ Equation (8)

Where:

ER_y = Emission reductions in year y (t CO_2)

BE_y = Baseline Emissions in year y (t CO_2)

PE_y = Project emissions in year y (t CO_2)

LE_y = Leakage emissions in year y (t CO_2)

I.6.2. Data and parameters fixed ex ante

Data/Parameter	**$EF_{grid,y}$**
Data unit	t CO_2e/kWh
Description	Combined margin CO_2 emission factor for grid connected power generation in year y calculated using the latest version of the .Tool to calculate the emission factor for an electricity system CO_2 emission factor of the grid electricity in year y
Source of data	As per the "Tool to calculate the emission factor for an electricity system" V07
Value(s) applied	At CPA level
Choice of data or Measurement methods and procedures	As per the requirements in "Tool to calculate the emission factor for an electricity system" V07
Purpose of data	Baseline Emissions calculation
Additional comment	The grid emission factor will be fixed ex ante in all CPAs of this category

I.6.3. Modalities for ex ante calculation of emission reductions

As mentioned previously ex-ante emission reduction is estimated using equation:

$\boldsymbol{ER_y = BE_y - PE_y - LE}$ Equation (9)

Where;

ER_y = Emission reduction in year y (tCO_2/y)

BE_y = Baseline emission in year y (tCO_2/y)

PE_y = Project emission in year y (tCO_2/y)

LE_y = Leakage emission year y (tCO_2/y)

PE_y = 0

CO_2 emissions from on-site consumption of fossil fuels due to the project activity are neglected.

LE_y = 0

Thus, ER_y = BE_y − 0 − 0

Using the "Tool to calculate the emission factor for an electricity system (Version 07.0.0) it will be calculated the $EF_{grid,\ y}$. (Combined margin CO_2 emission factor for grid connected power generation in year y).

$EF_{grid,y} = EF_{grid,OM,y} \times W_{OM} + EF_{grid,BM,y} \times W_{BM}$ Equation (10)

Where;

$EF_{grid,BM,y}$ = Build margin CO_2 emission factor in year *y* (tCO_2/MWh)
$EF_{grid,OM,y}$ = Operating margin CO_2 emission factor in year *y* (tCO_2/MWh)
W_{OM} = Weighting of operating margin emissions factor (%)
W_{BM} = Weighting of build margin emissions factor (%)

Therefore, the BEy, is calculated as follows:

$BE_y = EG_{PJ,y} \times EF_{grid,y}$ Equation (11)
Where:

BE_y = Baseline emission in year y
$EG_{PJ,y}$ = Quantity of net electricity generation supplied by the project plant/unit to the grid in year *y* (MWh)

To estimate $EG_{PJ,y}$ ex ante the following equation will be applied:

$EGP_{J,y}$ = Plant capacity (MW) x Plant Load Factor x 24 x 365 Equation (12)

Where:
Plant Load Factor = Measure of a power plant's capacity utilisation

I.7. Monitoring plan

I.7.1. Data and parameters to be monitored

Data/Parameter	$EG_{PJ,facility,y}$
Data unit	MWh
Description	Quantity of net electricity generation supplied by the project plant/unit to the grid in year *y*
Source of data	Electricity meter(s)
Value(s) applied	Specific to each CPA (each CPA will specify this value in accordance with project parameters)
Measurement methods and procedures	This parameter should be either monitored using bi-directional energy meter or calculated as difference between (a) the quantity of electricity supplied by the project plant/unit to the grid; and (b) the quantity of electricity the project plant/unit from the grid. In case it is calculated then the following parameters shall be measured: (a) The quantity of electricity supplied by the project plant/unit to the grid; and (b) The quantity of electricity delivered to the project plant/unit from the grid
Monitoring frequency	Continuous monitoring, hourly measurement and at least monthly recording
QA/QC procedures	The meters will be checked and calibrated according to the relevant national electric industry standards and regulations. Data measured by the main meter will be cross checked by the data from invoices or sales receipts or official public available data.
Purpose of data	Calculation of baseline emissions
Additional comment	Based on methodology ACM0002, if the project activity is installation of a Greenfield power plant, then: $EG_{PJ,y} = EG_{PJ,facility,y}$ Net electricity supplied to the grid by the project activity will be calculated using the measured values for electricity exported to/imported from the national grid.

I.7.2. Sampling plan

No sampling plan is applied in CPAs of this category.

I.7.3. Other elements of monitoring plan

Each CPA will detail any other relevant element of the monitoring plan in this section.

SECTION J. Crediting period type and duration

7 years and 0 month, renewable

SECTION K. Eligibility criteria for inclusion of CPAs

Eligibility criteria for inclusion of CPAs in the PoA are following detailed including their usability to assess the inclusion of CPAs in the generic CPA-DD:

No.	Eligibility criterion category	Eligibility criterion – required condition	Supporting evidence for inclusion
1	Geographical boundaries	Each CPA is located within the physical/geographical boundary of PoA (Colombia or Chile)	Location and boundary are specified in the Section A.2 of the PoA-DD and in each CPA-DD. - Information for geographical coordinate of CPA is also included in the Technical Feasibility Study.
2	Avoid double counting	Each CPA will not be involved in another registered or under validation as a CDM project activity or as a CPA under the proposed or another PoA or as other GHG reduction project.	Declaration of double counting check, unique GPS coordinates.
3	Registration	The CME before adding a CPA under this PoA shall review the project activity database on the UNFCCC website to ensure that the CPA is not already registered as a CDM project or a CPA of another PoA or as a project activity that have been deregistered.	Comparation with project information provided in UNFCCC website and description in each CPA-DD. Declaration of the CPA implementer.
4	Specification of the technology/measure	Each large-scale CPA will introduce photovoltaic power plant with an installed capacity between 15 and 900 MW and a load factor between 15 and 40% Specification of technology/ measures proposed to be implemented under the CPA. Specifications of the technology/measure shall include the type, capacity and other key features of the design of the systems ranges of load factors, sizes of installation. The CPA-DD shall incorporate relevant details on the technological	A brief description of the technologies will be included in each CPA, are described in the Section A.3 of this PoA-DD and section H4, more specific information of the technology will be detail in each CPA-DD. Description of the technologies including expected lifetime, capacity, plant load factor, and any manufacturer specifications will be included in the CPA-DD. Information will be obtained from the Technical Supplier Offer and the Technical Feasibility Study.

		specifications, including level and type of service, performance specifications including compliance with testing/certifications.	
5	Start date	The start date of each CPA will be the date on which the project participants commit to making expenditures for the construction of the main equipment or facility. The start date of any proposed CPA will be on or after the start date of the proposed CDM PoA, i.e., 03/02/2020.	1st Contract of the construction or contract of the main equipment or facilities.
6	Compliance with the applicability conditions of ACM0002	Each CPA will satisfy the applicability conditions and monitoring methodologies as specified in the ACM0002. (Version 20.0) and other applied methodological regulatory documents	Applicability conditions of ACM0002. (Version.20.0) Section B of CPA-DD Information will be obtained from the Technical Supplier Offer and the Technical Feasibility Study.
7	Additionality	Each CPA under this category will follow the process in Section C of PoA-DD to demonstrate additionality of the large-scale project activities (TOOL 01). Since the baseline scenario provides the ability to obtain renewable energy by other sources, the Option III "Benchmark Analysis" is chosen as the most appropriate option to develop the investment analysis. Project IRR has been identified as the most suitable economical/financial indicator to the case, since the project will be considered as financially attractive when this IRR is better than the Benchmark. Thus, TOOL 27 will be used for the analysis. The type of Project IRR selected to be used is going to be the post-tax IRR, since it includes all input and output cash flows. Thus, the IRR will be	Description of the process in the Section C of the PoA-DD. In each CPA, the demonstration of the additionality will be described in the Section F of CPA-DD and will fulfill requirements contained in the additionality section of the ACM0002. (Version.20.0) methodologies and TOOL 01. The investment analysis will be used. Information will be obtained from the Technical Supplier Offer, the Technical Feasibility Study, Investment term sheet, Financial analysis and official taxes for each country, using actual values applicable at the time of the CPA inclusion.

		calculated using the following inputs: Electricity Generation (from 1,300 to 3,500 MWh/MW installed/year (it represents generation per year per installed MW with load factor 15% and 40%), Average Sales Price (from 20 USD/MWh to 300 USD/MWh), Annual Income (from 394 kUSD/year to 946 million USD/year (range based on minimum and maximum sales price, installed capacity and load factor. - 15 MW x 15% x 8760 x 20 USD/MWh = 394 k: - 900 MW x 40% x 8760 x 300 = 946 MM Total Investment (from 1,000 to 8,000 USD/kW (where mixed minimum values from 2014 and maximum values from 2010 for solar as per Irena site: https://www.irena.org/costs/Charts/Solar-photovoltaic , Average Annual Operational Costs (2-10% CAPEX), Load factor (15-40%), the Fair Value, Project duration (20-50 years), taxes (10-35%) and depreciation (20-50 years). The additionality of each CPA shall then be assessed by using the actual values, applicable to that CPA at the time of inclusion, in the investment analysis conducted for the purpose of demonstrating the additionality of the CPA	
8	Compliance with other requirements of the applied methodologies, the applied standardized baselines and the other applied methodological regulatory documents	Each CPA will satisfy the applicability conditions and monitoring methodologies and other applied methodological regulatory documents	Applicability conditions of other requirements, applied methodologies, standardized baselines and other applied methodological regulatory documents are explained in Section B of CPA-DD

9	Local Stakeholder Consultation and Environmental Impact Analysis	Each CPA will hold local stakeholder consultation before the inclusion in PoA and construction. Each CPA will conduct environmental impact analysis as per the National Environmental Regulation of the country where the CPA is located.	Minutes, stakeholder consultation reports, etc. will be provided. Environmental Impact Assessment Report and approval if it is required by the national regulation.
10	Public funding	Each CPA will provide an affirmation that funding from Annex I party, if any, does not result in a diversion of official development assistance	Affidavit on No public Funding from Annex I party.
11	Target group	The project activity will consist in the implementation of grid-connected power plant.	Described in the Section A.1 of the PoA-DD and CPA-DD. The CPA-DD will be grid connected according to the Technical Supplier Offer and the Technical Feasibility Study.
12	Sampling	Not applicable, sampling procedures are not applied.	N/A
13	Debundling check	Not applicable since a large-scale methodology is used.	N/A
14	Small-scale or microscale thresholds	Not applicable since a large-scale methodology is used.	N/A

SECTION H. Description of generic CPA

H.1. Title of generic CPA

Large Scale Generic CPA 02

H.2. Reference number of generic CPA

CPA 02

H.3. Purpose and general description of generic CPA

The purpose of the PoA is to promote the development of new power plants with solar photovoltaic technology connected to the national grid of each country in order to pour the electricity obtained to it avoiding generation from mix of fuels. Under this CPA being implemented the installed plant will provide electricity to a national or regional grid.

The proposed generic CPA will include large scale project activities, whose total installed capacity will be between 15 and 900 MW.

The electricity generated from the project activity contributes to an average GHG reductions estimated as tCO_2/year.

H.4. Technologies/measures

The detailed technical description and technical details will be given in the specific CPA-DD.

Technology	Large scale photovoltaic generation
Installed Capacity	15 - 900 MW
Applicability	Greenfield project activities
Use of the produced electricity	The CPAs will displace electricity from an electricity distribution system that is or would have been supplied by at least one fossil fuel fired generating unit i.e., in the absence of the project activity, the users would have been supplied electricity from the national grid.
Facilities, systems and equipment that will be installed	Solar panels, inverters, transformers, and electric meters
Lifetime of main equipment	At least 20 years according manufacturer specifications
Capacity Factor	At least 15-40%, based on projects developed in the region
Monitoring equipment	Electric meters at the grid interface.

As the Generic CPA only includes Greenfield project activities, prior to the implementation of the corresponding CPAs there were no existing technologies at the same sites.
In addition, the baseline scenario is that the electricity delivered to the grid by the project activity would have otherwise been generated by the operation of grid-connected power plants and by the addition of new generation sources into the grid.

SECTION I. Application of methodologies and standardized baselines

I.1. References to methodologies and standardized baselines

The methodology ACM0002 "Grid-connected electricity generation from renewable sources" (Version 20.0) includes the use of the following tools:

- TOOL07 - Tool to calculate the emission factor for an electricity system (Version 07.0.0)
- TOOL 32 - Positive lists of technologies (Version 02.0)

I.2. Applicability of methodologies and standardized baselines

Each Large-Scale CPA under this generic category will meet the applicability conditions of the approved consolidated baseline and monitoring methodology ACM0002, Version 20.0, Sectoral Scope, as described below:

Id.	Applicability	Project activity vis-à-vis applicability Conditions
1	This methodology is applicable to grid-connected renewable power generation project activities that: • install a Greenfield power plant; • involve a capacity addition to (an) existing plant(s); • involve a retrofit of (an) existing operating plants/units; • involve a rehabilitation of (an) existing plant(s)/unit(s) or • involve a replacement of (an) existing plant(s)/unit(s).	The CPA-XXX under this generic CPA will be the installation of a new grid connected solar power plant at a site where no renewable power plant was operated prior to the implementation of the project activity (Greenfield plant) and hence this criterion is applicable.
2	The methodology is applicable under the following conditions: a) The project activity may include renewable energy power plant/unit of one of the following types plant/unit with or without reservoir, wind-solar power-wave-tidal plant/unit b) In the case of capacity additions, retrofits, rehabilitations or replacements the existing plant/unit started commercial operation prior to the start of a minimum historical reference period of five years and no capacity expansion, retrofit, or rehabilitation of the plant/unit has been undertaken between the start of this minimum historical reference period and the implementation of the project activity.	The proposed CPA XXX under this generic CPA will be an installation of solar plant/unit The proposed CPA XXX under this generic CPA does not involve capacity additions, retrofits or replacements and therefore this second condition is not applicable.
3	In case of hydro-power project activities following conditions apply: a) The project activity is implemented in an existing reservoir with no change in the volume of reservoir; b) The project activity is implemented in an existing reservoir, where the volume of reservoir is increased and the power density of the project activity, calculating using equation 7 of the methodology, is greater than 4 W/m^2 c) The project activity results in new reservoirs and the	This condition is not applicable since hydro-power project activities are not included in this generic CPA

	power density of the power plant, calculating using equation 7 of the methodology, is greater than 4 W/m^2 d) The project activity results is an integrated hydro power involving multiple reservoirs, where density of the power plant, calculating using equation 7 of the methodology, is equal or lower to 4 W/m^2 apply to all the following conditions: (iv) The power density calculated using the total installed capacity of the integrated project, as per equation (8), is greater than 4 W/m^2; (v) Water flow between reservoirs is not used by any other hydropower unit which is not a part of the project activity; (vi) Installed capacity of the power plant(s) with power density lower than or equal to 4 W/m^2 shall be: a. Lower than or equal to 15 MW; and b. Less than 10 per cent of the total installed capacity of integrated hydro power project.	
4	In the case of integrated hydro power project: a) Demonstrate that water flow from upstream power plants/units spill directly to the downstream reservoir and that collectively constitute to the generation capacity of the integrated hydro power project. b) Provide an analysis of the water balance covering the water fed to power units, with all possible combinations of reservoirs and without the construction of reservoirs, demonstrating the requirement of specific combination of reservoirs constructed under CDM project activity for the optimization of power output	This condition is not applicable since hydro-power project activities are not included in this generic CPA.
5	In the case of retrofits, rehabilitations, replacements, or capacity additions, this methodology is only applicable if the most plausible baseline scenario, as a result of the identification of baseline scenario, is "the continuation of the current situation, that is to use the power generation equipment that was already in use prior to the implementation of the project activity and undertaking business as usual maintenance".	Not applicable for the generic CPA, since the project activity does not include retrofits, rehabilitations, replacements, or capacity additions.
6	Is not applicable to: a) Project activities that involve switching from fossil fuels to renewable energy sources at the site of the project activity, since in this case the baseline may be the continued use of fossil fuels at the site. b) Biomass fired power plants/units.	The CPAs of this category will demonstrate that the project activity does not involve switching from fossil fuels to renewable energy sources
7	The TOOL07 "Tool to calculate the emission factor of an electricity system Version 07.0" will be applicable if the following applicability criteria are accomplished: • "This tool may be applied to estimate the OM, BM and/or CM when calculating baseline emissions for a project activity that substitutes grid electricity, that is where a project activity supplies electricity to	The CPAs will supply electricity to a grid. The electricity system will not be located partially or totally in an Annex I country. The CPAs will not involve biofuels.

	a grid or a project activity that results in savings of electricity that would have been provided by the grid (e.g., demand-side energy efficiency projects)". • Under this tool, the emission factor for the project electricity system can be calculated either for grid power plants only or, as an option, can include off-grid power plants. In the latter case, two sub-options under the step 2 of the tool are available to the project participants: i.e. option IIa and option IIb. If option IIa is chosen, the conditions specified in "Appendix 1: Procedures related to off-grid power generation" should be met. Namely, the total capacity of off-grid power plants (in MW) should be at least 10 per cent of the total capacity of grid power plants in the electricity system; or the total electricity generation by off-grid power plants (in MWh) should be at least 10 per cent of the total electricity generation by grid power plants in the electricity system; and that factors which negatively affect the reliability and stability of the grid are primarily due to constraints in generation and not to other aspects such as transmission capacity. • In case of CDM projects the tool is not applicable if the project electricity system is located partially or totally in Annex I country. • Under this tool, the value applied to the CO2 emission factor of biofuels is zero.	
8	The TOOL 32 "Positive lists of technologies. Version 2.0" will be applicable.	The following grid-connected electricity generation technologies is considered for the positive list: Solar photovoltaic technologies; The CPA will meet one of the following conditions at the time of CPA-DD submission: (a) The percentage share of total installed capacity of the specific technology in the total installed grid connected power generation capacity in the host country is equal to or less than two per cent; or (b) The total installed capacity of the technology in the host country is less than or equal to 50 MW. Thus, the CPA will be defined as automatically additional.
9	The "Tool to calculate project or leakage CO2 emissions from fossil fuel combustion. Version 03.0.0" will be applicable if the following applicability criteria is accomplished: • This tool provides procedures to calculate project	The CPA will not include the procedures of the tool since the combustion of fossil fuels is neglected.

		and/or leakage CO2 emissions from the combustion of fossil fuels. It can be used in cases where CO2 emissions from fossil fuel combustion are calculated based on the quantity of fuel combusted and its properties. Methodologies using this tool should specify to which combustion process j this tool is being applied.	

I.3. Application of multiple methodologies

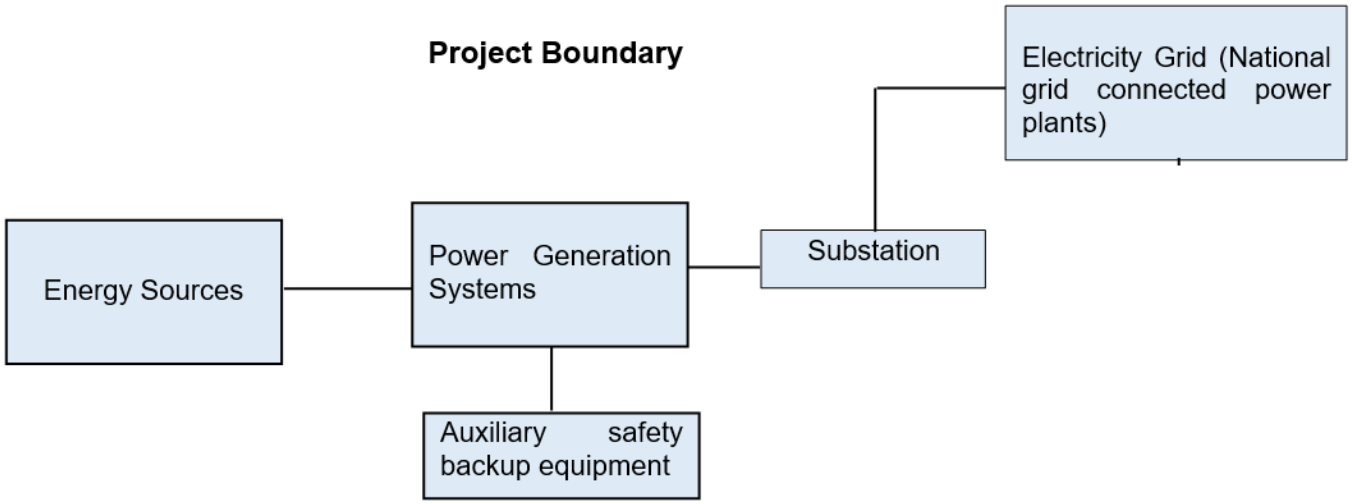
The organization of the PoA is done in line with the methodologies used for the emission reductions calculation and monitoring in each category. Thus, in each Large-scale CPA does not apply multiple methodologies, instead, only one methodology is applied, and this section is therefore, not applicable.

I.4. Project boundary, sources and greenhouse gases (GHGs)

	Source	GHG	Included?	Justification/Explanation
Baseline	CO_2 emissions from electricity generation in fossil fuel fired power plants that are displaced due to the project activity	CO_2	Yes	Main emissions source
		CH_4	No	Minor emissions source
		N_2O	No	Minor emission source
Project activity	For dry or flash steam geothermal power plants, emissions of CH_4 and CO_2 from non-condensable gases contained in geothermal steam	CO_2	No	Geothermal project activities are not included in this CPA category.
		CH_4	No	
		N_2O	No	
	For binary geothermal power plants, fugitive emissions of CH_4 and CO_2 from non-condensable gases contained in geothermal steam	CO_2	No	Geothermal project activities are not included in this CPA category.
		CH_4	No	
		N_2O	No	
	For binary geothermal power plants, fugitive emissions of hydrocarbons such as n-butane and isopentane (working fluid) contained in the heat exchangers	Low GWP hydrocarbon/ refrigerant	No	Geothermal project activities are not included in this CPA category.
	CO_2 emissions from combustion of fossil fuels for electricity generation in solar thermal power plants and geothermal power plants	CO_2	No	Not applicable since solar thermal power plants and geothermal power plants are not included in this generic CPA
		CH_4	No	
		N_2O	No	
	For hydro power plants, emissions of CH_4 from the reservoir	CO_2	No	Hydro power project activities are not included in this CPA category.
		CH_4	No	
		N_2O	No	

The greenhouse gases emissions within the project activity boundaries are associated to the baseline, produces from electricity generation in fossil fuel-fired power plants connected to the national grid.

The project activity will supply zero-emissions electricity to the grid, thus avoiding greenhouse gases emissions by displacing the dispatch of thermoelectric power plants. As it is shown in the following diagram blow, there are no greenhouse gas emissions associated with the project activity.



I.5. Establishment and description of baseline scenario

According to methodology ACM0002 version 20.0, the baseline scenario will be:

a) **Baseline scenario for Greenfield power plant**: the baseline scenario is electricity delivered to the grid by the project activity would have otherwise been generated by the operation of grid-connected power plants and by the addition of new generation sources, as reflected in the combined margin (CM) calculations described in "TOOL07: Tool to calculate the emission factor for an electricity system".

I.6. Estimation of emission reductions

I.6.1. Explanation of methodological choices

Baseline emissions

Baseline emissions include only CO_2 emissions from electricity generation in power plants that are displaced due to the project activity. The methodology assumes that all project electricity generation above baseline levels would have been generated by existing grid-connected power plants and the addition of new grid-connected power plants. The baseline emissions are to be calculated as follows:

$$BE_y = EG_{PJ,y} \times EF_{grid,y} \qquad \text{Equation (1)}$$

Where:

BE_y	=	Baseline emissions in year *y* (t CO_2)
$EG_{PJ,y}$	=	Quantity of net electricity generation that is produced and fed into the grid as a result of the implementation of the CDM project activity in year *y* (MWh)
$EF_{grid,y}$	=	Combined margin CO_2 emission factor for grid connected power generation in year *y* calculated using the latest version of the "Tool to calculate the emission factor for an electricity system (tCO_2/MWh)

The emission factor will be calculated in a transparent and conservative manner as follows: A combined margin (CM), consisting of the combination of operating margin (OM) and build margin (BM) according to the procedures prescribed in the "Tool to calculate the emission factor for an electricity system". The steps for calculate the emission factor, will be the following ones:

Step 1. Identify the relevant electricity systems;

Step 2. Choose whether to include off-grid power plants in the project electricity system (optional);

Step 3. Select a method to determine the operating margin (OM);

Step 4. Calculate the operating margin emission factor according to the selected method;

Step 5. Calculate the build margin (BM) emission factor;

Step 6. Calculate the combined margin (CM) emission factor.

Step 1. Identify the relevant electricity systems

For determining the electricity emission factors, the project participants shall identify the relevant project electricity system. Project participants may delineate the project electricity system using any of the following options:

(a) Option 1. A delineation of the project electricity system and connected electricity systems published by the DNA or the group of the DNAs of the host country(ies), In case a delineation is provided by a group of DNAs, the same delineation should be used by all the project participants applying the tool in these countries;

(b) Option 2. A delineation of the project electricity system defined by the dispatch area of the dispatch centre responsible for scheduling and dispatching electricity generated by the project activity. Where the dispatch area is controlled by more than one dispatch centre, i.e., layered dispatch area, the higher level area shall be used as a delineation of the project electricity system (e.g. where regional dispatch centres are required to comply with dispatch orders of the national dispatch centre then area controlled by the national dispatch centre shall be used);

(c) Option 3. A delineation of the project electricity system defined by more than one independent dispatch areas, e.g., multi-national power pools.

In the case of this generic CPA the electricity system is defined by the Option 2 "*the project electricity system defined by the dispatch area of the dispatch centre responsible for scheduling and dispatching electricity generated by the project activity.*

Step 2. Choose whether to include off-grid power plants in the project electricity system (optional).

In the Step 2**,** Option I will be chosen to calculate the operating margin and build margin emission factor because there is no off-grid power plant to be included in the project electricity system.

Step 3. Select a method to determine the operating margin (OM)

The calculation of the operating margin emission factor ($EF_{grid,OM,y}$) will be based on one of the following methods:

(c) Simple OM; or

(d) Simple adjusted OM; or

The simple OM method (Option a in paragraph 38) will be used if Low-cost/must-run resources constitute less than 50 per cent of total grid generation (excluding electricity generated by off-grid power plants) in average of the five most recent years, and the average of the five most recent years will be determined by using one of the approaches described below; or

$$\text{Share}_{LCMR} = \text{average}\left[\frac{EG_{LCMR_{y-4}}}{total_{y-4}}, \ldots, \frac{EG_{LCMR_y}}{total_y}\right]$$

$$\text{Share}_{LCMR} = \frac{average\left(EG_{LCMR_{y-4}}, \ldots, EG_{LCMR_y}\right)}{average\left(total_{y-4}, \ldots, total_y\right)}$$

Where:
Share_{LCMR} = Share of the low cost/must run resources (per cent)
EG_{LCMRy} = Electricity generation supplied to the project electricity system by the low cost/must run resources in year y (MWh)
$total_y$ = Total electricity generation supplied to the project electricity system in year y (MWh)
Y = The most recent year for which data is available

If the grid does not meet this requirement, the simple adjusted OM will be used.

Step 4. Calculate the operating margin emission factor according to the selected method
In addition, the OM emissions factor will be calculated using the ex-ante option. Thus, the emission factor will be determined once at the validation stage, thus no monitoring and recalculation of the emissions factor during the crediting period is required. A 3-year generation-weighted average will be used, based on the most recent data available at the time of submission of the CPA-DD to the DOE for validation.

If the simple OM will be used, the following equation applies:

$$EF_{grid,OMsimple,y} = \frac{\sum_m EG_{m,y} \times EF_{EL,m,y}}{\sum_m EG_{m,y}}$$

Where:

$EF_{grid,OM\ simple,y}$	= Simple operating margin CO_2 emission factor in year y (tCO_2/MWh)
$EG_{m,y}$	= Net quantity of electricity generated and delivered to the grid by power unit *m* in year *y* (MWh)
$EF_{EL,m,y}$	= CO_2 emission factor of power unit *m* in year *y* (tCO_2/MWh)
m	= All grid power units serving the grid in year *y* except low-cost/must-run power units
y	= The relevant year as per the data vintage chosen

Whereas if the simple adjusted OM will be used, the following equation applies:

$$EF_{grid,OM-adj,y} = (1-\lambda_y) \times \frac{\sum_m EG_{m,y} \times EF_{EL,m,y}}{\sum_m EG_{m,y}} + \lambda_y \times \frac{\sum_k EG_{k,y} \times EF_{EL,k,y}}{\sum_k EG_{k,y}}$$

$EF_{grid,OM-adj,y}$	= Simple adjusted operating margin CO_2 emission factor in year y (tCO_2/MWh)

λ_y:	= Factor expressing the percentage of time when low-cost/must-run power units are on the margin in year *y*.
$EG_{m,y}$	= Net quantity of electricity generated and delivered to the grid by power unit *m* in year *y* (MWh)
$EG_{k,y}$	= Net quantity of electricity generated and delivered to the grid by power unit *k* in year *y* (MWh)
$EF_{EL,m,y}$	= CO_2 emission factor of power unit *m* in year *y* (tCO2/MWh)
$EF_{EL,k,y}$	= CO_2 emission factor of power unit *k* in year *y* (tCO2/MWh)
m	= All grid power units serving the grid in year *y* except low-cost/must-run power units
k	= All low-cost/must-run grid power units serving the grid in year *y*
y	= The relevant year as per the data vintage chosen in Step 3

The parameter $EG_{m,y}$ is determined as per the provision in the monitoring tables.

The following equations are used to calculate $EF_{EL,m,y}$ according to Option A1 of the simple OM method.

$$EF_{EL,m,y} = \frac{\sum_i FC_{i,m,y} \times NCV_{i,y} \times EF_{CO2,i,y}}{EG_{m,y}}$$

Where:

$EF_{EL,m,y}$	= CO_2 emission factor of power unit *m* in year *y* (tCO_2/MWh)
$FC_{i,m,y}$	= Amount of fossil fuel type *i* consumed by power unit *m* in the year *y* (Mass or volume unit)
$NCV_{i,y}$	= Net calorific value (energy content) of fossil fuel type *i* in the year *y* (GJ/mass or volume unit)
$EF_{CO2,i,y}$	= CO_2 emission factor of fossil fuel type *i* in the year *y* (tCO_2/GJ)
$EG_{m,y}$	= Net quantity of electricity generated and delivered to the grid by power plant *m* in the year y (MWh). For grid power plants, it was determined as per the provisions in the monitoring tables.
m	= All power units serving the grid in year *y* except low-cost/must-run power units
i	= All fossil fuel types combusted in power unit *m* in year *y*
y	= The relevant year.

The following equations are used to calculate $EF_{EL,m,y}$ and $EF_{EL,k,y}$ according to Option A2 of the simple adjusted OM method.

$$EF_{EL,m,y} = \frac{EF_{co2,m,i,y} \times 3.6}{\eta_{m,y}}$$

$$EF_{EL,k,y} = \frac{\sum_i FC_{i,k,y} \times NCV_{i,y} \times EF_{CO2,i,y}}{EG_{k,y}}$$

Where:

$EF_{EL,m,y}$	= CO_2 emission factor of power unit *m* in year *y* (tCO_2/MWh)
$EF_{EL,k,y}$	= CO_2 emission factor of power unit *k* in year *y* (tCO_2/MWh)
$FC_{i,m,y}$	= Amount of fossil fuel type *i* consumed by power unit *m* in the year *y* (Mass or volume unit)
$FC_{i,k,y}$	= Amount of fossil fuel type *i* consumed by power unit *k* in the year *y* (Mass or volume unit)
$NCV_{i,y}$	= Net calorific value (energy content) of fossil fuel type *i* in the year *y* (GJ/mass or volume unit)
$EF_{CO2,i,y}$	= CO_2 emission factor of fossil fuel type *i* in the year *y* (tCO_2/GJ)
$EG_{m,y}$	= Net quantity of electricity generated and delivered to the grid by power plant *m* in the year *y* (MWh)
$EG_{k,y}$	= Net quantity of electricity generated and delivered to the grid by power plant *k* in the year *y* (MWh)
$\eta_{m,y}$	= Average net energy conversion efficiency of power unit *m* in year *y* (ratio)
m	= All power units serving the grid in year *y* except low-cost/must-run power units
y	= The relevant year as per the data vintage chosen in Step 3
3.6	= Conversion factor (GJ/MWh)
k	= All low-cost/must run grid power units serving the grid in year *y*
i	= All fossil fuel types combusted in power unit *m* in year

If the simple adjusted OM will be used, the λ_y is defined as follows:

λ_y (%)= (number of hours low-cost/must-run sources are on margin in year y)/8,760 hours per year

According to methodology Lambda (λy) should be calculated as follows:

- Step i) Plot a load duration curve. Collect load data (typically in MW) for each hour of the year y, and sort and plot the load data from the highest to the lowest annual system load.
- Step ii) Collect the electricity generation data from each low-cost/must-run power plant/unit. Calculate the total annual generation (in MWh) from low-cost/must-run power plants/units.
- Step iii) – Find out the intersection on the load duration curve in order to determine a period LCMR sources are on the margin. To find the intersection, fill the area under the load duration curve by the total generation (in MWh) from LCMR power plants/units. To fill the area, plot a horizontal line across the load duration curve such that the area under horizontal line and the curve right from the intersection point (MW times hours) equals the total generation (in MWh) from low-cost/must-run power plants/units.
- Step iv) - Determine the "Number of hours for which low-cost/must-run sources are on the margin in year y. At the step where cumulative electricity generation reaches the level of the total generation (in MWh) from low-cost/must-run power plants/units. This is the number of hours for which low-cost/must-run sources are on the margin in year y If the lines do not intersect, then one may conclude that low-cost/must-run sources do not appear on the margin and λ_y is equal to zero.

Step 5. Calculate the build margin (BM) emission factor.

The BM factor will be calculated using ex ante option (Option 1), based on the most recent information available on units already built for sample group m at the time of CPA-DD submission to the DOE for validation. For the second crediting period, the build margin emission factor will be updated based on the most recent information available on units already built at the time of submission of the request for renewal of the crediting period to the DOE. For the third crediting period, the build margin emission factor calculated for the second crediting period will be used. This option does not require monitoring the emission factor during the crediting period.

The build margin emission factor (BM) will be calculated using the following equation:

$$EF_{grid,BM,y} = \frac{\sum_m EG_{m,y} \times EF_{EL,m,y}}{\sum_m EG_{m,y}}$$

Where:

$EF_{grid,BM,y}$	=	Build margin CO_2 emission factor in year *y* (t CO_2/MWh)
$EG_{m,y}$	=	Net quantity of electricity generated and delivered to the grid by power unit *m* in year *y* (MWh)
$EF_{EL,m,y}$	=	CO_2 emission factor of power unit *m* in year *y* (t CO_2/MWh)
m	=	Power units included in the build margin
y	=	Most recent historical year for which electricity generation data is available

Step 6. Calculate the combined margin emissions factor.

The combined margin emission factor (CM) is based on one of the following:

(a) Weighted Average CM; or

(b) Simplified CM

The (a) option (Weighted average CM) should be used as the preferred option, and those conditions required to use (b) option do not occur, so (a) option is the chosen method to calculate de CM.

Using the weighted average CM, the emission factor is calculated as follows:

$$EF_{grid,CM,y} = EF_{grid,OM,y} \times w_{OM} + EF_{grid,BM,y} \times w_{BM}$$

Where:

$EF_{grid,BM,y}$	=	Build margin CO_2 emission factor in year *y* (t CO_2/MWh)
$EF_{grid,OM,y}$	=	Operating margin CO_2 emission factor in year *y* (t CO_2/MWh)
w_{OM}	=	Weighting of operating margin emissions factor (per cent)
w_{BM}	=	Weighting of build margin emissions factor (per cent)

The default values for w_{OM} and w_{BM} for the first crediting period and type of source used are:

Solar-wind power generation	Hydroelectric power generation
w_{OM} = 0.75	w_{OM} = 0.50
w_{BM} = 0.25	w_{BM} = 0.50

These values are applicable for the first crediting period being different for the subsequent, as stated in the TOOL 07.

Calculation of $EG_{PJ,y}$

a. Greenfield power plants

If the project activity is the installation of a greenfield power plant, then:

$$EG_{PJ,} = EG_{PJ,\text{facility},y} \quad \text{Equation (2)}$$

Where:

$EG_{PJ,\text{facility},y}$ = Quantity of net electricity generation supplied by the project plant/unit to the grid in year *y* (MWh)

Project Emissions

For most renewable energy power generation project activities, PE_y = 0. However, some project activities may involve project emissions that can be significant. These emissions shall be accounted for as project emissions by using the following equation:

$$PE_y = PE_{FF,y} + PE_{GP,y} + PE_{HP,y} \quad \text{Equation (7)}$$

Where:

PE_y = Project emissions in year *y* (t CO_2e/yr)

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

$PE_{GP,y}$ = Project emissions from the operation of dry, flash steam or binary geothermal power plants in year *y* (t CO_2e/yr)

$PE_{HP,y}$ = Project emissions from water reservoirs of hydro power plants in year *y* (t CO_2e/yr)

In this CPA category the only applicable project emissions are the emissions associated to the fossil fuel combustion, due to the fact that geothermal and hydro power plants are not included. Nevertheless, for all renewable energy power generation project activities, emissions due to the use of fossil fuels for the backup generator can be neglected. Therefore, project emissions will be equal to zero in this CPA.

Leakage

No other leakage emissions are considered. The emissions potentially arising due to activities such as power plant construction and upstream emissions from fossil fuel use (e.g. extraction, processing, transport etc.) are neglected.

Emission reductions

Emission reductions are calculated as follows:

$$ER_y = BE_y - PE_y - LE_y \quad \text{Equation (8)}$$

Where:

ER_y = Emission reductions in year y (t CO_2)

BE_y = Baseline Emissions in year y (t CO_2)

PE_y = Project emissions in year y (t CO_2)

LE_y = Leakage emissions in year y (t CO_2)

I.6.2. Data and parameters fixed ex ante

Data/Parameter	$EF_{grid,y}$
Data unit	t CO_2e/kWh
Description	Combined margin CO_2 emission factor for grid connected power generation in year y calculated using the version 7.0 of the .Tool to calculate the emission factor for an electricity system CO_2 emission factor of the grid electricity in year y
Source of data	As per the "Tool to calculate the emission factor for an electricity system" V07
Value(s) applied	At CPA level
Choice of data or Measurement methods and procedures	As per the requirements in "Tool to calculate the emission factor for an electricity system" V07
Purpose of data	Baseline Emissions calculation
Additional comment	The grid emission factor will be fixed ex ante in all CPAs of this category

Data/Parameter	**The percentage share of total installed capacity of the specific technology**
Data unit	%
Description	The percentage share of total installed capacity of the solar technology
Source of data	Official public data
Value(s) applied	At CPA level
Choice of data or Measurement methods and procedures	Official public data
Purpose of data	Additionality as of TOOL 32
Additional comment	-

Data/Parameter	**Total installed capacity of the technology**
Data unit	MW
Description	Total installed capacity of the solar technology
Source of data	Official public data
Value(s) applied	At CPA level
Choice of data or Measurement methods and procedures	Official public data
Purpose of data	Additionality as of TOOL 32
Additional comment	-

I.6.3. Modalities for ex ante calculation of emission reductions

As mentioned previously ex-ante emission reduction is estimated using equation:

$$\boldsymbol{ER_y = BE_y - PE_y - LE}$$ Equation (9)

Where;

ER_y = Emission reduction in year y (tCO_2/y)
BE_y = Baseline emission in year y (tCO_2/y)
PE_y = Project emission in year y (tCO_2/y)
LE_y = Leakage emission year y (tCO_2/y)

PE_y = 0

CO_2 emissions from on-site consumption of fossil fuels due to the project activity will be neglected.

LE_y = 0

Thus, $ER_y = BE_y - 0 - 0$

Using the "Tool to calculate the emission factor for an electricity system (Version 07.0.0) it will be calculated the $EF_{grid,\ y}$. (Combined margin CO_2 emission factor for grid connected power generation in year y).

$EF_{grid,y} = EF_{grid,OM,y} \times W_{OM} + EF_{grid,BM,y} \times W_{BM}$ Equation (10)

Where;

$EF_{grid,BM,y}$ = Build margin CO_2 emission factor in year *y* (tCO_2/MWh)
$EF_{grid,OM,y}$ = Operating margin CO_2 emission factor in year *y* (tCO_2/MWh)
W_{OM} = Weighting of operating margin emissions factor (%)
W_{BM} = Weighting of build margin emissions factor (%)

Therefore, the BEy, is calculated as follows:

$BE_y = EG_{PJ,y} \times EF_{grid,y}$ Equation (11)
Where:

BE_y = Baseline emission in year y
$EG_{PJ,y}$ = Quantity of net electricity generation supplied by the project plant/unit to the grid in year *y* (MWh)

To estimate $EG_{PJ,y}$ ex ante the following equation will be applied:

$EGP_{J,y}$ = Plant capacity (MW) x Plant Load Factor x 24 x 365 Equation (12)

Where:

Plant Load Factor = Measure of a power plant's capacity utilisation

I.7. Monitoring plan

I.7.1. Data and parameters to be monitored

Data/Parameter	***EG*** $_{PJ,facility,y}$
Data unit	MWh
Description	Quantity of net electricity generation supplied by the project plant/unit to the grid in year *y*
Source of data	Electricity meter(s)
Value(s) applied	Specific to each CPA (each CPA will specify this value in accordance with project parameters)
Measurement methods and procedures	This parameter should be either monitored using bi-directional energy meter or calculated as difference between (a) the quantity of electricity supplied by the project plant/unit to the grid; and (b) the quantity of electricity the project

	plant/unit from the grid. In case it is calculated then the following parameters shall be measured: (a) The quantity of electricity supplied by the project plant/unit to the grid; and (b) The quantity of electricity delivered to the project plant/unit from the grid
Monitoring frequency	Continuous monitoring, hourly measurement and at least monthly recording
QA/QC procedures	The meters will be checked and calibrated according to the relevant national electric industry standards and regulations. Data measured by the main meter will be cross checked with invoices or sales receipts or official public available data..
Purpose of data	Calculation of baseline emissions
Additional comment	Based on methodology ACM0002, if the project activity is installation of a Greenfield power plant, then: EGPJ,y = EGPJ,facility,y Net electricity supplied to the grid by the project activity will be calculated using the measured values for electricity exported to/imported from the national grid.

I.7.2. Sampling plan

No sampling plan is applied in CPAs of this category.

I.7.3. Other elements of monitoring plan

Each CPA will detail any other relevant element of the monitoring plan in this section.

SECTION J. Crediting period type and duration

7 years and 0 month, renewable

SECTION K. Eligibility criteria for inclusion of CPAs

Eligibility criteria for inclusion of CPAs in the PoA are following detailed including their usability to assess the inclusion of CPAs in the generic CPA-DD:

No.	Eligibility criterion category	Eligibility criterion – required condition	Supporting evidence for inclusion
1	Geographical boundaries	Each CPA is located within the physical/geographical boundary of PoA (Colombia or Chile)	Location and boundary are specified in the Section A.2 of the PoA-DD and in each CPA-DD. - Information for geographical coordinate of CPA is also included in the Technical Feasibility Study.
2	Avoid double counting	Each CPA will not be involved in another registered or under validation as a CDM project activity or as a CPA under the proposed or another PoA or as other GHG reduction project.	Declaration of double counting check, unique GPS coordinates.
3	Registration	The CME before adding a CPA under this PoA shall review the project activity database on the UNFCCC website to ensure that the CPA is not already registered as a CDM project or a CPA of another PoA or as a project activity that have been deregistered.	Comparation with project information provided in UNFCCC website and description in each CPA-DD. Declaration of the CPA implementer.
4	Specification of the technology/measure	Each large-scale CPA will introduce photovoltaic power plant with an installed capacity higher than 15 - 900 MW and a load factor at least 15 - 40% Specification of technology/ measures proposed to be implemented under the CPA. Specifications of the technology/measure shall include the type, capacity and other key features of the design of the systems ranges of load factors, sizes of installation. The CPA-DD shall incorporate relevant details on the technological specifications, including level and type of service, performance specifications including compliance with	A brief description of the technologies will be included in each CPA, are described in the Section A.3 of this PoA-DD and section H4, more specific information of the technology will be detail in each CPA-DD. Description of the technologies including expected lifetime, capacity, plant load factor, and any manufacturer specifications will be included in the CPA-DD. Information will be obtained from the Technical Supplier Offer and the Technical Feasibility Study.

		testing/certifications.	
5	Start date	The start date of each CPA will be the date on which the project participants commit to making expenditures for the construction of the main equipment or facility. The start date of any proposed CPA will be on or after the start date of the proposed CDM PoA, i.e. 03/02/2020.	1st Contract of the construction or contract of equipment or facilities.
6	Compliance with the applicability conditions of ACM0002	Each CPA will satisfy the applicability conditions and monitoring methodologies as specified in the ACM0002. (Version 20.0), and other applied methodological regulatory documents	Applicability conditions of ACM0002. (Version.20.0) Section B of CPA-DD. Information will be obtained from the Technical Supplier Offer and the Technical Feasibility Study.
7	Additionality	Each CPA under this category will follow the process in Section C of PoA-DD to demonstrate additionality of the large-scale project activities (TOOL 01). This CPA will be automatically additional according to the TOOL 32 Version 02.0. In paragraph 14 the solar photovoltaic technology is defined as automatically additional if at the time of PDD submission2 any of the following conditions is met: (a) The percentage share of total installed capacity of the specific technology in the total installed grid connected power generation capacity in the host country is equal to or less than two per cent; or (b) The total installed capacity of the technology in the host country is less than or equal to 50 MW.	Description of the process in the Section C of the PoA-DD. In each CPA, the demonstration of the additionality will be described in the Section F of CPA-DD and will fulfill requirements contained in the additionality section of the ACM0002. (Version.20.0) methodologies and TOOL 32. Information will be obtained from the public available data to calculate the total installed capacity and the percentage share of total installed capacity of photovoltaic technology in the total installed grid connected power generation capacity in the host country, using actual values applicable at the time of the CPA inclusion.
8	Compliance with other requirements of the applied methodologies, the applied standardized baselines and the other applied methodological	Each CPA will satisfy the applicability conditions and monitoring methodologies and other applied methodological regulatory documents	Applicability conditions of other requirements, applied methodologies, standardized baselines and other applied methodological regulatory documents are explained in Section B of CPA-DD

	regulatory documents		
9	Local Stakeholder Consultation and Environmental Impact Analysis	Each CPA will hold local stakeholder consultation before the inclusion in PoA and construction. Each CPA will conduct environmental impact analysis as per the National Environmental Regulation of the country where the CPA is located.	Minutes, stakeholder consultation reports, etc. will be provided. Environmental Impact Assessment Report and approval if it is required by the national regulation.
10	Public funding	Each CPA will provide an affirmation that funding from Annex I party, if any, does not result in a diversion of official development assistance	Affidavit on No public Funding from Annex I party.
11	Target group	The project activity will consist in the implementation of grid-connected power plant.	Described in the Section A.1 of the PoA-DD and CPA-DD. The CPA-DD will be grid connected according to the Technical Supplier Offer and the Technical Feasibility Study.
12	Sampling	Not applicable, sampling procedures are not applied.	N/A
13	Debundling check	Not applicable since a large-scale methodology is used.	N/A
14	Small-scale or microscale thresholds	Not applicable since a large-scale methodology is used.	N/A

SECTION H. Description of generic CPA

H.1. Title of generic CPA

Wind Generic CPA 03

H.2. Reference number of generic CPA

CPA 03

H.3. Purpose and general description of generic CPA

The purpose of the PoA is to promote the development of new power plants with wind energy connected to the national grid of each country in order to pour the electricity obtained to it avoiding generation from mix of fuels. Under this CPA being implemented the installed plant will provide electricity to a national or regional grid.

The electricity generated from the project activity contributes to an average GHG reductions estimated as tCO_2/year.

H.4. Technologies/measures

The detailed technical description and technical details will be given in the generic CPA-DD.

Technology	Wind generation
Applicability	Greenfield project activities
Installed capacity	1 – 900 MW
Use of the produced electricity	The CPAs will displace electricity from an electricity distribution system that is or would have been supplied by at least one fossil fuel fired generating unit i.e., in the absence of the project activity, the users would have been supplied electricity from the national grid.
Facilities, systems and equipment that will be installed	Wind turbines, inverters, transformers, and electric meters
Lifetime of main equipment	At least 20 years according manufacturer specifications
Capacity Factor	Between 15 – 60 % based on projects developed in the region[2]
Monitoring equipment	Electric meters at the grid interface.

As the Generic CPA only includes Greenfield project activities, prior to the implementation of the corresponding CPAs there were no existing technologies at the same sites.
In addition, the baseline scenario is that the electricity delivered to the grid by the project activity would have otherwise been generated by the operation of grid-connected power plants and by the addition of new generation sources into the grid.

[2] As per capacity factor mentioned in the IRENA website for Latin America an Caribbean: https://www.irena.org/costs/Charts/Wind

SECTION I. Application of methodologies and standardized baselines

I.1. References to methodologies and standardized baselines

The methodology ACM0002 "Grid-connected electricity generation from renewable sources" (Version 20.0) includes the use of the following tools:

- TOOL01 - Tool for the demonstration and assessment of additionality (Version 7.0.0)
- TOOL07 - Tool to calculate the emission factor for an electricity system (Version 07.0.0)

I.2. Applicability of methodologies and standardized baselines

Each CPA under this generic category will meet the applicability conditions of the approved consolidated baseline and monitoring methodology ACM0002, Version 20.0, Sectoral Scope, as described below:

Id.	Applicability	Project activity vis-à-vis applicability Conditions
1	This methodology is applicable to grid-connected renewable power generation project activities that: • install a Greenfield power plant; • involve a capacity addition to (an) existing plant(s); • involve a retrofit of (an) existing operating plants/units; • involve a rehabilitation of (an) existing plant(s)/unit(s) or • involve a replacement of (an) existing plant(s)/unit(s).	The CPA-XXX under this generic CPA will be the installation of a new grid connected wind energy power plant at a site where no renewable power plant was operated prior to the implementation of the project activity (Greenfield plant) and hence this criterion is applicable.
2	The methodology is applicable under the following conditions: a) The project activity may include renewable energy power plant/unit of one of the following types plant/unit with or without reservoir, wind-solar power-wave-tidal plant/unit b) In the case of capacity additions, retrofits, rehabilitations or replacements the existing plant/unit started commercial operation prior to the start of a minimum historical reference period of five years and no capacity expansion, retrofit, or rehabilitation of the plant/unit has been undertaken between the start of this minimum historical reference period and the implementation of the project activity.	The proposed CPA XXX under this generic CPA will be an installation of wind plant/unit The proposed CPA XXX under this generic CPA does not involve capacity additions, retrofits or replacements and therefore this second condition is not applicable.
3	In case of hydro-power project activities following conditions apply: a) The project activity is implemented in an existing reservoir with no change in the volume of reservoir; b) The project activity is implemented in an existing reservoir, where the volume of reservoir is increased and the power density of the project activity, calculating using equation 7 of the methodology, is greater than 4 W/m^2 c) The project activity results in new reservoirs and the	This condition is not applicable since hydro-power project activities are not included in this generic CPA

	power density of the power plant, calculating using equation 7 of the methodology, is greater than 4 W/m^2 d) The project activity results is an integrated hydro power involving multiple reservoirs, where density of the power plant, calculating using equation 7 of the methodology, is equal or lower to 4 W/m^2 apply to all the following conditions: (vii) The power density calculated using the total installed capacity of the integrated project, as per equation (8), is greater than 4 W/m^2; (viii) Water flow between reservoirs is not used by any other hydropower unit which is not a part of the project activity; (ix) Installed capacity of the power plant(s) with power density lower than or equal to 4 W/m^2 shall be: a. Lower than or equal to 15 MW; and b. Less than 10 per cent of the total installed capacity of integrated hydro power project.	
4	In the case of integrated hydro power project: a) Demonstrate that water flow from upstream power plants/units spill directly to the downstream reservoir and that collectively constitute to the generation capacity of the integrated hydro power project. b) Provide an analysis of the water balance covering the water fed to power units, with all possible combinations of reservoirs and without the construction of reservoirs, demonstrating the requirement of specific combination of reservoirs constructed under CDM project activity for the optimization of power output	This condition is not applicable since hydro-power project activities are not included in this generic CPA
5	In the case of retrofits, rehabilitations, replacements, or capacity additions, this methodology is only applicable if the most plausible baseline scenario, as a result of the identification of baseline scenario, is "the continuation of the current situation, that is to use the power generation equipment that was already in use prior to the implementation of the project activity and undertaking business as usual maintenance".	Not applicable for the generic CPA, since the project activity does not include retrofits, rehabilitations, replacements, or capacity additions.
6	Is not applicable to: a) Project activities that involve switching from fossil fuels to renewable energy sources at the site of the project activity, since in this case the baseline may be the continued use of fossil fuels at the site. b) Biomass fired power plants/units.	The CPAs of this category will demonstrate that the project activity does not involve switching from fossil fuels to renewable energy sources
7	The "Tool to calculate the emission factor of an electricity system Version 07.0" will be applicable if the following applicability criteria are accomplished: • "This tool may be applied to estimate the OM, BM and/or CM when calculating baseline emissions for a project activity that substitutes grid electricity, that is where a project activity supplies electricity to	The CPAs will supply electricity to a grid. The electricity system will not be located partially or totally in an Annex I country. The CPAs will not involve biofuels.

	a grid or a project activity that results in savings of electricity that would have been provided by the grid (e.g. demand-side energy efficiency projects)". • Under this tool, the emission factor for the project electricity system can be calculated either for grid power plants only or, as an option, can include off-grid power plants. In the latter case, two sub-options under the step 2 of the tool are available to the project participants, i.e., option IIa and option IIb. If option IIa is chosen, the conditions specified in "Appendix 1: Procedures related to off-grid power generation" should be met. Namely, the total capacity of off-grid power plants (in MW) should be at least 10 per cent of the total capacity of grid power plants in the electricity system; or the total electricity generation by off-grid power plants (in MWh) should be at least 10 per cent of the total electricity generation by grid power plants in the electricity system; and that factors which negatively affect the reliability and stability of the grid are primarily due to constraints in generation and not to other aspects such as transmission capacity. • In case of CDM projects the tool is not applicable if the project electricity system is located partially or totally in Annex I country. Under this tool, the value applied to the CO2 emission factor of biofuels is zero.	
8	The "Tool for the demonstration and assessment of additionality. Version 07.0.0" will be applicable if the following applicability criteria is accomplished: Once the additionally tool is included in an approved methodology, its application by project participants using this methodology is mandatory.	The CPA does include an approved methodology, ACM0002, that includes the additionally tool.
9	The "Tool to calculate project or leakage CO2 emissions from fossil fuel combustion. Version 03.0.0" will be applicable if the following applicability criteria is accomplished: This tool provides procedures to calculate project and/or leakage CO2 emissions from the combustion of fossil fuels. It can be used in cases where CO2 emissions from fossil fuel combustion are calculated based on the quantity of fuel combusted and its properties. Methodologies using this tool should specify to which combustion process j this tool is being applied.	The CPA will not include the procedures of the tool since the combustion of fossil fuels is neglected.

I.3. Application of multiple methodologies

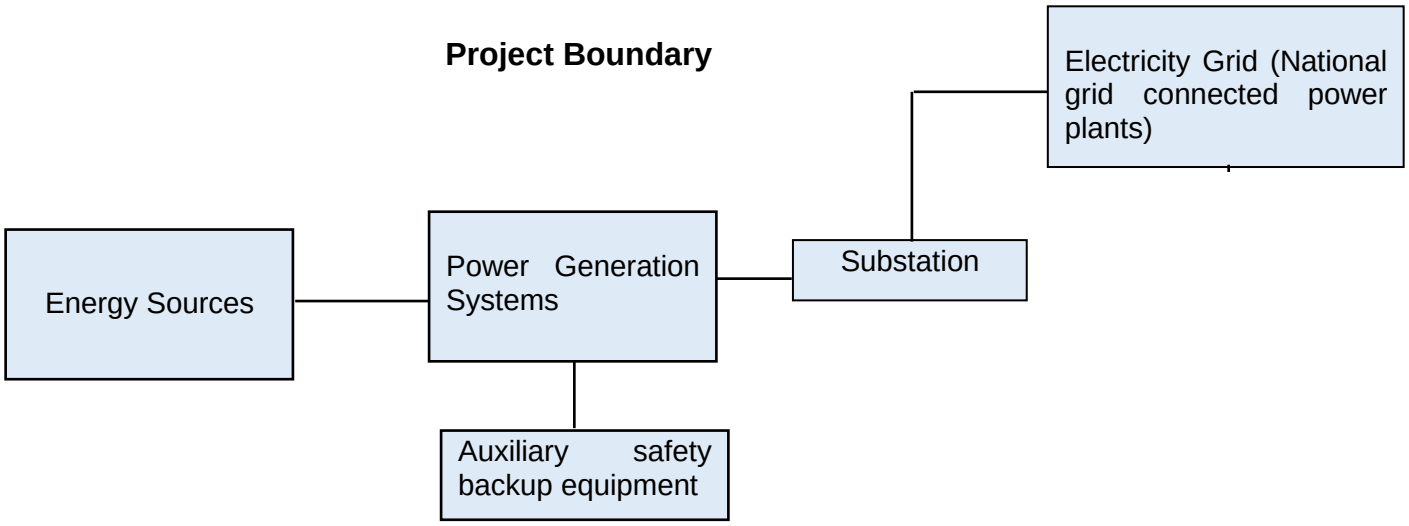
The organization of the PoA is done in line with the methodologies used for the emission reductions calculation and monitoring in each category. Thus, in each Large-scale CPA does not apply multiple methodologies, instead, only one methodology is applied, and this section is therefore, not applicable.

I.4. Project boundary, sources and greenhouse gases (GHGs)

	Source	GHG	Included?	Justification/Explanation
Baseline	CO_2 emissions from electricity generation in fossil fuel fired power plants that are displaced due to the project activity	CO_2	Yes	Main emissions source
		CH_4	No	Minor emissions source
		N_2O	No	Minor emission source
Project activity	For dry or flash steam geothermal power plants, emissions of CH_4 and CO_2 from non-condensable gases contained in geothermal steam	CO_2	No	Geothermal project activities are not included in this CPA category.
		CH_4	No	
		N_2O	No	
	For binary geothermal power plants, fugitive emissions of CH_4 and CO_2 from non-condensable gases contained in geothermal steam	CO_2	No	Geothermal project activities are not included in this CPA category.
		CH_4	No	
		N_2O	No	
	For binary geothermal power plants, fugitive emissions of hydrocarbons such as n-butane and isopentane (working fluid) contained in the heat exchangers	Low GWP hydrocarbon/ refrigerant	No	Geothermal project activities are not included in this CPA category.
	CO_2 emissions from combustion of fossil fuels for electricity generation in solar thermal power plants and geothermal power plants	CO_2	No	Not applicable since solar thermal power plants and geothermal power plants are not included in this generic CPA
		CH_4	No	
		N_2O	No	
	For hydro power plants, emissions of CH_4 from the reservoir	CO_2	No	Hydro power project activities are not included in this CPA category.
		CH_4	No	
		N_2O	No	

The greenhouse gases emissions within the project activity boundaries are associated to the baseline, produces from electricity generation in fossil fuel-fired power plants connected to the national grid.

The project activity will supply zero-emissions electricity to the grid, thus avoiding greenhouse gases emissions by displacing the dispatch of thermoelectric power plants. As it is shown in the following diagram blow, there are no greenhouse gas emissions associated with the project activity.



I.5. Establishment and description of baseline scenario

According to methodology ACM0002 version 20.0, the baseline scenario will be:

Baseline scenario for Greenfield power plant: the baseline scenario is electricity delivered to the grid by the project activity would have otherwise been generated by the operation of grid-connected power plants and by the addition of new generation sources, as reflected in the combined margin (CM) calculations described in "TOOL07: Tool to calculate the emission factor for an electricity system".

I.6. Estimation of emission reductions

I.6.1. Explanation of methodological choices

Baseline emissions

Baseline emissions include only CO_2 emissions from electricity generation in power plants that are displaced due to the project activity. The methodology assumes that all project electricity generation above baseline levels would have been generated by existing grid-connected power plants and the addition of new grid-connected power plants. The baseline emissions are to be calculated as follows:

$$BE_y = EG_{PJ,y} \times EF_{grid,y}$$ Equation (1)

Where:

BE_y	=	Baseline emissions in year *y* (t CO_2)
$EG_{PJ,y}$	=	Quantity of net electricity generation that is produced and fed into the grid as a result of the implementation of the CDM project activity in year *y* (MWh)
$EF_{grid,y}$	=	Combined margin CO_2 emission factor for grid connected power generation in year *y* calculated using the latest version of the "Tool to calculate the emission factor for an electricity system (tCO_2/MWh)

The emission factor will be calculated in a transparent and conservative manner as follows: A combined margin (CM), consisting of the combination of operating margin (OM) and build margin (BM) according to the procedures prescribed in the "Tool to calculate the emission factor for an electricity system". The steps for calculate the emission factor, will be the following ones:

Step 1. Identify the relevant electricity systems;

Step 2. Choose whether to include off-grid power plants in the project electricity system (optional);

Step 3. Select a method to determine the operating margin (OM);

Step 4. Calculate the operating margin emission factor according to the selected method;

Step 5. Calculate the build margin (BM) emission factor;

Step 6. Calculate the combined margin (CM) emission factor.

Step 1. Identify the relevant electricity systems

For determining the electricity emission factors, the project participants shall identify the relevant project electricity system. Project participants may delineate the project electricity system using any of the following options:

(a) Option 1. A delineation of the project electricity system and connected electricity systems published by the DNA or the group of the DNAs of the host country(ies), In case a delineation is provided by a group of DNAs, the same delineation should be used by all the project participants applying the tool in these countries;

(b) Option 2. A delineation of the project electricity system defined by the dispatch area of the dispatch centre responsible for scheduling and dispatching electricity generated by the project activity. Where the dispatch area is controlled by more than one dispatch centre, i.e., layered dispatch area, the higher-level area shall be used as a delineation of the project electricity system (e.g., where regional dispatch centres are required to comply with dispatch orders of the national dispatch centre then area controlled by the national dispatch centre shall be used);

(c) Option 3. A delineation of the project electricity system defined by more than one independent dispatch areas, e.g., multi-national power pools.

In the case of this generic CPA the electricity system is defined by the Option 2 "*the project electricity system defined by the dispatch area of the dispatch centre responsible for scheduling and dispatching electricity generated by the project activity.*

Step 2. Choose whether to include off-grid power plants in the project electricity system (optional).

In the Step 2**,** Option I will be chosen to calculate the operating margin and build margin emission factor because there is no off-grid power plant to be included in the project electricity system.

Step 3. Select a method to determine the operating margin (OM)

The calculation of the operating margin emission factor ($EF_{grid,OM,y}$) will be based on one of the following methods:

(e) Simple OM; or

(f) Simple adjusted OM; or

The simple OM method (Option a in paragraph 38) will be used if Low-cost/must-run resources constitute less than 50 per cent of total grid generation (excluding electricity generated by off-grid power plants) in average of the five most recent years, and the average of the five most recent years will be determined by using one of the approaches described below; or

$$\text{Share}_{LCMR} = \text{average}\left[\frac{EG_{LCMR_{y-4}}}{total_{y-4}}, \ldots, \frac{EG_{LCMR_y}}{total_y}\right]$$

$$\text{Share}_{LCMR} = \frac{average\left(EG_{LCMR_{y-4}}, \ldots, EG_{LCMR_y}\right)}{average\left(total_{y-4}, \ldots, total_y\right)}$$

Where:

- Share_{LCMR} = Share of the low cost/must run resources (per cent)
- EG_{LCMRy} = Electricity generation supplied to the project electricity system by the low cost/must run resources in year y (MWh)
- $total_y$ = Total electricity generation supplied to the project electricity system in year y (MWh)
- Y = The most recent year for which data is available

If the grid does not meet this requirement, the simple adjusted OM will be used.

Step 4. Calculate the operating margin emission factor according to the selected method

In addition, the OM emissions factor will be calculated using the ex ante option. Thus, the emission factor will be determined once at the validation stage, thus no monitoring and recalculation of the emissions factor during the crediting period is required. A 3-year generation-weighted average will be used, based on the most recent data available at the time of submission of the CPA-DD to the DOE for validation.

If the simple OM will be used, the following equation applies:

$$EF_{grid,OMsimple,y} = \frac{\sum_m EG_{m,y} \times EF_{EL,m,y}}{\sum_m EG_{m,y}}$$

Where:

$EF_{grid,OM\ simple,y}$	= Simple operating margin CO_2 emission factor in year y (tCO_2/MWh)
$EG_{m,y}$	= Net quantity of electricity generated and delivered to the grid by power unit *m* in year *y* (MWh)
$EF_{EL,m,y}$	= CO_2 emission factor of power unit *m* in year *y* (tCO_2/MWh)
m	= All grid power units serving the grid in year *y* except low-cost/must-run power units
y	= The relevant year as per the data vintage chosen

Whereas if the simple adjusted OM will be used, the following equation applies:

$$EF_{grid,OM-adj,y} = (1-\lambda_y) \times \frac{\sum_m EG_{m,y} \times EF_{EL,m,y}}{\sum_m EG_{m,y}} + \lambda_y \times \frac{\sum_k EG_{k,y} \times EF_{EL,k,y}}{\sum_k EG_{k,y}}$$

$EF_{grid,OM\text{-}adj,y}$	= Simple adjusted operating margin CO_2 emission factor in year y (tCO_2/MWh)
λ_y:	= Factor expressing the percentage of time when low-cost/must-run power units are on the margin in year *y*.
$EG_{m,y}$	= Net quantity of electricity generated and delivered to the grid by power unit *m* in year *y* (MWh)

$EG_{k,y}$	= Net quantity of electricity generated and delivered to the grid by power unit *k* in year *y* (MWh)
$EF_{EL,m,y}$	= CO_2 emission factor of power unit *m* in year *y* (tCO_2/MWh)
$EF_{EL,k,y}$	= CO_2 emission factor of power unit *k* in year *y* (tCO_2/MWh)
m	= All grid power units serving the grid in year *y* except low-cost/must-run power units
k	= All low-cost/must-run grid power units serving the grid in year *y*
y	= The relevant year as per the data vintage chosen in Step 3

The parameter $EG_{m,y}$ is determined as per the provision in the monitoring tables.

The following equations are used to calculate $EF_{EL,m,y}$ according to Option A1 of the simple OM method.

$$EF_{EL,m,y} = \frac{\sum_i FC_{i,m,y} \times NCV_{i,y} \times EF_{CO2,i,y}}{EG_{m,y}}$$

Where:

$EF_{EL,m,y}$	= CO_2 emission factor of power unit *m* in year *y* (tCO_2/MWh)
$FC_{i,m,y}$	= Amount of fossil fuel type *i* consumed by power unit *m* in the year *y* (Mass or volume unit)
$NCV_{i,y}$	= Net calorific value (energy content) of fossil fuel type *i* in the year *y* (GJ/mass or volume unit)
$EF_{CO2,i,y}$	= CO_2 emission factor of fossil fuel type *i* in the year *y* (tCO_2/GJ)
$EG_{m,y}$	= Net quantity of electricity generated and delivered to the grid by power plant *m* in the year y (MWh). For grid power plants, it was determined as per the provisions in the monitoring tables.
m	= All power units serving the grid in year *y* except low-cost/must-run power units
i	= All fossil fuel types combusted in power unit *m* in year *y*
y	= The relevant year.

The following equations are used to calculate $EF_{EL,m,y}$ and $EF_{EL,k,y}$ according to Option A2 of the simple adjusted OM method.

$$EF_{EL,m,y} = \frac{EF_{co2,m,i,y} \times 3.6}{\eta_{m,y}}$$

$$EF_{EL,k,y} = \frac{\sum_i FC_{i,k,y} \times NCV_{i,y} \times EF_{CO2,i,y}}{EG_{k,y}}$$

Where:

$EF_{EL,m,y}$	= CO_2 emission factor of power unit *m* in year *y* (tCO_2/MWh)
$EF_{EL,k,y}$	= CO_2 emission factor of power unit *k* in year *y* (tCO_2/MWh)
$FC_{i,m,y}$	= Amount of fossil fuel type *i* consumed by power unit *m* in the year *y* (Mass or volume unit)

$FC_{i,k,y}$ = Amount of fossil fuel type *i* consumed by power unit *k* in the year *y* (Mass or volume unit)

$NCV_{i,y}$ = Net calorific value (energy content) of fossil fuel type *i* in the year *y* (GJ/mass or volume unit)

$EF_{CO2,i,y}$ = CO_2 emission factor of fossil fuel type *i* in the year *y* (tCO_2/GJ)

$EG_{m,y}$ = Net quantity of electricity generated and delivered to the grid by power plant *m* in the year *y* (MWh)

$EG_{k,y}$ = Net quantity of electricity generated and delivered to the grid by power plant *k* in the year *y* (MWh)

$\eta_{m,y}$ = Average net energy conversion efficiency of power unit *m* in year *y* (ratio)

m = All power units serving the grid in year *y* except low-cost/must-run power units

y = The relevant year as per the data vintage chosen in Step 3

3.6 = Conversion factor (GJ/MWh)

k = All low-cost/must run grid power units serving the grid in year *y*

i = All fossil fuel types combusted in power unit *m* in year

If the simple adjusted OM will be used, the λ_y is defined as follows:

λ_y (%)= (number of hours low-cost/must-run sources are on margin in year y)/8,760 hours per year

According to methodology Lambda (λ_y) should be calculated as follows:

- Step i) Plot a load duration curve. Collect load data (typically in MW) for each hour of the year y, and sort and plot the load data from the highest to the lowest annual system load.
- Step ii) Collect the electricity generation data from each low-cost/must-run power plant/unit. Calculate the total annual generation (in MWh) from low-cost/must-run power plants/units.
- Step iii) – Find out the intersection on the load duration curve in order to determine a period LCMR sources are on the margin. To find the intersection, fill the area under the load duration curve by the total generation (in MWh) from LCMR power plants/units. To fill the area, plot a horizontal line across the load duration curve such that the area under horizontal line and the curve right from the intersection point (MW times hours) equals the total generation (in MWh) from low-cost/must-run power plants/units.
- Step iv) - Determine the "Number of hours for which low-cost/must-run sources are on the margin in year y. At the step where cumulative electricity generation reaches the level of the total generation (in MWh) from low-cost/must-run power plants/units. This is the number of hours for which low cost/must-run sources are on the margin in year y If the lines do not intersect, then one may conclude that low-cost/must-run sources do not appear on the margin and λ_y is equal to zero.

Step 5. Calculate the build margin (BM) emission factor.

The BM factor will be calculated using ex ante option (Option 1), based on the most recent information available on units already built for sample group m at the time of CPA-DD submission to the DOE for validation. For the second crediting period, the build margin emission factor will be updated based on the most recent information available on units already built at the time of submission of the request for renewal of the crediting period to the DOE. For the third crediting period, the build margin emission factor calculated for the second crediting period will be used. This option does not require monitoring the emission factor during the crediting period.

The build margin emission factor (BM) will be calculated using the following equation:

$$EF_{grid,BM,y} = \frac{\sum_m EG_{m,y} \times EF_{EL,m,y}}{\sum_m EG_{m,y}}$$

Where:

$EF_{grid,BM,y}$	=	Build margin CO_2 emission factor in year *y* (t CO_2/MWh)
$EG_{m,y}$	=	Net quantity of electricity generated and delivered to the grid by power unit *m* in year *y* (MWh)
$EF_{EL,m,y}$	=	CO_2 emission factor of power unit *m* in year *y* (t CO_2/MWh)
m	=	Power units included in the build margin
y	=	Most recent historical year for which electricity generation data is available

Step 6. Calculate the combined margin emissions factor.

The combined margin emission factor (CM) is based on one of the following:

(a) Weighted Average CM; or

(b) Simplified CM

The (a) option (Weighted average CM) should be used as the preferred option, and those conditions required to use (b) option do not occur, so (a) option is the chosen method to calculate de CM.

Using the weighted average CM, the emission factor is calculated as follows:

$$EF_{grid,CM,y} = EF_{grid,OM,y} \times w_{OM} + EF_{grid,BM,y} \times w_{BM}$$

Where:

$EF_{grid,BM,y}$	=	Build margin CO_2 emission factor in year *y* (t CO_2/MWh)
$EF_{grid,OM,y}$	=	Operating margin CO_2 emission factor in year *y* (t CO_2/MWh)
w_{OM}	=	Weighting of operating margin emissions factor (per cent)
w_{BM}	=	Weighting of build margin emissions factor (per cent)

The default values for w_{OM} and w_{BM} for the first crediting period and type of source used are:

Solar-wind power generation	Hydroelectric power generation
w_{OM} = 0.75	w_{OM} = 0.50
w_{BM} = 0.25	w_{BM} = 0.50

These values are applicable for the first crediting period being different for the subsequent, as stated in the TOOL 07.

Calculations shall be based on data from an official source and made publicly available. Data for the national grid (SIN) will be provided by XM[3], while for Chile, the data for the SEN grid will be provided by the Comisión Nacional de Energía (CNE).

[3] Company that manages the wholesale energy market and the development of energy and information solutions and services.

Calculation of $EG_{PJ,y}$

a. Greenfield power plants

If the project activity is the installation of a greenfield power plant, then:

$$EG_{PJ,} = EG_{PJ,\text{facility},y} \quad \text{Equation (2)}$$

Where:

$EG_{PJ,\text{facility},y}$ = Quantity of net electricity generation supplied by the project plant/unit to the grid in year *y* (MWh)

Project Emissions

For most renewable energy power generation project activities, PE_y = 0. However, some project activities may involve project emissions that can be significant. These emissions shall be accounted for as project emissions by using the following equation:

$$PE_y = PE_{FF,y} + PE_{GP,y} + PE_{HP,y} \quad \text{Equation (7)}$$

Where:

PE_y = Project emissions in year *y* (t CO_2e/yr)

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

$PE_{GP,y}$ = Project emissions from the operation of dry, flash steam or binary geothermal power plants in year *y* (t CO_2e/yr)

$PE_{HP,y}$ = Project emissions from water reservoirs of hydro power plants in year *y* (t CO_2e/yr)

In this CPA category the only applicable project emissions are the emissions associated to the fossil fuel combustion, due to the fact that geothermal and hydro power plants are not included. Nevertheless, for all renewable energy power generation project activities, emissions due to the use of fossil fuels for the backup generator can be neglected. Therefore, project emissions will be equal to zero in this CPA.

Leakage

No other leakage emissions are considered. The emissions potentially arising due to activities such as power plant construction and upstream emissions from fossil fuel use (e.g., extraction, processing, transport etc.) are neglected.

Emission reductions

Emission reductions are calculated as follows:

$$ER_y = BE_y - PE_y - LE_y \quad \text{Equation (8)}$$

Where:

ER_y = Emission reductions in year y (t CO_2)

BE_y = Baseline Emissions in year y (t CO_2)

PE_y = Project emissions in year y (t CO_2)

LE_y = Leakage emissions in year y (t CO_2)

I.6.2. Data and parameters fixed ex ante

Data/Parameter	$EF_{grid,y}$
Data unit	t CO_2e/kWh
Description	Combined margin CO_2 emission factor for grid connected power generation in year y calculated using the version 7.0 of the .Tool to calculate the emission factor for an electricity system CO_2 emission factor of the grid electricity in year y
Source of data	As per the "Tool to calculate the emission factor for an electricity system" V07
Value(s) applied	At CPA level
Choice of data or Measurement methods and procedures	As per the requirements in "Tool to calculate the emission factor for an electricity system" V07
Purpose of data	Baseline Emissions calculation
Additional comment	The grid emission factor will be fixed ex ante in all CPAs of this category

I.6.3. Modalities for ex ante calculation of emission reductions

As mentioned previously ex-ante emission reduction is estimated using equation:

$$\boldsymbol{ER_y = BE_y - PE_y - LE}$$ Equation (9)

Where;

ER_y = Emission reduction in year y (tCO_2/y)
BE_y = Baseline emission in year y (tCO_2/y)
PE_y = Project emission in year y (tCO_2/y)
LE_y = Leakage emission year y (tCO_2/y)

PE_y = 0

CO_2 emissions from on-site consumption of fossil fuels due to the project activity will be neglected.

LE_y = 0

Thus, $ER_y = BE_y - 0 - 0$

Using the "Tool to calculate the emission factor for an electricity system (Version 07.0.0) it will be calculated the $EF_{grid,\,y}$. (Combined margin CO_2 emission factor for grid connected power generation in year y).

$$EF_{grid,y} = EF_{grid,OM,y} \text{ x } W_{OM} + EF_{grid,BM,y} \text{ x } W_{BM}$$ Equation (10)

Where;

$EF_{grid,BM,y}$ = Build margin CO_2 emission factor in year *y* (tCO_2/MWh)
$EF_{grid,OM,y}$ = Operating margin CO_2 emission factor in year *y* (tCO_2/MWh)
W_{OM} = Weighting of operating margin emissions factor (%)
W_{BM} = Weighting of build margin emissions factor (%)

Therefore, the BEy, is calculated as follows:

$BE_y = EG_{PJ,y} \text{ x } EF_{grid,y}$ Equation (11)

Where:

BE_y = Baseline emission in year y

$EG_{PJ,y}$ = Quantity of net electricity generation supplied by the project plant/unit to the grid in year *y* (MWh)

To estimate $EG_{PJ,y}$ ex ante the following equation will be applied:

$EGP_{J,y} = \text{Plant capacity (MW) x Plant Load Factor x 24 x 365}$ Equation (12)

Where:

Plant Load Factor = Measure of a power plant's capacity utilisation

I.7. Monitoring plan

I.7.1. Data and parameters to be monitored

Data/Parameter	***EG*** $_{PJ,facility,y}$
Data unit	MWh
Description	Quantity of net electricity generation supplied by the project plant/unit to the grid in year *y*
Source of data	Electricity meter(s)
Value(s) applied	Specific to each CPA (each CPA will specify this value in accordance with project parameters)
Measurement methods and procedures	This parameter should be either monitored using bi-directional energy meter or calculated as difference between (a) the quantity of electricity supplied by the project plant/unit to the grid; and (b) the quantity of electricity the project plant/unit from the grid. In case it is calculated then the following parameters shall be measured: (c) The quantity of electricity supplied by the project plant/unit to the grid; and (d) The quantity of electricity delivered to the project plant/unit from the grid
Monitoring frequency	Continuous monitoring, hourly measurement and at least monthly recording

QA/QC procedures	The meters will be checked and calibrated according to the relevant national electric industry standards and regulations. Data measured by the main meter will be cross checked with data from invoices or sales receipts or official public available data.
Purpose of data	Calculation of baseline emissions
Additional comment	Based on methodology ACM0002, if the project activity is installation of a Greenfield power plant, then: $EG_{PJ,y} = EG_{PJ,facility,y}$ Net electricity supplied to the grid by the project activity will be calculated using the measured values for electricity exported to/imported from the national grid.

I.7.2. Sampling plan

No sampling plan is applied in CPAs of this category.

I.7.3. Other elements of monitoring plan

Each CPA will detail any other relevant element of the monitoring plan in this section.

SECTION J. Crediting period type and duration

7 years and 0 month, renewable

SECTION K. Eligibility criteria for inclusion of CPAs

Eligibility criteria for inclusion of CPAs in the PoA are following detailed including their usability to assess the inclusion of CPAs in the generic CPA-DD:

No.	Eligibility criterion category	Eligibility criterion – required condition	Supporting evidence for inclusion
1	Geographical boundaries	Each CPA is located within the physical/geographical boundary of PoA (Colombia or Chile)	Location and boundary are specified in the Section A.2 of the PoA-DD and in each CPA-DD. - Information for geographical coordinate of CPA is also included in the Technical Feasibility Study.
2	Avoid double counting	Each CPA will not be involved in another registered or under validation as a CDM project activity or as a CPA under the proposed or another PoA or as other GHG reduction project.	Declaration of double counting check, unique GPS coordinates.
3	Registration	The CME before adding a CPA under this PoA shall review the project activity database on the UNFCCC website to ensure that the CPA is not already registered as a CDM project or a CPA of another PoA or as a project activity that have been deregistered.	Comparation with project information provided in UNFCCC website and description in each CPA-DD. Declaration of the CPA implementer.
4	Specification of the technology/measure	Each CPA will introduce wind power plant with an installed capacity between 1 – 900 MW and a load factor between 15 - 60%. Specification of technology/ measures proposed to be implemented under the CPA. Specifications of the technology/measure shall include the type, capacity and other key features of the design of the systems ranges of load factors, sizes of installation. The CPA-DD shall incorporate relevant details on the technological specifications, including level and type of service, performance specifications including compliance with	A brief description of the technologies will be included in each CPA, are described in the Section A.3 of this PoA-DD and section H4, more specific information of the technology will be detail in each CPA-DD. Description of the technologies including expected lifetime, capacity, plant load factor, and any manufacturer specifications will be included in the CPA-DD. Information will be obtained from the Technical Supplier Offer and the Technical Feasibility Study.

		testing/certifications.	
5	Start date	The start date of each CPA will be the date on which the project participants commit to making expenditures for the construction of the main equipment or facility. The start date of any proposed CPA will be on or after the start date of the proposed CDM PoA, i.e. 03/02/2020.	1st Contract of the construction or contract of equipment or facilities.
6	Compliance with the applicability conditions of ACM0002	Each CPA will satisfy the applicability conditions and monitoring methodologies as specified in the ACM0002. (Version 20.0), and other applied methodological regulatory documents	Applicability conditions of ACM0002. (Version.20.0) Section B of CPA-DD. Information will be obtained from the Technical Supplier Offer and the Technical Feasibility Study.
7	Additionality	Each CPA under this category will follow the process in Section C of PoA-DD to demonstrate additionality of the large-scale project activities (TOOL 01). Since the baseline scenario provides the ability to obtain renewable energy by other sources, the Option III "Benchmark Analysis" is chosen as the most appropriate option to develop the investment analysis. Project IRR has been identified as the most suitable economical/financial indicator to the case, since the project will be considered as financially attractive when this IRR is better than the Benchmark. Thus, TOOL 27 will be used for the analysis. The type of Project IRR selected to be used is going to be the post-tax IRR, since it includes all input and output cash flows. Thus, the IRR will be calculated using the following inputs: Electricity Generation (from 1,300 to 5,300 MWh/MW installed/year, it represents generation per year per	Description of the process in the Section C of the PoA-DD. In each CPA, the demonstration of the additionality will be described in the Section F of CPA-DD and will fulfil requirements contained in the additionality section of the ACM0002. (Version.20.0) methodologies and TOOL 01. The investment analysis will be used. Information will be obtained from the Technical Supplier Offer, the Technical Feasibility Study, Investment term sheet, Financial analysis and official taxes for each country using actual values applicable at the time of the CPA inclusion.

		installed MW with load factor 15% and 60%), Average Sales Price (from 20 USD/MWh to 300 USD/ MWh), Annual Income (25 kUSD/year to 1,419 million USD/year, range based on minimum and maximum sales price, installed capacity and load factor. - 1 MW x 15% x 8760 x 20 USD/MWh = 25k USD: - 900 MW x 60% x 8760 x 300 = 1,419 MM USD), Total Investment (from 1,000 to 4,000 USD/kW – installed costs[4]) Average Annual Operational Costs (2-10% CAPEX), Load factor (15 to 60%), the Fair Value, Project duration (20-50 years), taxes (10-35%) and depreciation (20-50 years). The additionality of each CPA shall then be assessed by using the actual values, applicable to that CPA at the time of inclusion, in the investment analysis conducted for the purpose of demonstrating the additionality of the CPA	
8	Compliance with other requirements of the applied methodologies, the applied standardized baselines and the other applied methodological regulatory documents	Each CPA will satisfy the applicability conditions and monitoring methodologies and other applied methodological regulatory documents	Applicability conditions of other requirements, applied methodologies, standardized baselines and other applied methodological regulatory documents are explained in Section B of CPA-DD
9	Local Stakeholder Consultation and Environmental Impact Analysis	Each CPA will hold local stakeholder consultation before the inclusion in PoA and construction. Each CPA will conduct environmental impact analysis as per the National Environmental Regulation of the country where the CPA is located.	Minutes, stakeholder consultation reports, etc. will be provided. Environmental Impact Assessment Report and approval if it is required by the national regulation.
10	Public funding	Each CPA will provide an affirmation that funding from	Affidavit on No public Funding

[4] https://www.irena.org/costs/Charts/Wind

		Annex I party, if any, does not result in a diversion of official development assistance	from Annex I party.
11	Target group	The project activity will consist in the implementation of grid-connected power plant.	Described in the Section A.1 of the PoA-DD and CPA-DD. The CPA-DD will be grid connected according to the Technical Supplier Offer and the Technical Feasibility Study.
12	Sampling	Not applicable, sampling procedures are not applied.	N/A
13	Debundling check	Not applicable since a large-scale methodology is used.	N/A
14	Small-scale or microscale thresholds	Not applicable since a large-scale methodology is used.	N/A

PART II. Generic component project activity (CPA)

SECTION H. Description of generic CPA

H.1 Title of generic CPA

Small Scale Generic CPA 04

H.2 Reference number of generic CPA

CPA 04

H.3 Purpose and general description of generic CPA

The purpose of the PoA is to promote the development of new power plants with solar photovoltaic technology only connected to the national grid of each country in order to pour the electricity obtained to it avoiding generation from mix of fuels. Under this CPA being implemented the installed plant will provide electricity to a national or regional grid.

The proposed generic CPA will include small scale project activities Type I, whose total installed capacity will be up to 15 MW.

The electricity generated from the project activity contributes to an average GHG reductions estimated as tCO_2/year.

H.4. Technologies/measures

The detailed technical description and technical details will be given in the specific CPA-DD.

Technology	Small scale photovoltaic generation
Generation Capacity	Up to15 MW
Applicability	Greenfield power plant;
Use of the produced electricity	The CPAs will displace electricity from an electricity distribution system that is or would have been supplied by at least one fossil fuel fired generating unit i.e., in the absence of the project activity, the users would have been supplied electricity from the national or regional grids.
Facilities, systems and equipment that will be installed	Solar panels, inverters, transformers and electric meters
Lifetime of main equipment	At least 20 years according manufacturer specifications
Capacity Factor	At least 15%, based on projects developed in the region
Monitoring equipment	Electric meters at the grid interface.

As the Generic CPA only includes Greenfield project activities, prior to the implementation of the corresponding CPAs there were no existing technologies at the same sites.
In addition, the baseline scenario is that the electricity delivered to the grid by the project activity would have otherwise been generated by the operation of grid-connected power plants and by the addition of new generation sources into the grid.

SECTION I. Application of methodologies and standardized baselines

I.1 References to methodologies and standardized baselines

The methodology AMS-I.D "Grid connected renewable electricity generation" (Version 18.0.0) will be applied. This methodology includes the use of the following Tools:

- TOOL07 - Tool to calculate the emission factor for an electricity system (Version 07.0.0)
- TOOL 21 - Demonstration of additionality of small scale project activities (Version 13.1)
- TOOL32 – Positive list of technologies (Version 2.0)

I.2 Applicability of methodologies and standardized baselines

Each Small Scale CPA under this generic category will meet the applicability conditions of the approved consolidated baseline and monitoring methodology AMS-I.D, Version 18.0, Sectoral Scope 1, as described below:

Id.	Applicability	Project activity vis-à-vis applicability Conditions
1	This methodology is applicable to project activities that: • install a Greenfield power plant; • involve a capacity addition to (an) existing plant(s); • involve a retrofit of (an) existing operating plants/units; • involve a rehabilitation of (an) existing plant(s)/unit(s) or • involve a replacement of (an) existing plant(s)/unit(s).	The CPA-XXX under this generic CPA will be the installation of a Greenfield power plant; Hence this criterion is applicable.
2	In case of hydro-power project activities following conditions apply: a) The project activity is implemented in an existing reservoir with no change in the volume of reservoir; b) The project activity is implemented in an existing reservoir, where the volume of reservoir is increased and the power density of the project activity, as per definitions given in the project emissions section, is greater than 4 W/m^2 c) The project activity results in new reservoirs and the power density of the power plant, as per definitions given in the project emissions section, is greater than 4 W/m^2	Not applicable since hydro-power project activities are not included in this generic CPA.
3	If the new unit has both renewable and non-renewable components (e.g. a wind/diesel unit), the eligibility limit of 15 MW for a small-scale CDM project activity applies only to the renewable component. If the new unit co-fires fossil fuel, the capacity of the entire unit shall not exceed the limit of 15 MW.	CPA-XXX shall have an installed capacity up to 15MW.
4	Combined heat and power (co-generation) systems are not eligible under this category.	CPA-XXX will not involve ccombined heat and power (co-generation) systems
5	In the case of project activities that involve the capacity addition of renewable energy generation units at an existing renewable power generation facility, the added	Not applicable for the generic CPA, since the project activity does not include retrofits,

	capacity of the units added by the project should be lower than 15 MW and should be physically distinct from the existing units.	rehabilitations, replacements, or capacity additions.
6	In the case of retrofit, rehabilitation or replacement, to qualify as a small-scale project, the total output of the retrofitted, rehabilitated or replacement power plant/unit shall not exceed the limit of 15 MW.	Not applicable for the generic CPA, since the project activity does not include retrofits, rehabilitations, replacements, or capacity additions.
7	In the case of landfill gas, waste gas, wastewater treatment and agro-industries projects, recovered methane emissions are eligible under a relevant Type III category. If the recovered methane is used for electricity generation for supply to a grid then the baseline for the electricity component shall be in accordance with procedure prescribed under this methodology	Not applicable since landfill gas, waste gas, wastewater treatment and agro-industries project activities are not included in this generic CPA
8	In case biomass is sourced from dedicated plantations, the applicability criteria in the tool "Project emissions from cultivation of biomass" shall apply	Not applicable since biomass project activities are not included in this generic CPA

I.3 Application of multiple methodologies

The organization of the PoA is done in line with the methodologies used for the emission reductions calculation and monitoring in each category. Thus, in each Small-scale CPA only one methodology is applied, and this section is therefore, not applicable.

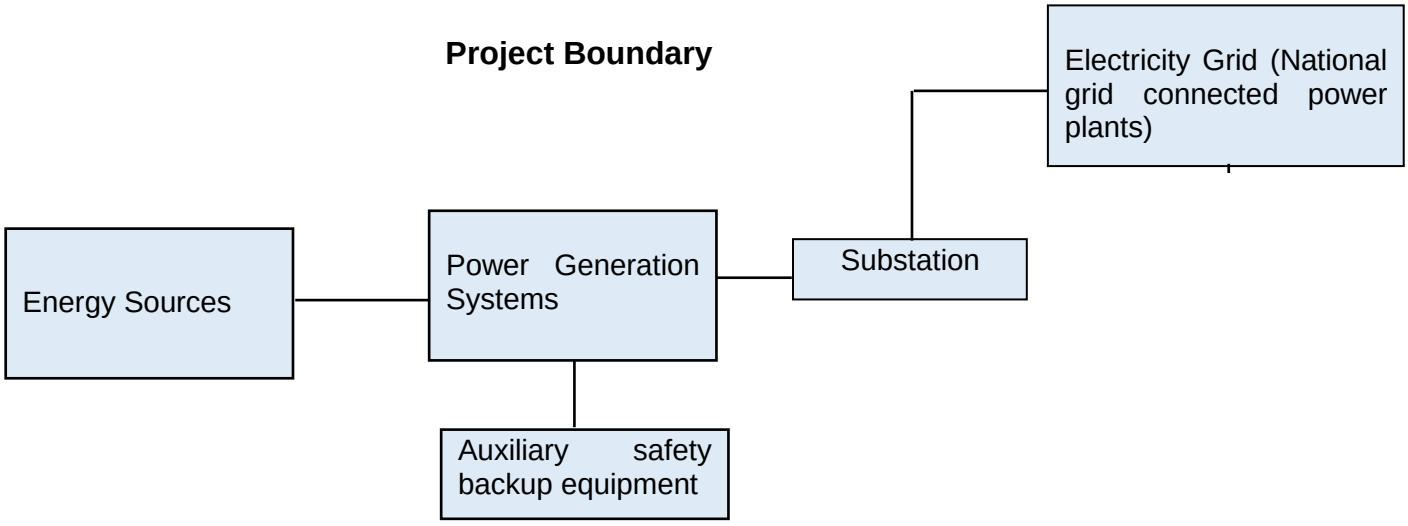
I.4 Project boundary, sources and greenhouse gases (GHGs)

Source		GHG	Included?	Justification/Explanation
Baseline	CO_2 emissions from electricity generation in fossil fuel fired power plants that are displaced due to the project activity	CO_2	Yes	Main source of emissions
		CH_4	No	Minor source of emissions
		N_2O	No	Minor source of emissions
Project activity	For dry or flash steam geothermal power plants, emissions of CH4 and CO2 from non-condensable gases contained in geothermal steam	CO_2	No	Not applicable since geothermal project activities are not included in this CPA category.
		CH_4	No	
		N_2O	No	
	For binary geothermal power plants, fugitive emissions of CH4 and CO2 from non-condensable gases contained in geothermal steam	CO_2	No	Not applicable since binary geothermal power plants and geothermal power plants are not included in this generic CPA
		CH_4	No	
		N_2O	No	
	For binary geothermal power plants, fugitive emissions of hydrocarbons such as n-butane and isopentane (working fluid) contained in the heat exchangers	CO_2	No	Not applicable since binary geothermal power plants and geothermal power plants are not included in this generic CPA
		CH_4	No	
		N_2O	No	
	CO_2 emissions from combustion of fossil fuels for electricity generation in solar thermal power plants and geothermal power plants	CO_2	No	Not applicable since solar thermal power plants and geothermal power plants are not included in this generic CPA
		CH_4	No	
		N_2O	No	
	For hydro power plants, emissions of CH_4	CO_2	No	Not applicable since hydro-power

Source		GHG	Included?	Justification/Explanation
	from the reservoir	CH_4	No	project activities are not included in this CPA category.
		N_2O	No	

The greenhouse gases emissions within the project activity boundaries are associated to the baseline, produces from electricity generation in fossil fuel-fired power plants connected to the national grid.

The project activity will supply zero-emissions electricity to the grid, thus avoiding greenhouse gases emissions by displacing the dispatch of thermoelectric power plants. As it is shown in the following diagram blow, there are no greenhouse gas emissions associated with the project activity.



I.5 Establishment and description of baseline scenario

According to methodology AMS-I.D version 18.0, the baseline scenario will be:

> **a) Baseline scenario for Greenfield power plant**: the baseline scenario is that the electricity delivered to the grid by the project activity would have otherwise been generated by the operation of grid-connected power plants and by the addition of new generation sources into the grid". The CPAs consisting of a Greenfield renewable plant that delivers electricity to the National Grid of each country, and the grid emission factor is calculated in combined margin manner according to procedures in "Tool to Calculate the Emission Factor for an Electricity System (version 07.0)".

I.6 Estimation of emission reductions

I.6.1 Explanation of methodological choices

Baseline emissions

Baseline emissions include only CO_2 emissions from electricity generation in power plants that are displaced due to the project activity. The methodology assumes that all project electricity generation above baseline levels would have been generated by existing grid-connected power plants and the addition of new grid-connected power plants. The baseline emissions are to be calculated as follows:

$$BE_y = EG_{PJ,y} \times EF_{grid,y}$$ Equation (1)

Where:

BE_y	=	Baseline emissions in year *y* (t CO_2)
$EG_{PJ,y}$	=	Quantity of net electricity generation that is produced and fed into the grid as a result of the implementation of the CDM project activity in year *y* (MWh)
$EF_{grid,y}$	=	Combined margin CO_2 emission factor for grid connected power generation in year *y* calculated using the latest version of the "Tool to calculate the emission factor for an electricity system (tCO_2/MWh)

Calculations will be based on data from an official source (where available) and made publicly available.

The emission factor will be calculated in a transparent and conservative manner as follows: A combined margin (CM), consisting of the combination of operating margin (OM) and build margin (BM) according to the procedures prescribed in the "Tool to calculate the emission factor for an electricity system". The steps for calculate the emission factor, will be the following ones:

Step 1. Identify the relevant electricity systems;

Step 2. Choose whether to include off-grid power plants in the project electricity system (optional);

Step 3. Select a method to determine the operating margin (OM);

Step 4. Calculate the operating margin emission factor according to the selected method;

Step 5. Calculate the build margin (BM) emission factor;

Step 6. Calculate the combined margin (CM) emission factor.

Step 1. Identify the relevant electricity systems

For determining the electricity emission factors, the project participants shall identify the relevant project electricity system. Project participants may delineate the project electricity system using any of the following options:

(a) Option 1. A delineation of the project electricity system and connected electricity systems published by the DNA or the group of the DNAs of the host country(ies), In case a delineation is provided by a group of DNAs, the same delineation should be used by all the project participants applying the tool in these countries;

(b) Option 2. A delineation of the project electricity system defined by the dispatch area of the dispatch centre responsible for scheduling and dispatching electricity generated by the project activity. Where the dispatch area is controlled by more than one dispatch centre, i.e., layered dispatch area, the higher-level area shall be used as a delineation of the project electricity system (e.g. where regional dispatch centres are required to comply with dispatch orders of the national dispatch centre then area controlled by the national dispatch centre shall be used);

(c) Option 3. A delineation of the project electricity system defined by more than one independent dispatch areas, e.g., multi-national power pools.

In the case of this generic CPA the electricity system is defined by the Option 2 "*the project electricity system defined by the dispatch area of the dispatch centre responsible for scheduling and dispatching electricity generated by the project activity.*

Step 2. Choose whether to include off-grid power plants in the project electricity system (optional).

In the Step 2**,** Option I will be chosen to calculate the operating margin and build margin emission factor because there is no off-grid power plant to be included in the project electricity system.

Step 3. Select a method to determine the operating margin (OM)

The calculation of the operating margin emission factor ($EF_{grid,OM,y}$) will be based on one of the following methods:

(g) Simple OM; or

(h) Simple adjusted OM; or

The simple OM method (Option a in paragraph 38) will be used if Low-cost/must-run resources constitute less than 50 per cent of total grid generation (excluding electricity generated by off-grid power plants) in average of the five most recent years, and the average of the five most recent years will be determined by using one of the approaches described below; or

$$\text{Share}_{LCMR} = \text{average}\left[\frac{EG_{LCMR_{y-4}}}{total_{y-4}}, \ldots, \frac{EG_{LCMR_y}}{total_y}\right]$$

$$\text{Share}_{LCMR} = \frac{average\left(EG_{LCMR_{y-4}}, \ldots, EG_{LCMR_y}\right)}{average\left(total_{y-4}, \ldots, total_y\right)}$$

Where:

- Share_{LCMR} = Share of the low cost/must run resources (per cent)
- EG_{LCMRy} = Electricity generation supplied to the project electricity system by the low cost/must run resources in year y (MWh)
- $total_y$ = Total electricity generation supplied to the project electricity system in year y (MWh)
- Y = The most recent year for which data is available

If the grid does not meet this requirement, the simple adjusted OM will be used.

Step 4. Calculate the operating margin emission factor according to the selected method

In addition, the OM emissions factor will be calculated using the ex-ante option. Thus, the emission factor will be determined once at the validation stage, thus no monitoring and recalculation of the emissions factor during the crediting period is required. A 3-year generation-weighted average will be used, based on the most recent data available at the time of submission of the CPA-DD to the DOE for validation.

If the simple OM will be used, the following equation applies:

$$EF_{grid,OMsimple,y} = \frac{\sum_m EG_{m,y} \times EF_{EL,m,y}}{\sum_m EG_{m,y}}$$

Where:

$EF_{grid,OM\ simple,y}$ = Simple operating margin CO_2 emission factor in year y (tCO_2/MWh)

$EG_{m,y}$ = Net quantity of electricity generated and delivered to the grid by power unit *m* in year *y* (MWh)

$EF_{EL,m,y}$ = CO_2 emission factor of power unit *m* in year *y* (tCO_2/MWh)

m = All grid power units serving the grid in year *y* except low-cost/must-run power units

y = The relevant year as per the data vintage chosen

Whereas if the simple adjusted OM will be used, the following equation applies:

$$EF_{grid,OM-adj,y} = (1-\lambda_y)\times\frac{\sum_m EG_{m,y}\times EF_{EL,m,y}}{\sum_m EG_{m,y}} + \lambda_y \times \frac{\sum_k EG_{k,y}\times EF_{EL,k,y}}{\sum_k EG_{k,y}}$$

$EF_{grid,OM-adj,y}$ = Simple adjusted operating margin CO_2 emission factor in year y (tCO_2/MWh)

λ_y: = Factor expressing the percentage of time when low-cost/must-run power units are on the margin in year *y*.

$EG_{m,y}$ = Net quantity of electricity generated and delivered to the grid by power unit *m* in year *y* (MWh)

$EG_{k,y}$ = Net quantity of electricity generated and delivered to the grid by power unit *k* in year *y* (MWh)

$EF_{EL,m,y}$ = CO_2 emission factor of power unit *m* in year *y* (tCO_2/MWh)

$EF_{EL,k,y}$ = CO_2 emission factor of power unit *k* in year *y* (tCO_2/MWh)

m = All grid power units serving the grid in year *y* except low-cost/must-run power units

k = All low-cost/must-run grid power units serving the grid in year *y*

y = The relevant year as per the data vintage chosen in Step 3

The parameter $EG_{m,y}$ is determined as per the provision in the monitoring tables.

The following equations are used to calculate $EF_{EL,m,y}$ according to Option A1 of the simple OM method.

$$EF_{EL,m,y} = \frac{\sum_i FC_{i,m,y}\times NCV_{i,y}\times EF_{CO2,i,y}}{EG_{m,y}}$$

Where:

$EF_{EL,m,y}$ = CO_2 emission factor of power unit *m* in year *y* (tCO_2/MWh)

$FC_{i,m,y}$ = Amount of fossil fuel type *i* consumed by power unit *m* in the year *y* (Mass or volume unit)

$NCV_{i,y}$ = Net calorific value (energy content) of fossil fuel type *i* in the year *y* (GJ/mass or volume unit)

$EF_{CO2,i,y}$ = CO_2 emission factor of fossil fuel type *i* in the year *y* (tCO_2/GJ)

$EG_{m,y}$ = Net quantity of electricity generated and delivered to the grid by power plant *m* in the year y (MWh). For grid power plants, it was determined as per the provisions in the monitoring tables.

m = All power units serving the grid in year *y* except low-cost/must-run power units

i = All fossil fuel types combusted in power unit *m* in year *y*

y = The relevant year.

The following equations are used to calculate $EF_{EL,m,y}$ and $EF_{EL,k,y}$ according to Option A2 of the simple adjusted OM method.

$$EF_{EL,m,y} = \frac{EF_{co2,m,i,y} \times 3.6}{\eta_{m,y}}$$

$$EF_{EL,k,y} = \frac{\sum_i FC_{i,k,y} \times NCV_{i,y} \times EF_{CO2,i,y}}{EG_{k,y}}$$

Where:

$EF_{EL,m,y}$ = CO_2 emission factor of power unit *m* in year *y* (tCO_2/MWh)

$EF_{EL,k,y}$ = CO_2 emission factor of power unit *k* in year *y* (tCO_2/MWh)

$FC_{i,m,y}$ = Amount of fossil fuel type *i* consumed by power unit *m* in the year *y* (Mass or volume unit)

$FC_{i,k,y}$ = Amount of fossil fuel type *i* consumed by power unit *k* in the year *y* (Mass or volume unit)

$NCV_{i,y}$ = Net calorific value (energy content) of fossil fuel type *i* in the year *y* (GJ/mass or volume unit)

$EF_{CO2,i,y}$ = CO_2 emission factor of fossil fuel type *i* in the year *y* (tCO_2/GJ)

$EG_{m,y}$ = Net quantity of electricity generated and delivered to the grid by power plant *m* in the year *y* (MWh)

$EG_{k,y}$ = Net quantity of electricity generated and delivered to the grid by power plant *k* in the year *y* (MWh)

$\eta_{m,y}$ = Average net energy conversion efficiency of power unit *m* in year *y* (ratio)

m = All power units serving the grid in year *y* except low-cost/must-run power units

y = The relevant year as per the data vintage chosen in Step 3

3.6 = Conversion factor (GJ/MWh)

k = All low-cost/must run grid power units serving the grid in year *y*

i = All fossil fuel types combusted in power unit *m* in year

If the simple adjusted OM will be used, the λ_y is defined as follows:

λ_y (%)= (number of hours low-cost/must-run sources are on margin in year y)/8,760 hours per year

According to methodology Lambda (λy) should be calculated as follows:

- Step i) Plot a load duration curve. Collect load data (typically in MW) for each hour of the year y, and sort and plot the load data from the highest to the lowest annual system load.
- Step ii) Collect the electricity generation data from each low-cost/must-run power plant/unit. Calculate the total annual generation (in MWh) from low-cost/must-run power plants/units.

- Step iii) – Find out the intersection on the load duration curve in order to determine a period LCMR sources are on the margin. To find the intersection, fill the area under the load duration curve by the total generation (in MWh) from LCMR power plants/units. To fill the area, plot a horizontal line across the load duration curve such that the area under horizontal line and the curve right from the intersection point (MW times hours) equals the total generation (in MWh) from low-cost/must-run power plants/units.

- Step iv) - Determine the "Number of hours for which low-cost/must-run sources are on the margin in year y. At the step where cumulative electricity generation reaches the level of the total generation (in MWh) from low-cost/must-run power plants/units. This is the number of hours for which low cost/must-run sources are on the margin in year y If the lines do not intersect, then one may conclude that low-cost/must-run sources do not appear on the margin and λ_y is equal to zero.

Step 5. Calculate the build margin (BM) emission factor.

The BM factor will be calculated using ex ante option (Option 1), based on the most recent information available on units already built for sample group m at the time of CPA-DD submission to the DOE for validation. For the second crediting period, the build margin emission factor will be updated based on the most recent information available on units already built at the time of submission of the request for renewal of the crediting period to the DOE. For the third crediting period, the build margin emission factor calculated for the second crediting period will be used. This option does not require monitoring the emission factor during the crediting period.

The build margin emission factor (BM) will be calculated using the following equation:

$$EF_{grid,BM,y} = \frac{\sum_m EG_{m,y} \times EF_{EL,m,y}}{\sum_m EG_{m,y}}$$

Where:

$EF_{grid,BM,y}$	=	Build margin CO_2 emission factor in year *y* (t CO_2/MWh)
$EG_{m,y}$	=	Net quantity of electricity generated and delivered to the grid by power unit *m* in year *y* (MWh)
$EF_{EL,m,y}$	=	CO_2 emission factor of power unit *m* in year *y* (t CO_2/MWh)
m	=	Power units included in the build margin
y	=	Most recent historical year for which electricity generation data is available

Step 6. Calculate the combined margin emissions factor.

The combined margin emission factor (CM) is based on one of the following:

(a) Weighted Average CM; or

(b) Simplified CM

The (a) option (Weighted average CM) should be used as the preferred option, and those conditions required to use (b) option do not occur, so (a) option is the chosen method to calculate de CM.

Using the weighted average CM, the emission factor is calculated as follows:

$$EF_{grid,CM,y} = EF_{grid,OM,y} \times w_{OM} + EF_{grid,BM,y} \times w_{BM}$$

Where:

$EF_{grid,BM,y}$ = Build margin CO_2 emission factor in year *y* (t CO_2/MWh)

$EF_{grid,OM,y}$ = Operating margin CO_2 emission factor in year *y* (t CO_2/MWh)

w_{OM} = Weighting of operating margin emissions factor (per cent)

w_{BM} = Weighting of build margin emissions factor (per cent)

The default values for w_{OM} and w_{BM} for the first crediting period and type of source used are:

Solar-wind power generation	Hydroelectric power generation
w_{OM} = 0.75	w_{OM} = 0.50
w_{BM} = 0.25	w_{BM} = 0.50

These values are applicable for the first crediting period being different for the subsequent, as stated in the TOOL 07.

Calculations shall be based on data from an official source and made publicly available. For Colombia, the data for the national grid (SIN) will be provided by XM[5], while for Chile, the data for the SEN grid will be provided by the *Comisión Nacional de Energía* (CNE).

Calculation of $EG_{PJ,y}$

a. Greenfield power plants

If the project activity is the installation of a greenfield power plant, then:

$$EG_{PJ,y} = EG_{PJ,facility,y} \quad \text{Equation (2)}$$

Where:

$EG_{PJ,facility,y}$ = Quantity of net electricity generation supplied by the project plant/unit to the grid in year *y* (MWh)

Project Emissions

For this Generic CPA, PE_y = 0.

CO_2 emissions from on-site consumption of fossil fuels due to the project activity will be neglected.

Leakage

Not applicable

Emission reductions

[5] Company that manages the wholesale energy market and the development of energy and information solutions and services.

Emission reductions are calculated as follows:

$$ER_y = BE_y - PE_y - LE_y$$ Equation (5)

Where:

ER_y = Emission reductions in year y (t CO_2)

BE_y = Baseline Emissions in year y (t CO_2)

PE_y = Project emissions in year y (t CO_2)

LE_y = Leakage emissions in year y (t CO_2)

I.6.2 Data and parameters fixed ex ante

Data/Parameter	**$EF_{grid,y}$**
Data unit	t CO_2e/kWh
Description	Combined margin CO_2 emission factor for grid connected power generation in year y calculated using the latest version of the .Tool to calculate the emission factor for an electricity system
Source of data	- As per the "Tool to calculate the emission factor for an electricity system" Version 7.0.
Value(s) applied	At CPA level
Choice of data or Measurement methods and procedures	As per the requirements in "Tool to calculate the emission factor for an electricity system" Version 7.0.
Purpose of data	Baseline Emissions calculation
Additional comment	The grid emission factor will be fixed ex ante in all CPAs of this category

I.6.3 Modalities for ex ante calculation of emission reductions

As mentioned previously ex-ante emission reduction is estimated using equation:

$$\boldsymbol{ER_y = BE_y - PE_y \ \ LE}$$ Equation (6)

Where;

ER_y = Emission reduction in year y (tCO_2/y)
BE_y = Baseline emission in year y (tCO_2/y)
PE_y = Project emission in year y (tCO_2/y)
LE_y = Leakage emission year y (tCO_2/y)

PE_y = 0

CO_2 emissions from on-site consumption of fossil fuels due to the project activity will be neglected.

LE_y = 0

Thus, $ER_y = BE_y - 0 - 0$

Also,
Baseline Emissions in year y = (Quantity of net electricity generation that is produced and fed into the grid as a result of the implementation of the CDM project activity in year y (MWh)) X (Combined margin CO_2

emission factor for grid connected power generation in year y calculated using the latest version of the "Tool to calculate the emission factor for an electricity system" (tCO_2/MWh)

$BE_y = EG_{PJ,y} \text{ x } EF_{grid,y}$ Equation (7)

Using the "Tool to calculate the emission factor for an electricity system (Version 07.0.0) it will be calculated the $EFgrid, y.$ (Combined margin CO_2 emission factor for grid connected power generation in year y)

$EF_{grid,y} = EF_{grid,OM,y} \text{ x } W_{OM} + EF_{grid,BM,y} \text{ x } W_{BM}$ Equation (8)

Where;

$EF_{grid,BM}$ = Build margin CO_2 emission factor in year *y* (tCO_2/MWh)
$EF_{grid,OM,y}$ = Operating margin CO_2 emission factor in year *y* (tCO_2/MWh)
W_{OM} = Weighting of operating margin emissions factor (%)
W_{BM} = Weighting of build margin emissions factor (%)

Therefore, the $BEy,$ is calculated as follows:

$BE_y = EG_{PJ,y} \text{ x } EF_{grid,y}$ Equation (9)
Where:

BE_y = Baseline emission in year y
$EG_{PJ,y}$ = Quantity of net electricity generation supplied by the project plant/unit to the grid in year *y* (MWh)

To estimate $EG_{PJ,y}$ ex ante the following equation will be applied:

$EG_{PJ,y} = \text{Plant capacity (MW) x Plant Load Factor x 24 x 365}$ Equation (11)

Where:

Plant Load Factor = Measure of a power plant's capacity utilisation

I.7. Monitoring plan

I.7.1. Data and parameters to be monitored

Data/Parameter	$EG_{PJ,facility,y}$
Data unit	MWh
Description	Quantity of net electricity generation supplied by the project plant/unit to the grid in year *y*
Source of data	Electricity meter(s)
Value(s) applied	Specific to each CPA (each CPA will specify this value in accordance with project parameters)
Measurement methods and procedures	This parameter should be either monitored using bi-directional energy meter or calculated as difference between (a) the quantity of electricity supplied by the project plant/unit to the grid; and (b) the quantity of electricity the project plant/unit from the grid. In case it is calculated then the following parameters shall be measured: a) The quantity of electricity supplied by the project plant/unit to the grid; and b) The quantity of electricity delivered to the project plant/unit from the grid
Monitoring frequency	Continuous monitoring, hourly measurement and at least monthly recording
QA/QC procedures	The meters will be checked and calibrated according to the relevant national electric industry standards and regulations. Data measured by the main meter will be cross checked by the data from invoices or sales receipts or official public available data.
Purpose of data	Calculation of baseline emissions
Additional comment	Based on methodology AMS-I.D, if the project activity is installation of a Greenfield power plant, then: $EG_{PJ,y} = EG_{PJ,facility,y}$ Net electricity supplied to the grid by the project activity will be calculated using the measured values for electricity exported to/imported from the national grid.

I.7.2 Sampling plan

No sampling plan is applied in CPAs of this category.

I.7.3 Other elements of monitoring plan

Each CPA will detail any other relevant element of the monitoring plan in this section.

SECTION J. Crediting period type and duration

7 years and 0 month, renewable

SECTION K. Eligibility criteria for inclusion of CPAs

Eligibility criteria for inclusion of CPAs in the PoA are following detailed including their usability to assess the inclusion of CPAs in the generic CPA-DD:

No.	Eligibility criterion category	Eligibility criterion – required condition	Supporting evidence for inclusion
1	Geographical boundaries	Each CPA is located within the physical/geographical boundary of PoA (Colombia or Chile)	Location and boundary are specified in the Section A.2 of the PoA-DD and in each CPA-DD. - Information for geographical coordinate of CPA is also included in the Technical Feasibility Study.
2	Avoid double counting	Each CPA will not be involved in another registered or under validation as a CDM project activity or as a CPA under the proposed or another PoA or as other GHG reduction project.	Declaration of double counting check, unique GPS coordinates.
3	Registration	The CME before adding a CPA under this PoA shall review the project activity database on the UNFCCC website to ensure that the CPA is not already registered as a CDM project or a CPA of another PoA or as a project activity that have been deregistered.	Comparation with project information provided in UNFCCC website and description in each CPA-DD. Declaration of the CPA implementer.
4	Specification of the technology/measure	Each small-scale CPA will introduce photovoltaic power plant with an installed capacity less than or equal to 15 MW and a load factor at least 15%. Specification of technology/ measures proposed to be implemented under the CPA. Specification of technology/measure shall include the type, capacity and other key features of the design of the systems ranges of load factors, sizes of installation. The CPA-DD shall incorporate relevant details on the technological specifications, including level and type of service, performance specifications including compliance with testing/certifications.	A brief description of the technologies it will be used in the CPA, are described in the Section A.3 of this PoA-DD and section H4, more specific information of the technology will be detail in each CPA-DD. Description of the technologies including expected lifetime, capacity, plant load factor, and any manufacturer specifications will be included in the CPA-DD. Information will be obtained from the Technical Supplier Offer and the Technical Feasibility Study.
5	Start date	The start date of each CPA will be the date on which the project	1st Contract of the construction or contract of equipment or

		participants commit to making expenditures for the construction of the main equipment or facility. The start date of any proposed CPA will be on or after the start date of the proposed CDM PoA, i.e., 03/02/2020.	facilities.
6	Compliance with the applicability conditions of AMSI.D	Each CPA will satisfy the applicability conditions and monitoring methodologies as specified in the AMS-I.D. (Version 18.0) and other applied methodological regulatory documents	Applicability conditions of AMS-I.D. (Version.18.0) Section B of CPA-DD. Information will be obtained from the Technical Supplier Offer and the Technical Feasibility Study.
7	Additionality	Each CPA under this category will follow the process in Section C of PoA-DD to demonstrate additionality of the small-scale project activities (TOOL 21). As stated in the TOOL 21, CPAs that are included in the positive list of technologies are defined as automatically additional for project sizes up to and including the small-scale CDM thresholds (e.g., installed capacity up to 15 MW). For the positive list of technologies, the project proponent shall refer to methodological tool "TOOL32: Positive lists of technologies". According to the paragraph of the 17 of the TOOL 32, the solar photovoltaic technologies are included in the positive list.	Description of the process in the Section C of the PoA-DD. In each CPA, the demonstration of the additionality will be described in the Section F of CPA-DD. The CPA will be automatically additional since the solar photovoltaic technology is included in TOOL 32 Version 2.0.0 in the positive list. Information of the installed capacity will be obtained from the Technical Supplier Offer and the Technical Feasibility Study.
8	Compliance with other requirements of the applied methodologies, the applied standardized baselines and the other applied methodological regulatory documents	Each CPA will satisfy the applicability conditions and monitoring methodologies and other applied methodological regulatory documents	Applicability conditions of other requirements, applied methodologies, standardized baselines and other applied methodological regulatory documents are explained in Section B of CPA-DD.
9	Local Stakeholder Consultation and Environmental Impact Analysis	Each CPA will hold local stakeholder consultation before the inclusion in PoA and construction. Each CPA will conduct environmental impact analysis as per the National Environmental Regulation of the country where the CPA is located.	Minutes, stakeholder consultation reports, etc. will be provided. Environmental Impact Assessment Report and approval if it is required by the national regulation.

10	Public funding	Each CPA will provide an affirmation that funding from Annex I party, if any, does not result in a diversion of official development assistance	Affidavit on No public Funding from Annex I party.
11	Target group	The capacity of each power plant will not exceed 15MW over the entire crediting period as small-scale CDM project activities.	Described in the Section A.1 of PoA-DD and CPA-DD. The CPA-DD will be grid connected.
12	Sampling	Not applicable, Sampling procedures are not applied.	N/A
13	Debundling check	Each CPA is not a debundled component of a large-scale project activity as per Para.15 of Methodological tool Assessment of debundling for small-scale project activities. The tool 20 shall be applied: “Assessment of debundling for small-scale project activities” (Version 13.1)	Confirmation that CPA does not consist in a de-bundled component of a larger project activity, being qualified as a small-scale CDM project activity in each CPA-DD. This information will be checked in the Technical Supplier Offer and the Technical Feasibility Study
14	Small-scale or microscale thresholds	The capacity of each power plant will not exceed 15MW over the entire crediting period as small-scale CDM project activities.	As described in the Section A.3 of the CPA-DD, the capacity of each power plant will not exceed 15MW over the entire crediting period according to the Technical Supplier Offer and the Technical Feasibility Study.

PART II. Generic component project activity (CPA)

SECTION H. Description of generic CPA

H.1 Title of generic CPA

Small Scale Hydro Generic CPA 05

H.2 Reference number of generic CPA

CPA 05

H.3 Purpose and general description of generic CPA

The purpose of the PoA is to promote the development of hydro power plants with renewable sources only connected to the national grid of each country in order to pour the electricity obtained to it avoiding generation from mix of fuels. Under this CPA being implemented the installed plant will provide electricity to a national or regional grid.

The proposed generic CPA will include small scale project activities Type I, whose total installed capacity will be up to 15 MW.

The electricity generated from the project activity contributes to an average GHG reductions estimated as tCO_2/year.

H.4. Technologies/measures

The detailed technical description and technical details will be given in the specific CPA-DD.

Technology	Small scale hydro power projects
Generation Capacity	Up to 15 MW
Applicability	Greenfield power plant;
Use of the produced electricity	The CPAs will displace electricity from an electricity distribution system that is or would have been supplied by at least one fossil fuel fired generating unit i.e., in the absence of the project activity, the users would have been supplied electricity from the national or regional grid.
Facilities, systems and equipment that will be installed	Turbines, generators, transformers and electric meters
Lifetime of main equipment	At least 20 years according manufacturer specifications
Capacity Factor	15 - 95 %, based on projects developed in the region[6]
Monitoring equipment	Electric meters at the grid interface.

As the Generic CPA only includes Greenfield project activities, prior to the implementation of the corresponding CPAs there were no existing technologies at the same sites.
In addition, the baseline scenario is that the electricity delivered to the grid by the project activity would have otherwise been generated by the operation of grid-connected power plants and by the addition of new generation sources into the grid.

[6] As per Irena site in Latin America: https://www.irena.org/costs/Charts/Hydropower

SECTION I. Application of methodologies and standardized baselines

I.1 References to methodologies and standardized baselines

The methodology AMS-I.D "Grid connected renewable electricity generation" (Version 18.0.0) will be applied. This methodology includes the use of the following Tools:

- TOOL07 - Tool to calculate the emission factor for an electricity system (Version 07.0.0)
- TOOL21 - Demonstration of additionality of small-scale project activities (Version 13.1)

In addition, the methodology ACM0002: Grid-connected electricity generation from renewable sources --- Version 20.0 will be used to calculate project emissions.

I.2 Applicability of methodologies and standardized baselines

Each Small Scale CPA under this generic category will meet the applicability conditions of the approved consolidated baseline and monitoring methodology AMS-I.D, Version 18.0, Sectoral Scope 1, as described below:

Id.	Applicability	Project activity vis-à-vis applicability Conditions
1	This methodology is applicable to project activities that: • install a Greenfield power plant; • involve a capacity addition to (an) existing plant(s); • involve a retrofit of (an) existing operating plants/units; • involve a rehabilitation of (an) existing plant(s)/unit(s) or • involve a replacement of (an) existing plant(s)/unit(s).	The CPA-XXX under this generic CPA will be the installation of a Greenfield power plant; Hence this criterion is applicable.
2	In case of hydro-power project activities following conditions apply: a) The project activity is implemented in an existing reservoir with no change in the volume of reservoir; b) The project activity is implemented in an existing reservoir, where the volume of reservoir is increased and the power density of the project activity, as per definitions given in the project emissions section, is greater than 4 W/m^2 c) The project activity results in new reservoirs and the power density of the power plant, as per definitions given in the project emissions section, is greater than 4 W/m^2	These conditions will be demonstrated at CPA level. • In case of being installed in an existing reservoir with no change in the volume or there is an increased, the power density is greater than 4 W/m^2. • In case of resulting in new reservoirs, the power density is greater than 4 W/m^2 The power density will be reported at CPA level.
3	If the new unit has both renewable and non-renewable components (e.g. a wind/diesel unit), the eligibility limit of 15 MW for a small-scale CDM project activity applies only to the renewable component. If the new unit co-fires fossil fuel, the capacity of the entire unit shall not exceed the limit of 15 MW.	CPA-XXX will have an installed capacity up to 15MW.
4	Combined heat and power (co-generation) systems are not eligible under this category.	CPA-XXX will not involve combined heat and power (co-generation) systems
5	In the case of project activities that involve the capacity addition of renewable energy generation units at an	The project activity does not involve a capacity addition.

	existing renewable power generation facility, the added capacity of the units added by the project should be lower than 15 MW and should be physically distinct from the existing units.	
6	In the case of retrofit, rehabilitation or replacement, to qualify as a small-scale project, the total output of the retrofitted, rehabilitated or replacement power plant/unit shall not exceed the limit of 15 MW.	The project activity does not involve a retrofit, rehabilitation or replacement.
7	In the case of landfill gas, waste gas, wastewater treatment and agro-industries projects, recovered methane emissions are eligible under a relevant Type III category. If the recovered methane is used for electricity generation for supply to a grid then the baseline for the electricity component shall be in accordance with procedure prescribed under this methodology	Not applicable since landfill gas, waste gas, wastewater treatment and agro-industries project activities are not included in this generic CPA
8	In case biomass is sourced from dedicated plantations, the applicability criteria in the tool "Project emissions from cultivation of biomass" shall apply	Not applicable since biomass project activities are not included in this generic CPA

I.3 Application of multiple methodologies

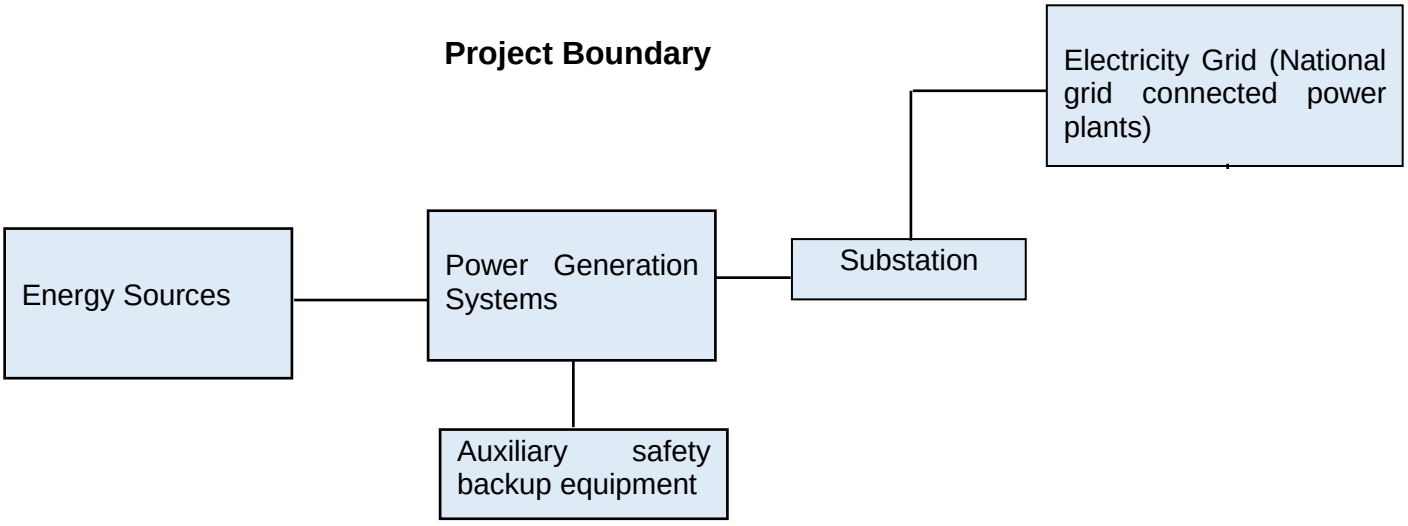
The organization of the PoA is done in line with the methodologies used for the emission reductions calculation and monitoring in each category. Thus, in each Small-scale CPA only one methodology is applied, and this section is therefore, not applicable.

I.4 Project boundary, sources and greenhouse gases (GHGs)

Source		GHG	Included?	Justification/Explanation
Baseline	CO_2 emissions from electricity generation in fossil fuel fired power plants that are displaced due to the project activity	CO_2	Yes	Main source of emissions
		CH_4	No	Minor source of emissions
		N_2O	No	Minor source of emissions
Project activity	For dry or flash steam geothermal power plants, emissions of CH4 and CO2 from non-condensable gases contained in geothermal steam	CO_2	No	Not applicable since geothermal project activities are not included in this CPA category.
		CH_4	No	
		N_2O	No	
	For binary geothermal power plants, fugitive emissions of CH4 and CO2 from non-condensable gases contained in geothermal steam	CO_2	No	Not applicable since binary geothermal power plants and geothermal power plants are not included in this generic CPA
		CH_4	No	
		N_2O	No	
	For binary geothermal power plants, fugitive emissions of hydrocarbons such as n-butane and isopentane (working fluid) contained in the heat exchangers	CO_2	No	Not applicable since binary geothermal power plants and geothermal power plants are not included in this generic CPA
		CH_4	No	
		N_2O	No	
	CO_2 emissions from combustion of fossil fuels for electricity generation in solar thermal power plants and geothermal power plants	CO_2	No	Not applicable since solar thermal power plants and geothermal power plants are not included in this generic CPA
		CH_4	No	
		N_2O	No	
	For hydro power plants, emissions of CH_4 from the reservoir	CO_2	No	Minor source of emissions
		CH_4	Yes	Main source of emissions
		N_2O	No	Minor source of emissions

The greenhouse gases emissions within the project activity boundaries are associated to the baseline, produces from electricity generation in fossil fuel-fired power plants connected to the national grid.

The project activity will supply zero-emissions electricity to the grid, thus avoiding greenhouse gases emissions by displacing the dispatch of thermoelectric power plants. As it is shown in the following diagram blow, there are no greenhouse gas emissions associated with the project activity.



I.5 Establishment and description of baseline scenario

According to methodology AMS-I.D version 18.0, the baseline scenario will be:

a) Baseline scenario for Greenfield power plant: the baseline scenario is that the electricity delivered to the grid by the project activity would have otherwise been generated by the operation of grid-connected power plants and by the addition of new generation sources into the grid". The CPAs consisting of a Greenfield renewable plant that delivers electricity to the National Grid of each country, and the grid emission factor is calculated in combined margin manner according to procedures in "Tool to Calculate the Emission Factor for an Electricity System (version 07.0)"

I.6 Estimation of emission reductions

I.6.1 Explanation of methodological choices

Baseline emissions

Baseline emissions include only CO_2 emissions from electricity generation in power plants that are displaced due to the project activity. The methodology assumes that all project electricity generation above baseline levels would have been generated by existing grid-connected power plants and the addition of new grid-connected power plants. The baseline emissions are to be calculated as follows:

$$BE_y = EG_{PJ,y} \times EF_{grid,y} \qquad \text{Equation (1)}$$

Where:

BE_y = Baseline emissions in year *y* (t CO_2)

$EG_{PJ,y}$ = Quantity of net electricity generation that is produced and fed into the grid as a result of the implementation of the CDM project activity in year y (MWh)

$EF_{grid,y}$ = Combined margin CO_2 emission factor for grid connected power generation in year *y* calculated using the latest version of the "Tool to calculate the emission factor for an electricity system (tCO_2/MWh)

Calculations will be based on data from an official source (where available)[2] and made publicly available.

The emission factor will be calculated in a transparent and conservative manner as follows: A combined margin (CM), consisting of the combination of operating margin (OM) and build margin (BM) according to the procedures prescribed in the "Tool to calculate the emission factor for an electricity system". The steps for calculate the emission factor, will be the following ones:

Step 1. Identify the relevant electricity systems;

Step 2. Choose whether to include off-grid power plants in the project electricity system (optional);

Step 3. Select a method to determine the operating margin (OM);

Step 4. Calculate the operating margin emission factor according to the selected method;

Step 5. Calculate the build margin (BM) emission factor;

Step 6. Calculate the combined margin (CM) emission factor.

Step 1. Identify the relevant electricity systems

For determining the electricity emission factors, the project participants shall identify the relevant project electricity system. Project participants may delineate the project electricity system using any of the following options:

(a) Option 1. A delineation of the project electricity system and connected electricity systems published by the DNA or the group of the DNAs of the host country(ies), In case a delineation is provided by a group of DNAs, the same delineation should be used by all the project participants applying the tool in these countries;

(b) Option 2. A delineation of the project electricity system defined by the dispatch area of the dispatch centre responsible for scheduling and dispatching electricity generated by the project activity. Where the dispatch area is controlled by more than one dispatch centre, i.e., layered dispatch area, the higher-level area shall be used as a delineation of the project electricity system (e.g., where regional dispatch centres are required to comply with dispatch orders of the national dispatch centre then area controlled by the national dispatch centre shall be used);

(c) Option 3. A delineation of the project electricity system defined by more than one independent dispatch areas, e.g., multi-national power pools.

In the case of this generic CPA the electricity system is defined by the Option 2 "*the project electricity system defined by the dispatch area of the dispatch centre responsible for scheduling and dispatching electricity generated by the project activity.*

Step 2. Choose whether to include off-grid power plants in the project electricity system (optional).

In the Step 2**,** Option I will be chosen to calculate the operating margin and build margin emission factor because there is no off-grid power plant to be included in the project electricity system.

Step 3. Select a method to determine the operating margin (OM)

The calculation of the operating margin emission factor ($EF_{grid,OM,y}$) will be based on one of the following methods:

(i) Simple OM; or

(j) Simple adjusted OM; or

The simple OM method (Option a in paragraph 38) will be used if Low-cost/must-run resources constitute less than 50 per cent of total grid generation (excluding electricity generated by off-grid power plants) in average of the five most recent years, and the average of the five most recent years will be determined by using one of the approaches described below; or

$$\text{Share}_{LCMR} = \text{average}\left[\frac{EG_{LCMR_{y-4}}}{total_{y-4}}, \ldots, \frac{EG_{LCMR_y}}{total_y}\right]$$

$$\text{Share}_{LCMR} = \frac{average\left(EG_{LCMR_{y-4}}, \ldots, EG_{LCMR_y}\right)}{average\left(total_{y-4}, \ldots, total_y\right)}$$

Where:

- Share_{LCMR} = Share of the low cost/must run resources (per cent)
- EG_{LCMRy} = Electricity generation supplied to the project electricity system by the low cost/must run resources in year y (MWh)
- $total_y$ = Total electricity generation supplied to the project electricity system in year y (MWh)
- Y = The most recent year for which data is available

If the grid does not meet this requirement, the simple adjusted OM will be used.

Step 4. Calculate the operating margin emission factor according to the selected method

In addition, the OM emissions factor will be calculated using the ex-ante option. Thus, the emission factor will be determined once at the validation stage, thus no monitoring and recalculation of the emissions factor during the crediting period is required. A 3-year generation-weighted average will be used, based on the most recent data available at the time of submission of the CPA-DD to the DOE for validation.

If the simple OM will be used, the following equation applies:

$$EF_{grid,OMsimple,y} = \frac{\sum_m EG_{m,y} \times EF_{EL,m,y}}{\sum_m EG_{m,y}}$$

Where:

$EF_{grid,OM\ simple,y}$	= Simple operating margin CO_2 emission factor in year y (tCO_2/MWh)
$EG_{m,y}$	= Net quantity of electricity generated and delivered to the grid by power unit *m* in year *y* (MWh)
$EF_{EL,m,y}$	= CO_2 emission factor of power unit *m* in year *y* (tCO_2/MWh)
m	= All grid power units serving the grid in year *y* except low-cost/must-run power units
y	= The relevant year as per the data vintage chosen

Whereas if the simple adjusted OM will be used, the following equation applies:

$$EF_{grid,OM-adj,y} = (1-\lambda_y)\times\frac{\sum_m EG_{m,y}\times EF_{EL,m,y}}{\sum_m EG_{m,y}} + \lambda_y \times \frac{\sum_k EG_{k,y}\times EF_{EL,k,y}}{\sum_k EG_{k,y}}$$

$EF_{grid,OM-adj,y}$	= Simple adjusted operating margin CO_2 emission factor in year y (tCO_2/MWh)
λ_y:	= Factor expressing the percentage of time when low-cost/must-run power units are on the margin in year *y*.
$EG_{m,y}$	= Net quantity of electricity generated and delivered to the grid by power unit *m* in year *y* (MWh)
$EG_{k,y}$	= Net quantity of electricity generated and delivered to the grid by power unit *k* in year *y* (MWh)
$EF_{EL,m,y}$	= CO_2 emission factor of power unit *m* in year *y* (tCO2/MWh)
$EF_{EL,k,y}$	= CO_2 emission factor of power unit *k* in year *y* (tCO2/MWh)
m	= All grid power units serving the grid in year *y* except low-cost/must-run power units
k	= All low-cost/must-run grid power units serving the grid in year *y*
y	= The relevant year as per the data vintage chosen in Step 3

The parameter $EG_{m,y}$ is determined as per the provision in the monitoring tables.

The following equations are used to calculate $EF_{EL,m,y}$ according to Option A1 of the simple OM method.

$$EF_{EL,m,y} = \frac{\sum_i FC_{i,m,y}\times NCV_{i,y}\times EF_{CO2,i,y}}{EG_{m,y}}$$

Where:

$EF_{EL,m,y}$	= CO_2 emission factor of power unit *m* in year *y* (tCO_2/MWh)
$FC_{i,m,y}$	= Amount of fossil fuel type *i* consumed by power unit *m* in the year *y* (Mass or volume unit)
$NCV_{i,y}$	= Net calorific value (energy content) of fossil fuel type *i* in the year *y* (GJ/mass or volume unit)
$EF_{CO2,i,y}$	= CO_2 emission factor of fossil fuel type *i* in the year *y* (tCO_2/GJ)
$EG_{m,y}$	= Net quantity of electricity generated and delivered to the grid by power plant *m* in the year y (MWh). For grid power plants, it was determined as per the provisions in the monitoring tables.
m	= All power units serving the grid in year *y* except low-cost/must-run power units
i	= All fossil fuel types combusted in power unit *m* in year *y*
y	= The relevant year.

The following equations are used to calculate $EF_{EL,m,y}$ and $EF_{EL,k,y}$ according to Option A2 of the simple adjusted OM method.

$$EF_{EL,m,y} = \frac{EF_{co2,m,i,y} \times 3.6}{\eta_{m,y}}$$

$$EF_{EL,k,y} = \frac{\sum_i FC_{i,k,y} \times NCV_{i,y} \times EF_{CO2,i,y}}{EG_{k,y}}$$

Where:

$EF_{EL,m,y}$	= CO_2 emission factor of power unit *m* in year *y* (tCO_2/MWh)
$EF_{EL,k,y}$	= CO_2 emission factor of power unit *k* in year *y* (tCO_2/MWh)
$FC_{i,m,y}$	= Amount of fossil fuel type *i* consumed by power unit *m* in the year *y* (Mass or volume unit)
$FC_{i,k,y}$	= Amount of fossil fuel type *i* consumed by power unit *k* in the year *y* (Mass or volume unit)
$NCV_{i,y}$	= Net calorific value (energy content) of fossil fuel type *i* in the year *y* (GJ/mass or volume unit)
$EF_{CO2,i,y}$	= CO_2 emission factor of fossil fuel type *i* in the year *y* (tCO_2/GJ)
$EG_{m,y}$	= Net quantity of electricity generated and delivered to the grid by power plant *m* in the year *y* (MWh)
$EG_{k,y}$	= Net quantity of electricity generated and delivered to the grid by power plant *k* in the year *y* (MWh)
$\eta_{m,y}$	= Average net energy conversion efficiency of power unit *m* in year *y* (ratio)
m	= All power units serving the grid in year *y* except low-cost/must-run power units
y	= The relevant year as per the data vintage chosen in Step 3
3.6	= Conversion factor (GJ/MWh)
k	= All low-cost/must run grid power units serving the grid in year *y*
i	= All fossil fuel types combusted in power unit *m* in year

If the simple adjusted OM will be used, the λ_y is defined as follows:

λ_y (%)= (number of hours low-cost/must-run sources are on margin in year y)/8,760 hours per year

According to methodology Lambda (λy) should be calculated as follows:

- Step i) Plot a load duration curve. Collect load data (typically in MW) for each hour of the year y, and sort and plot the load data from the highest to the lowest annual system load.
- Step ii) Collect the electricity generation data from each low-cost/must-run power plant/unit. Calculate the total annual generation (in MWh) from low-cost/must-run power plants/units.
- Step iii) – Find out the intersection on the load duration curve in order to determine a period LCMR sources are on the margin. To find the intersection, fill the area under the load duration curve by the total generation (in MWh) from LCMR power plants/units. To fill the area, plot a horizontal line across the load duration curve such that the area under horizontal line and the curve right from the intersection point (MW times hours) equals the total generation (in MWh) from low-cost/must-run power plants/units.
- Step iv) - Determine the "Number of hours for which low-cost/must-run sources are on the margin in year y. At the step where cumulative electricity generation reaches the level of the total generation (in MWh) from low-cost/must-run power plants/units. This is the number of hours for

which low-cost/must-run sources are on the margin in year y If the lines do not intersect, then one may conclude that low-cost/must-run sources do not appear on the margin and λ_y is equal to zero.

Step 5. Calculate the build margin (BM) emission factor.

The BM factor will be calculated using ex ante option (Option 1), based on the most recent information available on units already built for sample group m at the time of CPA-DD submission to the DOE for validation. For the second crediting period, the build margin emission factor will be updated based on the most recent information available on units already built at the time of submission of the request for renewal of the crediting period to the DOE. For the third crediting period, the build margin emission factor calculated for the second crediting period will be used. This option does not require monitoring the emission factor during the crediting period.

The build margin emission factor (BM) will be calculated using the following equation:

$$EF_{grid,BM,y} = \frac{\sum_m EG_{m,y} \times EF_{EL,m,y}}{\sum_m EG_{m,y}}$$

Where:

$EF_{grid,BM,y}$	=	Build margin CO_2 emission factor in year *y* (t CO_2/MWh)
$EG_{m,y}$	=	Net quantity of electricity generated and delivered to the grid by power unit *m* in year *y* (MWh)
$EF_{EL,m,y}$	=	CO_2 emission factor of power unit *m* in year *y* (t CO_2/MWh)
m	=	Power units included in the build margin
y	=	Most recent historical year for which electricity generation data is available

Step 6. Calculate the combined margin emissions factor.

The combined margin emission factor (CM) is based on one of the following:

(a) Weighted Average CM; or

(b) Simplified CM

The (a) option (Weighted average CM) should be used as the preferred option, and those conditions required to use (b) option do not occur, so (a) option is the chosen method to calculate de CM.

Using the weighted average CM, the emission factor is calculated as follows:

$$EF_{grid,CM,y} = EF_{grid,OM,y} \times w_{OM} + EF_{grid,BM,y} \times w_{BM}$$

Where:

$EF_{grid,BM,y}$	=	Build margin CO_2 emission factor in year *y* (t CO_2/MWh)
$EF_{grid,OM,y}$	=	Operating margin CO_2 emission factor in year *y* (t CO_2/MWh)
w_{OM}	=	Weighting of operating margin emissions factor (per cent)
w_{BM}	=	Weighting of build margin emissions factor (per cent)

The default values for w_{OM} and w_{BM} for the first crediting period and type of source used are:

Solar-wind power generation	Hydroelectric power generation
w_{OM} = 0.75	w_{OM} = 0.50
w_{BM} = 0.25	w_{BM} = 0.50

These values are applicable for the first crediting period being different for the subsequent, as stated in the TOOL 07.

Calculation of $EG_{PJ,y}$

a. Greenfield power plants

If the project activity is the installation of a greenfield power plant, then:

$$EG_{PJ,y} = EG_{PJ,facility,y} \qquad \text{Equation (2)}$$

Where:

$EG_{PJ,facility,y}$ = Quantity of net electricity generation supplied by the project plant/unit to the grid in year *y* (MWh)

Project Emissions

CO_2 emissions from on-site consumption of fossil fuels due to the project activity will be neglected.

For Emissions from water reservoirs of hydro power plants, project emissions have to be considered following the procedure described in the most recent version of "ACM0002: Grid-connected electricity generation from renewable sources":

To calculate de emission from water reservoirs of hydro power plants: $PE_{HP,y}$

$$PD = \frac{Cap_{PJ} - Cap_{BL}}{A_{PJ} - A_{BL}} \qquad \text{Equation (5)}$$

Where:

PD = Power density of the project activity (W/m^2)

Cap_{PJ} = Installed capacity of the hydro power plant after the implementation of the project activity (W)

Cap_{BL} = Installed capacity of the hydro power plant before the implementation of the project activity (W). For new hydro power plants, this value is zero

A_{PJ} = Area of the single or multiple reservoirs measured in the surface of the water, after the implementation of the project activity, when the reservoir is full (m^2)

A_{BL} = Area of the single or multiple reservoirs measured in the surface of the water, before the implementation of the project activity, when the reservoir is full (m^2). For new reservoirs, this value is zero

For hydro power project activities that result in new single or multiple reservoirs and hydro power project activities that result in the increase of single or multiple existing reservoirs, project proponents shall account for CH_4 and CO_2 emissions from the reservoirs, estimated as follows:

(a) For integrated hydro power project PD of the entire project is calculated as follows:

$$PD = \frac{\sum Cap_{PJ,i}}{\sum A_{PJ,j}} \quad \text{Equation (6)}$$

Where:

i = Individual power plants included in integrated hydro power project

j = Individual reservoirs included in integrated hydro power project

(b) If the power density of the project activity using equation (6) or in case of integrated hydro power project using equation (7) is greater than 4 W/m^2 and less than or equal to 10 W/m^2

$$PE_{HP,y} = \frac{EF_{Res} \times TEG_y}{1000} \quad \text{Equation (7)}$$

Where:

$PE_{HP,y}$ = Individual power plants included in integrated hydro power project

EF_{Res} = Default emission factor for emissions from reservoirs of hydro power plants (kg CO2e/MWh)

TEG_y = Total electricity produced by the project activity, including the electricity supplied to the grid and the electricity supplied to internal loads, in year *y* (MWh)

(c) If the power density of the project activity is greater than 10 W/m^2

$$PE_{HP,y} = 0 \quad \text{Equation (8)}$$

Leakage

Not applicable

Emission reductions

Emission reductions are calculated as follows:

$$ER_y = BE_y - PE_y - LE_y \quad \text{Equation (9)}$$

Where:

ER_y = Emission reductions in year y (t CO_2)

BE_y = Baseline Emissions in year y (t CO_2)

PE_y = Project emissions in year y (t CO_2)

LE_y = Leakage emissions in year y (t CO_2)

I.6.2 Data and parameters fixed ex ante

Data/Parameter	**$EF_{grid,y}$**
Data unit	t CO_2e/kWh
Description	Combined margin CO_2 emission factor for grid connected power generation in year y calculated using the latest version of the .Tool to calculate the emission factor for an electricity system
Source of data	As per the "Tool to calculate the emission factor for an electricity system"
Value(s) applied	At CPA level
Choice of data or Measurement methods and procedures	As per the requirements in "Tool to calculate the emission factor for an electricity system"
Purpose of data	Baseline Emissions calculation
Additional comment	The grid emission factor will be fixed ex ante in all CPAs of this category

Data/Parameter	**EF_{Res}**
Data unit	t CO_2e/kWh
Description	Default emission factor for emissions from reservoirs
Source of data	Decision at EB 23
Value(s) applied	90 kgCO_2e/MWh
Choice of data or Measurement methods and procedures	As per the requirements in ACM0002 "Large-scale Consolidated Methodology: Grid-connected electricity generation from renewable sources Version 20.0"
Purpose of data	Project Emissions calculation
Additional comment	-

Data/Parameter	**Cap_{BL}**
Data unit	W
Description	Installed capacity of the hydro power plant before the implementation of the project activity. For new hydro power plants, this value is zero
Source of data	Project site
Value(s) applied	Value equal to zero
Choice of data or Measurement methods and procedures	As per the requirements in ACM0002 "Large-scale Consolidated Methodology: Grid-connected electricity generation from renewable sources Version 20.0"
Purpose of data	Project Emissions calculation
Additional comment	-

Data/Parameter	A_{BL}
Data unit	m^2
Description	Area of the single or multiple reservoirs measured in the surface of the water, before the implementation of the project activity, when the reservoir is full (m2). For new reservoirs, this value is zero
Source of data	Project site
Value(s) applied	At CPA level
Choice of data or Measurement methods and procedures	As per the requirements in ACM0002 “Large-scale Consolidated Methodology: Grid-connected electricity generation from renewable sources Version 20.0”
Purpose of data	Project Emissions calculation
Additional comment	-

I.6.3 Modalities for ex ante calculation of emission reductions

As mentioned previously ex-ante emission reduction is estimated using equation:

$$\boldsymbol{ER_y = BE_y - PE_y - LE}$$ Equation (10)

Where;

ER_y = Emission reduction in year y (tCO_2/y)
BE_y = Baseline emission in year y (tCO_2/y)
PE_y = Project emission in year y (tCO_2/y)
LE_y = Leakage emission year y (tCO_2/y)

In this case, as per the methodology to calculate the project emissions is necessary to apply the following methodology: ACM0002 “Grid-connected electricity generation from renewable sources” Version (20.0.0), which explains that the project emissions to have to take into account are the associated to the fossil fuel combustion and from water reservoirs, as shows the following equation:

$$PE_y = PE_{FF,y} + PE_{GP,y} + PE_{HP,y}$$ Equation (11)

Where:

PE_y = Project emissions in year *y* (t CO_2e/yr)
$PE_{FF,y}$ = Project emissions from fossil fuel consumption in year *y* (t CO_2/yr)
$PE_{GP,y}$ = Project emissions from the operation of dry, flash steam or binary geothermal power plants in year *y* (t CO_2e/yr). Since geothermal project activities are not applicable, $PE_{GP,y} = 0$.
$PE_{HP,y}$ = Project emissions from water reservoirs of hydro power plants in year *y* (t CO_2e/yr)

Considering the project emission from geothermal project activity as zero, the $PE_{HP,y}$ and $PE_{FF,y}$to calculate the project emission associated to the project activity, is shows as follows:

- $PE_{FF,y}$ will be neglected.
- $PE_{HP,y}$ shall be calculated in function of the result of the power density of the project activity:

$$PD = \frac{Capp_J - Cap_{BL}}{A_{PJ} - A_{BL}}$$ Equation (12)

For hydro power project activities that result in new single or multiple reservoirs and hydro power project activities that result in the increase of single or multiple existing reservoirs, project proponents shall account for CH_4 and CO_2 emissions from the reservoirs, estimated as follows:

Description	Equation
For integrated hydro power project PD of the entire project is calculated as follows	$PD = \frac{\sum Cap_{PJ,i}}{\sum A_{PJ,j}}$ Equation (13)
If the power density of the project activity using equation (6) or in case of integrated hydro power project using equation (7) is greater than 4 W/m^2 and less than or equal to 10 W/m^2	$PE_{HP,y} = \frac{EF_{Res} \times TEG_y}{1000}$ Equation (14)
If the power density of the project activity is greater than 10 W/m^2	$PE_{HP,y} = 0$ Equation (15)

Where:

PD = Power density of the project activity (W/m^2)

Cap_{PJ} = Installed capacity of the hydro power plant after the implementation of the project activity (W)

Cap_{BL} = Installed capacity of the hydro power plant before the implementation of the project activity (W). For new hydro power plants, this value is zero

A_{PJ} = Area of the single or multiple reservoirs measured in the surface of the water, after the implementation of the project activity, when the reservoir is full (m^2)

A_{BL} = Area of the single or multiple reservoirs measured in the surface of the water, before the implementation of the project activity, when the reservoir is full (m^2). For new reservoirs, this value is zero

$PE_{HP,y}$ = Individual power plants included in integrated hydro power project

EF_{Res} = Default emission factor for emissions from reservoirs of hydro power plants (kg CO2e/MWh)

TEG_y = Total electricity produced by the project activity, including the electricity supplied to the grid and the electricity supplied to internal loads, in year *y* (MWh)

LE_y = 0

Thus, $ER_y = BE_y - \mathrm{PE}_y - 0$

Also,
Baseline Emissions in year y = (Quantity of net electricity generation that is produced and fed into the grid as a result of the implementation of the CDM project activity in year y (MWh)) X (Combined margin CO_2 emission factor for grid connected power generation in year y calculated using the latest version of the "Tool to calculate the emission factor for an electricity system" (tCO_2/MWh)

$BE_y = EG_{PJ,y} \times EF_{grid,y}$ Equation (16)

Using the "Tool to calculate the emission factor for an electricity system (Version 07.0.0) it will be calculated the $EFgrid, y.$ (Combined margin CO_2 emission factor for grid connected power generation in year y)

$EF_{grid,y} = EF_{grid,OM,y} \times W_{OM} + EF_{grid,BM,y} \times W_{BM}$ Equation (17)

Where;

$EF_{grid,BM}$ = Build margin CO_2 emission factor in year *y* (tCO_2/MWh)
$EF_{grid,OM,y}$ = Operating margin CO_2 emission factor in year *y* (tCO_2/MWh)
W_{OM} = Weighting of operating margin emissions factor (%)
W_{BM} = Weighting of build margin emissions factor (%)

Therefore, the BEy, is calculated as follows:

$BE_y = EG_{PJ,y} \times EF_{grid,y}$ Equation (18)
Where:

BE_y = Baseline emission in year y
$EG_{PJ,y}$ = Quantity of net electricity generation supplied by the project plant/unit to the grid in year *y* (MWh)

To estimate $EG_{PJ,y}$ ex ante the following equation will be applied:

$EG_{PJ,y}$ = Plant capacity (MW) x Plant Load Factor x 24 x 365 Equation (19)

Where:

Plant Load Factor = Measure of a power plant's capacity utilisation

I.7. Monitoring plan

I.7.1. Data and parameters to be monitored

Data/Parameter	***EG*** $_{PJ,facility,y}$
Data unit	MWh
Description	Quantity of net electricity generation supplied by the project plant/unit to the grid in year *y*
Source of data	Electricity meter(s)
Value(s) applied	Specific to each CPA (each CPA will specify this value in accordance with project parameters)
Measurement methods and procedures	This parameter should be either monitored using bi-directional energy meter or calculated as difference between (a) the quantity of electricity supplied by the project plant/unit to the grid; and (b) the quantity of electricity the project plant/unit from the grid. In case it is calculated then the following parameters shall be measured: (a) The quantity of electricity supplied by the project plant/unit to the grid; and (b) The quantity of electricity delivered to the project plant/unit from the grid
Monitoring frequency	Continuous monitoring, hourly measurement and at least monthly recording
QA/QC procedures	The meters will be checked and calibrated according to the relevant national electric industry standards and regulations. Data measured by the main meter will be cross checked by the data from invoices or sales receipts or official public available data.
Purpose of data	Calculation of baseline emissions
Additional comment	Based on methodology AMS-I.D, if the project activity is installation of a Greenfield power plant, then: $EG_{PJ,y} = EG_{PJ,facility,y}$ Net electricity supplied to the grid by the project activity will be calculated using the measured values for electricity exported to/imported from the national grid.

Data/Parameter	TEG_y
Data unit	MWh/year
Description	Total electricity produced by the project activity, including the electricity supplied to the grid and the electricity supplied to internal loads, in year *y*
Source of data	Project site
Value(s) applied	Specific to each CPA (each CPA will specify this value in accordance with project parameters)
Measurement methods and procedures	Electricity meters
Monitoring frequency	Continuous measurement and at least monthly recording
QA/QC procedures	The meters will be checked and calibrated according to the relevant national electric industry standards and regulations. Data measured by the main meter will be cross checked by the data from invoices or sales receipts or official public available data.
Purpose of data	Calculation of project emission
Additional comment	Applicable to hydro power project activities with a power density greater than 4 W/m^2 and less than or equal to 10 W/m^2

Data/Parameter	Cap_{PJ}
Data unit	W
Description	Installed capacity of the hydro power plant after the implementation of the project activity
Source of data	Project site
Value(s) applied	At CPA level
Measurement methods and procedures	Determine the installed capacity based on manufacturer's specifications or commissioning data or recognized standards
Monitoring frequency	Once at the beginning of each crediting period
QA/QC procedures	-
Purpose of data	Calculation of project emission
Additional comment	-

Data/Parameter	A_{PJ}
Data unit	m^2
Description	Area of the single or multiple reservoirs measured in the surface of the water, after the implementation of the project activity, when the reservoir is full
Source of data	Project site
Value(s) applied	Specific to each CPA (each CPA will specify this value in accordance with project parameters)
Measurement methods and procedures	Measured from topographical surveys, maps, satellite pictures, etc.
Monitoring frequency	Once at the beginning of each crediting period
QA/QC procedures	-
Purpose of data	Calculation of project emission
Additional comment	-

I.7.2 Sampling plan

No sampling plan is applied in CPAs of this category.

I.7.3 Other elements of monitoring plan

Each CPA will detail any other relevant element of the monitoring plan in this section.

SECTION J. Crediting period type and duration

7 years and 0 month, renewable

SECTION K. Eligibility criteria for inclusion of CPAs

Eligibility criteria for inclusion of CPAs in the PoA are following detailed including their usability to assess the inclusion of CPAs in the generic CPA-DD:

No.	Eligibility criterion category	Eligibility criterion – required condition	Supporting evidence for inclusion
1	Geographical boundaries	Each CPA is located within the physical/geographical boundary of PoA (Colombia or Chile)	Location and boundary are specified in the Section A.2 of the PoA-DD and in each CPA-DD. - Information for geographical coordinate of CPA. Information will be obtained from the Technical Supplier Offer and the Technical Feasibility Study.
2	Avoid double counting	Each CPA will not be involved in another registered or under validation as a CDM project activity or as a CPA under the proposed or another PoA or as other GHG reduction project.	Declaration of double counting check, unique GPS coordinates.
3	Registration	The CME before adding a CPA under this PoA shall review the project activity database on the UNFCCC website to ensure that the CPA is not already registered as a CDM project or a CPA of another PoA or as a project activity that have been deregistered.	Comparation with project information provided in UNFCCC website and description in each CPA-DD. Declaration of the CPA implementer.
4	Specification of the technology/measure	Each small-scale CPA will introduce hydro power plant with an installed capacity less than or equal to 15 MW a load factor between 15 - 95%. Specification of technology/ measures proposed to be implemented under the CPA. Specifications of the technology/measure shall include the type, capacity and other key features of the design of the systems ranges of load factors, sizes of installation. The CPA-DD shall incorporate relevant details on the technological specifications, including level and type of service, performance specifications including compliance with testing/certifications.	A brief description of the technologies it will be used in the CPA, are described in the Section A.3 of this PoA-DD and section H4, more specific information of the technology will be detail in each CPA-DD. Description of the technologies including expected lifetime, capacity, plant load factor, and any manufacturer specifications of CPA-DD; Standardized Power Purchase Agreement. Information will be obtained from the Technical Supplier Offer and the Technical Feasibility Study.

5	Start date	The start date of each CPA will be the date on which the project participants commit to making expenditures for the construction of the main equipment or facility. The start date of any proposed CPA will be on or after the start date of the proposed CDM PoA, i.e., 03/02/2020.	1st Contract of the construction or contract of equipment or facilities.
6	Compliance with the applicability conditions of AMSI.D	Each CPA will satisfy the applicability conditions and monitoring methodologies as specified in the AMS-I.D. (Version 18.0) and other applied methodological regulatory documents	Applicability conditions of AMS-I.D. (Version.18.0) Section B of CPA-DD. Information will be obtained from the Technical Supplier Offer and the Technical Feasibility Study.
7	Additionality	Each CPA under this category will follow the process in Section C of PoA-DD to demonstrate additionality of the small-scale project activities (TOOL 21). Since the baseline scenario provides the ability to obtain renewable energy by other sources, the Option III "Benchmark Analysis" is chosen as the most appropriate option to develop the investment analysis. Project IRR has been identified as the most suitable economical/financial indicator to the case, since the project will be considered as financially attractive when this IRR is better than the Benchmark Thus, TOOL 27 will be used for the analysis. The type of Project IRR selected to be used is going to be the post-tax IRR, since it includes all input and output cash flows. Thus, the IRR will be calculated using the following inputs: Electricity Generation (at least 1,300 to 8400 MWh/MW installed/year), Average Sales Price (From 20 USD/ MWh to 300 USD/MWh), Annual Income from 0 USD/year to 38 million USD/year, range based on minimum and maximum sales price, installed capacity and load factor. - 0 MW x 15% x 8760 x 20 USD/MWh = 0 k: 15 MW x 95% x 8760 x 300 = 38 MM USD/year), Total Investment	Description of the process in the Section C of the PoA-DD. In each CPA, the demonstration of the additionality will be described in the Section F of CPA-DD and will fulfill requirements contained in the additionality section of the ACM0002. (Version.20.0) methodologies and TOOL 21. The investment analysis will be used. Information will be obtained from the Technical Supplier Offer, the Technical Feasibility Study, Investment term sheet, Financial analysis and official taxes for each country using actual values applicable at the time of the CPA inclusion.

		(From 500 to 7,000 USD/kW), Average Annual Operational Costs (2-10% CAPEX), Load factor (15 - 95%), the Fair Value, Project duration (20-50 years), taxes (10-35%) and depreciation (20-50 years). The additionality of each CPA shall then be assessed by using the actual values, applicable to that CPA at the time of inclusion, in the investment analysis conducted for the purpose of demonstrating the additionality of the CPA	
8	Local Stakeholder Consultation and Environmental Impact Analysis	Each CPA will hold local stakeholder consultation before the inclusion in PoA and construction. Each CPA will conduct environmental impact analysis as per the National Environmental Regulation of the country where the CPA is located.	Minutes, stakeholder consultation reports, etc. will be provided. Environmental Impact Assessment Report and approval if it is required by the national regulation.
9	Compliance with other requirements of the applied methodologies, the applied standardized baselines and the other applied methodological regulatory documents	Each CPA will satisfy the applicability conditions and monitoring methodologies and other applied methodological regulatory documents	Applicability conditions of other requirements, applied methodologies, standardized baselines and other applied methodological regulatory documents are explained in Section B of CPA-DD
10	Public funding	Each CPA will provide an affirmation that funding from Annex I party, if any, does not result in a diversion of official development assistance	Affidavit on No public Funding from Annex I party.
11	Target group	The project activity will consist in the implementation of grid-connected power plant.	Described in the Section A.1 of the PoA-DD and CPA-DD. The CPA-DD will be grid connected according to the Technical Supplier Offer and the Technical Feasibility Study
12	Sampling	Not applicable, Sampling procedures are not applied.	N/A
13	Debundling check	Each CPA is not a debundled component of a large-scale project activity as per Para.15 of Methodological tool Assessment of debundling for small-scale project activities. The tool 20 shall be applied: “Assessment of debundling	Confirmation that CPA does not consist in a de-bundled component of a larger project activity, being qualified as a small-scale CDM project activity in each CPA-DD. This information will be checked

		for small-scale project activities" (Version 13.1)	in the Technical Supplier Offer and the Technical Feasibility Study
14	Small-scale or microscale thresholds	The capacity of each power plant will not exceed 15MW over the entire crediting period as small-scale CDM project activities.	As described in the Section A.3 of the CPA-DD, the capacity of each power plant will not exceed 15MW over the entire crediting period. This information will be checked in the Technical Supplier Offer and the Technical Feasibility Study

PART II. Generic component project activity (CPA)

SECTION H. Description of generic CPA

H.1 Title of generic CPA

Micro Scale Generic CPA 06

H.2 Reference number of generic CPA

CPA 06

H.3 Purpose and general description of generic CPA

The purpose of the PoA is to promote the development of new power plants with solar photovoltaic energy in order to pour the electricity obtained to it avoiding generation from mix of fuels. Under this CPA being implemented the installed plant will provide electricity to a carbon intensive mini-grid.

The proposed generic CPA will include micro scale project activities Type I, whose total installed capacity will be up to 5 MW

The electricity generated from the project activity contributes to an average GHG reductions estimated as tCO_2/year.

H.4 Technologies/measures

The detailed technical description and technical details will be given in the specific CPA-DD.

Technology	Micro scale solar photovoltaic technology
Generation Capacity	<5 MW
Applicability	Greenfield project activities
Use of the produced electricity	The CPAs will displace electricity from an electricity distribution system that is or would have been supplied by at least one fossil fuel fired generating unit i.e., in the absence of the project activity, the users would have been supplied electricity from a carbon intense mini-grids.
Facilities, systems and equipment that will be installed	Solar panels, inverters, transformers and electric meters
Lifetime of main equipment	At least 20 years according manufacturer specifications
Capacity Factor	At least 15%, based on projects developed in the region
Monitoring equipment	Electric meters before the distribution system.

As the Generic CPA only includes Greenfield project activities, prior to the implementation of the corresponding CPAs there were no existing technologies at the same sites.

In addition, the baseline scenario is that the electricity delivered to the distribution systems by the project activity would have otherwise been generated by the operation of diesel/fuel oil generator power plants that supplies the distribution system.

SECTION I. Application of methodologies and standardized baselines

I.1 References to methodologies and standardized baselines

The methodology AMS-I.F "Renewable electricity generation for captive use and mini-grid" (Version 03.0.0) will be used. It includes It includes the use of the following tools:

- TOOL19 - Demonstration of additionality of microscale project activities (Version 09.0)

In order to calculate the emission factor for CPAs that supply energy to mini-grid systems where generators use not only use fuel oil and/or diesel fuel, the methodology AMS-ID "Grid connected renewable electricity generation" (Version 18.0) will be used.

I.2 Applicability of methodologies and standardized baselines

Each Micro Scale CPA with no connection to the grid under this generic category will meet the applicability conditions of the approved consolidated baseline and monitoring methodology AMS-I.F, Version 03.0, Sectoral Scope 01, as described below:

Id.	Applicability	Project activity vis-à-vis applicability Conditions
1	In case of hydro-power project activities following conditions apply: a) The project activity is implemented in an existing reservoir with no change in the volume of reservoir; b) The project activity is implemented in an existing reservoir, where the volume of reservoir is increased and the power density of the project activity, is greater than 4 W/m^2 c) The project activity results in new reservoirs and the power density of the power plant, is greater than 4 W/m^2	Not applicable since hydro power project activities are not included in this generic CPA
2	This methodology is applicable for project activities that: • Install a new power plant at a site where there was no renewable energy power plant operating prior to the implementation of the project activity (Greenfield plant); • Involve a capacity addition Involve a retrofit of (an) existing plant(s); • Involve a replacement of (an) existing plant(s)	The CPA-XXX under this generic CPA will be the installation of: • a Greenfield power plant; Hence this criterion is applicable only in this type of activity.
3	In the case of project activities that involve the capacity addition of renewable energy generation units at an existing renewable power generation facility, the added capacity of the units added by the project should be lower than 15 MW and should be physically distinct from the existing units.	The CPA-XXX under this generic CPA will be the installation of a new renewable energy power plant at a site where no renewable power plant was operated prior to the implementation of the project activity (Greenfield plant). Hence, this criterion is not applicable.
4	In the case of retrofit or replacement, to qualify as a small-scale project, the total output of the retrofitted or replacement unit shall not exceed the limit of 15 MW	The CPA-XXX under this generic CPA will be the installation of a new renewable energy power plant at a site where no renewable power plant was operated prior to the implementation of the project

		activity (Greenfield plant). Hence, this criterion is not applicable
5	If the electricity generation unit added has both renewable and non-renewable components (eligibility limit of 15MW apply only to the renewable component) or the unit added co-fires fossil fuel, where the entire capacity will be less than 15MW	The CPA-XXX under this generic CPA will be the installation of a new renewable energy power plant at a site where no renewable power plant was operated prior to the implementation of the project activity (Greenfield plant). Hence, this criterion is not applicable.
6	Combined heat and power (co-generation) systems are not eligible under this category.	CPA-XXX will not involve combined heat and power (co-generation) systems
7	If electricity and/or steam/heat produced by the project activity is delivered to a third party, i.e. another facility or facilities within the project boundary, a contract between the supplier and consumer(s) of the energy will have to be entered that ensures that there is no double counting of emission reductions.	It will be checked at CPA level. In case electricity is delivered to a third party, the contract between both parties will ensure that there will be no double counting of emission reductions.
8	In case biomass is sourced from dedicated plantations, the applicability criteria in the tool "Project emissions from cultivation of biomass" shall apply.	Not applicable since biomass project activities are not included in this generic CPA

I.3 Application of multiple methodologies

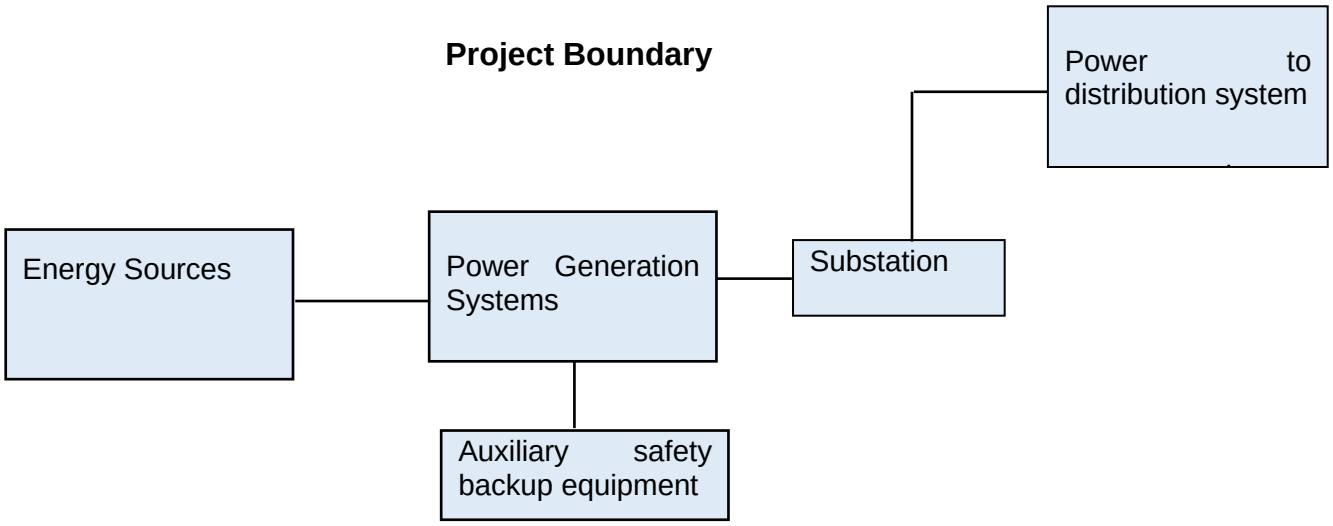
Not applicable since this generic CPA only uses one small-scale methodology.

I.4 Project boundary, sources and greenhouse gases (GHGs)

Source		GHG	Included?	Justification/Explanation
Baseline	CO_2 emissions from electricity generation in fossil fuel fired power plants that are displaced due to the project activity	CO_2	Yes	Main emissions source
		CH_4	No	Minor emissions source
		N_2O	No	Minor emission source
Project activity	For dry or flash steam geothermal power plants, emissions of CH4 and CO2 from non-condensable gases contained in geothermal steam	CO_2	No	Not applicable since geothermal power project activities are not included in this CPA category.
		CH_4	No	
		N_2O	No	
	CO_2 emissions from combustion of fossil fuels for electricity generation in solar thermal power plants and geothermal power plants	CO_2	No	Not applicable since solar thermal power plants and geothermal power plants are not included in this generic CPA
		CH_4	No	
		N_2O	No	
	For hydro power plants, emissions of CH_4 from the reservoir	CO_2	No	Not applicable since hydro power project activities are not included in this CPA category.
		CH_4	No	
		N_2O	No	

The greenhouse gases emissions within the project activity boundaries are associated to the baseline, produces from electricity generation in fossil fuel-fired power plants connected to a carbon intensive mini-grid.

The project activity will supply zero-emissions electricity, thus avoiding greenhouse gases emissions by displacing the dispatch of thermoelectric power plants. As it is shown in the following diagram blow, there are no greenhouse gas emissions associated with the project activity.



I.5 Establishment and description of baseline scenario

The baseline scenario will be:

a) Baseline scenario for Greenfield power plant: The baseline scenario is that the electricity delivered to the isolated mini-grid by the project activity would have otherwise been generated by the operation of diesel/fuel oil generator power plants that supply the isolated grid. The emission factor is calculated according to procedures in the methodology.

I.6 Estimation of emission reductions

I.6.1 Explanation of methodological choices

Baseline emissions

For a mini-grid system where all generators use exclusively fuel oil and/or diesel fuel, the baseline emissions is the annual electricity generated by the renewable energy unit times an emission factor for a modern diesel generating unit of the relevant capacity operating at optimal load (see Table 2 of the paragraph 18 of the methodology to choose the emission factor for diesel generator system in function of the level of load factor).

For other systems are the product of amount electricity displaced with the electricity produced by the renewable generating unit and an emission factor as shows as follow:

$$BE_y = EG_{BL,y} \times EF_{CO_2 y} \qquad \text{Equation (1)}$$

Where:

BE_y	=	Baseline emissions in year *y* (t CO_2)
$EG_{BL,y}$	=	Quantity of net electricity displaced as a result of the implementation of the CDM project activity in year *y* (MWh)
$EF_{CO_2,y}$	=	Emission factor (t CO_2/MWh)

To calculate the emission factor is necessary to take into account the type of the system implemented:

- For a mini-grid system other than described in paragraph 18 of the methodology, the baseline emission factor will be determined as per the weighted average emissions for the current generation mix following the procedure provided in AMS-I.D. Thus, the weighted average emissions (in t CO_2/MWh) of the current generation mix will be used. Then, the data of the year in which project generation occurs will be used.

Since this Generic CPAs includes only plants connected to carbon intensive mini grid, no electricity system(s) are covered. Data for the baseline electricity consumption source will be provided by the CPA implementer since no publicly available data is expected.

Project emissions

For this generic CPA, PE_y=0.

CO_2 emissions from on-site consumption of fossil fuels due to the project activity will be neglected as electricity from safety backup equipment (if applicable) will not be dispatched to mini-grid.

Leakage

Not applicable.

Emission reductions

Emission reductions are calculated as follows:

$$ER_y = BE_y - PE_y - LE_y \qquad \text{Equation (4)}$$

Where:

ER_y = Emission reductions in year y (t CO_2)

BE_y = Baseline Emissions in year y (t CO_2)

PE_y = Project emissions in year y (t CO_2)

LE_y = Leakage emissions in year y (t CO_2)

I.6.2 Data and parameters fixed ex ante

Data/Parameter	$EF_{CO2,y}$
Data unit	t CO_2e/kWh
Description	CO_2 emission factor mini-grid in year *y*
Source of data	AMS-I.F "Renewable electricity generation for captive use and mini-grid" Version 03.0.
Value(s) applied	At CPA level
Choice of data or Measurement methods and procedures	As prescribed in paragraph 18 of this methodology AMS-I.F "Renewable electricity generation for captive use and mini-grid" Version 03.0.
Purpose of data	Baseline Emissions
Additional comment	Applicable only for CPAs that supply energy to mini-grid systems where all generators use exclusively fuel oil and/or diesel fuel not connected to a national or regional grid

I.6.3 Modalities for ex ante calculation of emission reductions

As mentioned previously ex-ante emission reduction is estimated using equation:

$$\boldsymbol{ER_y = BE_y - PE_y - LE}$$ Equation (5)

Where;

ER_y = Emission reduction in year y (tCO_2/y)
BE_y = Baseline emission in year y (tCO_2/y)
PE_y = Project emission in year y (tCO_2/y)
LE_y = Leakage emission year y (tCO_2/y)

$PE_y = 0$

In case there are CO_2 emissions from on-site consumption of fossil fuels due to the project activity, it will be neglected.

$LE_y = 0$

Thus, $ER_y = BE_y - 0 - 0$

Baseline Emissions in year y are calculated as Quantity of net electricity displaced as a result of the implementation of the CDM project activity in year y (MWh) x Emission factor (tCO_2/MWh), which it will be calculated depending if the project activity is based on a mini-grid, using the procedure provided in AMS-I.D or if is based on captive electricity generation, being calculated as per "Tool to calculate baseline, project and/or leakage emissions from electricity consumption".

$$BE_y = EG_{BL,y} \times EF_{CO_2,y}$$ Equation (6)

Where:

BE_y = Baseline emissions in year *y* (t CO_2)
$EG_{BL,y}$ = Quantity of net electricity displaced as a result of the implementation of the CDM project activity in year *y* (MWh)
$EF_{CO2,y}$ = Emission factor (t CO_2/MWh)

I.7 Monitoring plan

I.7.1 Data and parameters to be monitored

Data/Parameter	$EG_{BL,y}$
Data unit	MWh/y
Description	Quantity of net electricity displaced in year *y*
Source of data	Plant records
Value(s) applied	At CPA level
Measurement methods and procedures	Measured using calibrated meters. In the case of electricity sold to a third party, measurement results shall be cross-checked with records of sold/purchased electricity. The net electricity displaced is the gross energy generation by the project activity power plant minus the auxiliary/station electricity consumption
Monitoring frequency	Continuous monitoring, hourly measurement and at least monthly recording
QA/QC procedures	-
Purpose of data	Baseline Emission calculation
Additional comment	-

Data/Parameter	$EF_{CO2,y}$
Data unit	t CO_2e/kWh
Description	Emission factor (t CO_2/MWh) for a mini-grid system other than described in paragraph 18 of the methodology
Source of data	It will be determined at CPA level following the methodology AMS-I.F "Renewable electricity generation for captive use and mini-grid" Version 03.0 or the methodology AMS I D "Grid connected renewable electricity generation" Version 18.0
Value(s) applied	At CPA level
Measurement methods and procedures	As prescribed in paragraph 19 of the methodology AMS-I.F "Renewable electricity generation for captive use and mini-grid" Version 03.0 or in paragraph 23 b) of the methodology AMS I D "Grid connected renewable electricity generation" Version 18.0
Monitoring frequency	Annually
QA/QC procedures	-
Purpose of data	Baseline Emission calculation
Additional comment	Applicable only for CPAs that supply energy to mini-grid systems where not all generators use exclusively fuel oil and/or diesel fuel.

I.7.2 Sampling plan

N/A

I.7.3 Other elements of monitoring plan

Each CPA will detail any other relevant element of the monitoring plan in this section.

SECTION J. Crediting period type and duration

7 years and 0 month, renewable

SECTION K. Eligibility criteria for inclusion of CPAs

Eligibility criteria for inclusion of CPAs in the PoA are following detailed including their usability to assess the inclusion of CPAs in the generic CPA-DD:

No.	Eligibility criterion category	Eligibility criterion – required condition	Supporting evidence for inclusion
1	Geographical boundaries	Each CPA is located within the physical/geographical boundary of PoA (Colombia or Chile)	Location and boundary are specified in the Section A.2 of the PoA-DD and in each CPA-DD. - Information for geographical coordinate of CPA is included in the Technical Feasibility Study.
2	Avoid double counting	Each CPA will not be involved in another registered or under validation as a CDM project activity or as a CPA under the proposed or another PoA or as other GHG reduction project.	Declaration of double counting check, unique GPS coordinates.
3	Registration	The CME before adding a CPA under this PoA shall review the project activity database on the UNFCCC website to ensure that the CPA is not already registered as a CDM project or a CPA of another PoA or as a project activity that have been deregistered.	Comparation with project information provided in UNFCCC website and description in each CPA-DD. Declaration of the CPA implementer.
4	Specification of the technology/measure	Each micro-scale CPA will introduce photovoltaic power plant with an installed capacity up to 5 MW and a load factor at least 15%. Specification of technology/ measures proposed to be implemented under the CPA. Specifications of the technology/measure shall include the type, capacity and other key features of the design of the systems ranges of load factors, sizes of installation. The CPA-DD shall incorporate relevant details on the technological specifications, including level and type of service, performance specifications including compliance with testing/certifications.	A brief description of the technologies it will be used in the CPA, are described in the Section A.3 and H.4 of this PoA-DD, more specific information of the technology will be detail in each CPA-DD. Description of the technologies including expected lifetime, capacity, plant load factor, and any manufacturer specifications of CPA-DD; Standardized Power Purchase Agreement. Information will be obtained from the Technical Supplier Offer and the Technical Feasibility Study.
5	Start date	The start date of each CPA will be the date on which the project participants commit to making	1st Contract of the construction or contract of equipment or facilities.

		expenditures for the construction of the main equipment or facility. The start date of any proposed CPA will be on or after the start date of the proposed CDM PoA, i.e. 03/02/2020.	
6	Compliance with the applicability conditions of AMS.I.F	Each CPA will satisfy the applicability conditions and monitoring methodologies as specified in the AMS-IF. (Version 03.0).	Applicability conditions of AMS-I.F (Version.03.0) Section B of CPA-DD. Information will be obtained from the Technical Supplier Offer and the Technical Feasibility Study.
7	Additionality	Each CPA under this category will follow the process in Section C of PoA-DD to demonstrate additionality of the micro-scale project activities. Each CPA will be an off-grid activity supplying energy to households/communities (less than 12 hours' grid availability per 24 hours is also considered "off-grid" for this assessment) or will consist of the following technology for distributed energy generation (not connected to a national or regional grid) where end users are households, communities or small and medium-sized enterprises (SMEs): Solar technologies (photovoltaic).	Description of the process in the Section C of the PoA-DD. In each CPA, the demonstration of the additionality will be described in the Section A.1 of CPA-DD and Section F of CPA-DD The CPA is deemed additional in accordance with tool Demonstration of additionality of microscale project activities v.9. Information will be obtained from the Technical Supplier Offer and the Technical Feasibility Study.
8	Compliance with other requirements of the applied methodologies, the applied standardized baselines and the other applied methodological regulatory documents	Each CPA will satisfy the applicability conditions and monitoring methodologies and other applied methodological regulatory documents	Applicability conditions of other requirements, applied methodologies, standardized baselines and other applied methodological regulatory documents are explained in Section B of CPA-DD
9	Local Stakeholder Consultation and Environmental Impact Analysis	Each CPA will hold local stakeholder consultation before the inclusion in PoA and construction. Each CPA will conduct environmental impact analysis as per the National Environmental Regulation of the country where the CPA is located.	Minutes, stakeholder consultation reports, etc. will be provided. Environmental Impact Assessment Report and approval if it is required by the national regulation.
10	Public funding	Each CPA will provide an affirmation that funding from Annex I party, if any, does not result in a diversion of official development assistance	Affidavit on No public Funding from Annex I party.

11	Target group	Each power plant will provide distributed energy generation (not connected to a national or regional grid) to households, communities or small and medium-sized enterprises (SMEs);.	Described in the Section A.1 of PoA-DD and of CPA-DD. Information will be obtained from the Technical Supplier Offer and the Technical Feasibility Study.
12	Sampling	There will be no sampling since it is only applicable in CPAs that provide distributed energy generation (not connected to a national or regional grid) to a carbon intensive minigrid.	N/A
13	Debundling check	Each CPA is not a debundled component of a large-scale project activity as per Para.15 of Methodological tool Assessment of debundling for small-scale project activities. The tool 20 shall be applied: “Assessment of debundling for small-scale project activities” (Version 13.1)	Confirmation that CPA does not consist in a de-bundled component of a larger project activity, being qualified as a micro scale CDM project activity in each CPA-DD. This information will be checked in the Technical Supplier Offer and the Technical Feasibility Study
14	Small-scale or microscale thresholds	Each CPA will be Type I: Project activities up to 5 MW that employ renewable energy as their primary technology.	As described in the Section A.3 of the CPA-DD, the capacity of each power plant will not exceed 5MW over the entire crediting period. Information will be obtained from the Technical Supplier Offer and the Technical Feasibility Study.

Appendix 1. Contact information of coordinating/managing entity and project participants

Coordinating/managing entity and/or project participants	☒ Coordinating/managing entity ☒ Project participant
Organization name	ALLCOT AG
Country	Colombia (country authorizing participation)
Address	Steinhauserstrasee 74, 6300 Zug, Switzerland
Telephone	+41 79 960 2924
Fax	
E-mail	all@allcot.com
Website	www.allcot.com
Contact person	Alexis Leroy

Appendix 2. Affirmation regarding public funding

No public funding is involved in the project.

Appendix 3. Applicability of methodologies and standardized baselines

Not applicable

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

Not applicable

Appendix 5. Further background information on monitoring plan

Not applicable

Appendix 6. Summary report of comments received from local stakeholders

Not applicable

Appendix 7. Summary of post-registration changes

Not applicable

Document information

Version	*Date*	*Description*
09.0	31 May 2019	Revision to: • Ensure consistency with version 02.0 of the "CDM project standard for programmes of activities" (CDM-EB93-A07-STAN); • Make editorial improvements.
08.1	28 June 2017	Revision to: • Remove a duplicated instruction; • Make editorial improvement.
08.0	7 June 2017	Revision to: • Improve consistency with the "CDM project standard for programmes of activities" and with the PDD and CPA-DD forms; • Make editorial improvement.
07.0	25 May 2017	Revision to: • Ensure consistency with the "CDM project standard for programmes of activities" (CDM-EB93-A07-STAN) (version 01.0); • Incorporate the "Programme design document form for small-scale CDM programmes of activities" (CDM-SSC-PoA-DD-FORM); • Make editorial improvement.
06.0	15 April 2016	Revision to ensure consistency with the "Standard: Applicability of sectoral scopes" (CDM-EB88-A04-STAN) (version 01.0).
05.0	9 March 2015	Revision to: • Include provisions related to choice of start date of PoA; • Include provisions related to delayed submission of a monitoring plan; • Provisions related to local stakeholder consultation; • Add exception for generic CPA where technology is under positive lists; • Make editorial improvement.
04.1	5 August 2014	Editorial revision to correct the document information table.
04.0	25 June 2014	Revision to: • Include the Attachment: Instructions for filling out the project design document form for CDM programme of activities (these instructions supersede the Guideline: Completing the programme design document form for CDM programme of activities (Version 04.0)); • Include provisions related to standardized baselines; • Add contact information on a responsible person(s)/ entity(ies) for the application of the methodology (ies) to the PoA in B.4 and Appendix 1; • Add general instructions on post-registration changes in paragraphs 2 and 3 of general instructions and Appendix 6; • Change the reference number from F-CDM-PoA-DD to CDM-PoA-DD-FORM; • Make editorial improvement.

Version	*Date*	*Description*
03.0	3 December 2012	EB 70 Revision to reflect changes to the *Guideline: Completing the programme design document form for CDM programmes of activities* (EB 70, Annex 6).
02.0	13 March 2012	EB 66 Revision required to ensure consistency with the "Guidelines for completing the programme design document form for CDM programmes of activities" (EB 66, annex 12).
01.0	27 July 2007	EB 33, Annex 41 Initial publication.

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