

**SMALL-SCALE CDM PROGRAMME ACTIVITY DESIGN DOCUMENT FORM
(CDM-SSC-CPA-DD) - Version 01**



NAME /TITLE OF THE PoA: Renewable Energy PoA in India



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

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

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

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

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

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

“XYZ project at ABC location”

Version X.X

Date: DD/MM/YYYY

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

The SSC-CPA involves the construction of a new grid connected “solar/wind/hydro” power plant in “State” India. The SSC-CPA’s installed capacity and estimated annual power generation are “xx” MW and the expected annual net electricity “ABCD” MWh.

The project’s purpose is to supply renewable electricity to the “XYZ” Grid.

This CPA is a part of the “Renewable Energy PoA in India”. The CME for the PoA is “Emission Reduction Services Private Limited”.

“Project Title” (referred later as the SSC-CPA “CPA NAME” or the project) is being implemented by “CPA Implementing Company” (referred later as the CPA implementer) and will generate renewable power and export the same to the grid, which will displace part of the electricity that would have otherwise been supplied by a majority of fossil fuel fired power plants constituting the grid mix. Thus, GHG emission reductions can be achieved via this SSC-CPA by avoiding the GHG emissions that would have occurred in the absence of the project activity.

The project’s contributions to the sustainable development of the local area as well as the host country are as follows:

Social well-being:

- The SSC-CPA “CPA NAME” leads to more development in the region.
- During construction, the SSC-CPA “CPA NAME” is expected to generate considerable employment opportunities for the local population during the construction as well as operational phases.
- Various kinds of mechanical work generate employment on a regular and permanent basis for the local people that increase the young people’s expertise and experiences in the region.

Economic well-being:

- The project activity creates jobs in the local region.
- Large investments in a rural region would not have been made in absence of the project.
- The project activity contributes to economic sustainability in and around the region.

Environmental well-being:

- The SSC-CPA “CPA NAME” utilizes “solar/wind/hydro” energy to generate electricity, which otherwise would have been generated through a majority of fossil-fuel based power plants. This way it shall contribute to a reduction in specific emissions (emissions of pollutant/unit of energy generated), including GHG emissions.

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- As “solar/wind/hydro” power projects produce no end products in the form of solid waste (ash, etc.), they address the problem of solid waste disposal encountered by most other sources of power.
- Being a renewable energy source, “solar/wind/hydro” energy used to generate electricity contributes to resource conservation.

Technological well-being:

- The project promotes new technology in the region in the form of “solar/wind/hydro” power generation technology

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

“CPA implementer” is the responsible project owner and implementer of the SSC-CPA.

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

“CPA implementer” involves setting up of grid connected “installed capacity and technology: solar/wind/hydro” plant. Installations shall be “name of technology”.

The grid connected “solar/wind/hydro” power generation scheme will mainly consist of “brief technical description”

SSC-CPA CPA NAME scheme.

Table 1: Main technical parameters of the proposed project activity

Main parameters	Units	SSC-CPA “CPA NAME”
Type of System	-	
Capacity of each Module/unit Proposed (if applicable)	Wp	
Proposed Capacity	MW	
Projected Net Energy for Sale	MWh/yr	
Plant Load Factor (PLF)	%	
Expected life of the project	Years	

Source: Technical specifications from the Detailed Project Report

“Technology Transfer Details”

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

Small Scale Renewable Energy PoA in India – “CPA Identification Number”

A.4.1.1. Host Party:

India

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

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SSC CPA “CPA NAME” is located in “XYZ” Village/City, “ABC” Tehsil of District “XYZ” in the state of “XYZ”, India. The project is located approximately XX km from “XYZ”, the capital city of “XYZ”. The project unique identification in terms of geographical co-ordinates is:

Latitude: XYZ

Longitude: ABC

“Map”

Figure 1: Project Location. Source: Google Earth

The CPA implementer contact details (see also annex 1):

“Contact details of CPA Implementer”

A.4.2. Duration of the <u>small-scale CPA</u> :

A.4.2.1. Starting date of the <u>small-scale CPA</u>:
--

“DD/MM/YYYY” (Expected date of Signature of a construction contract for the project)

This is the date where the CPA implementer expects to sign a construction contract for the construction of the project activity.

This would be the date of major financial commitment by the project implementer towards project activity. This is in accordance with the “CDM Glossary of Terms/version 05”, which defines the starting date of project as “the earliest date at which either the implementation or construction or real action of a project activity begins”. See section B3 for a project timeline and more details.

A.4.2.2. Expected operational lifetime of the <u>small-scale CPA</u>:
--

XX years

A.4.3. Choice of the <u>crediting period</u> and related information:
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Renewable crediting period

A.4.3.1. Starting date of the <u>crediting period</u>:

DD/MM/YYYY (Expected date of commissioning)

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

7 years

A.4.4. Estimated amount of emission reductions over the chosen <u>crediting period</u>:
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Table 2: Estimated amount of emission reductions over the chosen crediting period

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Years	Annual estimation of emission reductions in tonnes of tCO ₂ .eq
Y1	ABC
Y2	ABC
Y3	ABC
Y4	ABC
Y5	ABC
Y6	ABC
Y7	ABC
Total emission reductions (tonnes of CO ₂ -eq)	ABC
Total number of crediting years	X
Annual average over the crediting period of estimated reductions (tonnes of CO ₂ -eq)	ABC

A.4.5. Public funding of the CPA:

The project does not receive public funding.

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

The compendium of guidance on the debundling for SSC project activities (EB 54 annex 13) is used to demonstrate that the SSC-CPA included in the PoA is not a de-bundled component of a large-scale project activity.

There is no other registered SSC-CPA of a PoA, or an application to register another small-scale CPA of a PoA or another registered CDM project activity with the following characteristics:

- The same project implementer as SSC-CPA Dante.
- The boundary is within 1 km of the boundary of the proposed SSC-CPA, at the closest point.

Therefore, the project is not a de-bundled component.

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

By using the precise geographical coordinates of the SSC-CPA provided in section A.4.1.2 and comparing it with the database of registered CDM project activities and registered PoAs it has been established that the SSC-CPA is neither registered as an individual CDM project activity nor is part of another registered PoA.

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

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

Renewable Energy PoA in India

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

SSC-CPA “CPA NAME” is eligible to be included to the SSC-PoA because it fulfils all eligibility requirement of the SSC-PoA:

Topic	No.	Eligibility Criteria	Justification
Geographical boundary	1	Being setup within the geographical boundary of India	The SSC-CPA is being setup in geographical boundary of India as per the details in section A.4.1.2 of the CPA-DD.
Double counting	2	CPA must be uniquely identified with the Geographical co-ordinates of the project location and should not result into double counting	CPA has been uniquely identified as per the details in section A.4.1.2 of the CPA-DD.
Technology	3	be a renewable energy power plant (one of solar PV, solar thermal, hydro or wind power plant)	SSC-CPA “XYZ” is a “solar/hydro/wind” power plant generating electricity
Start date	4	have a starting date after the validation start of the PoA	PoA validation started at 26/08/11, which is previous to the project start date of the SSC-CPA as elaborated in section A.4.2.1 of the CPA-DD.
Compliance with applied methodology	5	Complies with all applicability conditions listed in the applied methodology AMS I.D version 17. Such requirements are listed in section E.2 of the PoA-DD.	The methodological requirements as listed in section E.2 of the PoA-DD are met by complying with the eligibility criteria no. 3, 10, 11, 12 and 13.
Additionality	6	Demonstrates that it is in compliance with one of the CPA additionality test as described in section E.5.2 of the PoA-DD.	As per section B.3 of the CPA-DD, the CPA is deemed additional.
Local stakeholder consultation	7	Conducts a local stakeholder consultation	A local stakeholder consultation has been conducted for the SS-CPA as summarized in section D of the CPA-DD
Environmental Impact Analysis	8	Shall show, based on national environmental policies applicable at time of inclusion, whether an environmental impact analysis is required or not. If required, the CPA shall conduct an environmental impact analysis.	“Specification in line with section C of the CPA-DD ”
Diversion of official development assistance	9	CPA should not result into the diversion of official development assistance	“Justification”
Target group	10	not be a capacity addition/retrofit/replacement activity at an existing power plant. In other	The SSC-CPA is Greenfield project that does not involve a capacity addition/retrofit/replacement at any

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		words the CPA to be included would only comprise of Greenfield renewable energy power plants.	existing power plant
	11	export the renewable electricity generated to a relevant and clearly identified grid within the geographical boundary of the host country	The SSC-CPA is connected to “Name of the Grid” Grid, which is relevant and clearly identified grid in the host country India.
	12	If the power plant is a hydroelectric plant that comprises a reservoir, the power density of the power plant shall be greater than 10 W/m ² .	Not applicable, see justification for eligibility criteria 3.
Small-scale threshold	13	Generates electricity with a capacity below or equal the type I small-scale threshold	The installed capacity of the CPA is “ABC” MW, which is below the type I small-scale threshold of 15MW.
Micro-scale threshold	14	Has a maximum installed capacity below or equal to 5 MW, in the case CPA is following additionality test a, as described in section E.5.2 of the PoA-DD. If additionality test b is chosen, this eligibility criteria does not need to be considered	“Justification”
Debundling check	15	<p>The CPA included in the PoA is not a de-bundled component of another CDM programme activity (CPA) or CDM project activity:</p> <p>CPA shall be deemed to be a de-bundled component of a large scale activity if there is already an activity, which satisfies both conditions (a) and (b) below:</p> <ul style="list-style-type: none"> (a) Has the same activity implementer as the proposed small scale CPA or has a coordinating or managing entity, which also manages a large scale PoA of the same technology/measure, and; (b) The boundary is within 1 km of the boundary of the proposed small-scale CPA, at the closest point. 	“Justification”
Other	16	have a contract of services and cessation of rights with the CME that governs the CPA’s participation in the RE PoA, and comply with the	The CPA implementer contractually ceded its rights to claim and own emission reductions under the Clean Development Mechanism or any

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		code of conduct of the CME	voluntary scheme to the coordinating entity of the SSC-PoA.
Other	17	be in line with laws and regulations available at the time of inclusion of the CPA into the PoA.	SSC-CPA Dante is inline with Indian laws and regulations available at the time of inclusion of the SSC-CPA into the SSC-PoA. “Justification”

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

As per section E.5.2 of the SSC-PoA-DD, the projects participants can prove additionality either on the basis of Test a or Test b. If SSC-CPA meeting Test a qualification, Test b must not be performed accordingly and vice versa.

Test a: Is the installed capacity of the CPA below or equal to 5 MW, and is the SSC-CPA located in an underdeveloped area of India?

Test	Yes	No
SSC-CPA capacity is below or equal to 5 MW	X	X
SSC-CPA is undertaken in a special underdeveloped zone as defined by Indian Government	X	X

Still as per paragraph 2-d of EB 63 annex 23, if at the date of SSC-CPA inclusion, applied technology of the SSC-CPA is recommended by the Host country DNA and approved by the board, test a is simplified as follows:

Test	Yes	No
SSC-CPA capacity is below or equal to 5 MW	X	X
Indian DNA has recommended applied small Renewable Energy technology/measure, which further has been approved by the Executive Board of the CDM to be additional.	X	X

SSC-CPA “CPA NAME” does/does not meet both the conditions of the additionality test. The PPs will/will not proceed with test b.

Test b: Additionality as per Attachment A to Appendix B version 8 (EB63, Annex 24):

This test is further broken down into two parts:

Test b.1: In case CPA to be included is a solar power project up to 15 MW capacity, then as per para 2 of Attachment A to Appendix B version 8 (EB63, Annex 24), such a CPA would be automatically defined as additional. Hence there is no requirement of any further additionality test in case of a CPA comprising Solar Power Generation.

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Test b.2: In case CPA comprises of Wind & Hydro power generation para 1(a) of Attachment A to Appendix B version 8 (EB63, Annex 24) would be applied, by proving additionality over via investment barriers according to the details mentioned below³.

Table 3: Parameters for calculation of project IRR

Technical lifetime	Year	X	“Explanation of source”
Investment decision date	DD/MM/YYYY	X	“Explanation of source”
Construction start date	Year	X	“Explanation of source”
Date project starts operating	Year	X	“Explanation of source”
Annual electricity generation	MWh/year	X	“Explanation of source”
Electricity tariff	Local currency unit/MWh	X	“Explanation of source”
Increase in electricity tariff	% per year	X	“Explanation of source”
Inflation	% per year	X	“Explanation of source”
Exchange Rate	USD/Local currency unit	X	“Explanation of source”
Total investments	Local currency unit or USD	X	“Explanation of source”
(Other revenues)	Local currency unit or USD	X	“Explanation of source”
Operation & Maintenance cost	Local currency unit/year	X	“Explanation of source”
(Other operating expenditure)	Local currency unit/year	X	“Explanation of source”
Insurance	% of Capex p.a.	X	“Explanation of source”

The benchmark used to compare the return of the project has been chosen as the “type of benchmark” and has been calculated with the investment decision date as base date.

“Description of the applied benchmark and its underlying references”

³ As per EB 35 Annex 34, best practice to prove investment barriers is to conduct a benchmark analysis where the project specific economic performance is compared with a suitable benchmark.

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“In the case of WACC as benchmark:

The predefined WACC calculation form has been applied, following calculation steps described in the PoA-DD. In order to determine the WACC the CAPM has been used to estimate the cost-of-equity. The list of parameters used to estimate the WACC is provided below:”

Parameters	Description	Source and choice of the value	Value
RFR	Risk Free Rate in a mature equity market	“Explanation of source”	X
$\beta_{unlevered}$	Beta (unlevered)	“Explanation of source”	X
RP	Total Risk Premium	“Explanation of source”	X
SP	Size Premium.	“Explanation of source”	X
CD (Cost of debt)	Interest Rate Loans by commercial banks for investment	“Explanation of source”	X
% Debt (Debt ratio)	Average industry debt ratio	As per EB 62, Annex 5, Para 18	50 %
% Equity	Average industry equity ratio	As per EB 62, Annex 5, Para 18	50 %
Investment decision date	Date	“Explanation of source”	X
T	Tax rate applicable to hydro SSC hydro power plant operators	“Explanation of source”	X

As per the date of investment the ”name of the applied benchmark” has been found as **XX** %.

The results of the financial analysis show that the project is not financially viable. The “pre- or post-tax” Project IRR without CDM revenue shows an IRR of **XX** %, which is below the benchmark rate of return of **XX** % as computed above. Moreover, as shown in the table below, while altering the investment, the O&M costs or the revenues, the IRR stays below the benchmark. Therefore, the proposed SSC-CPA is considered as additional.

Table 4: IRR calculation results and sensitivity analysis

	IRR	Likelihood to happen
Initial	XX	
Investment -10 %	XX	
Revenues +10 %	XX	

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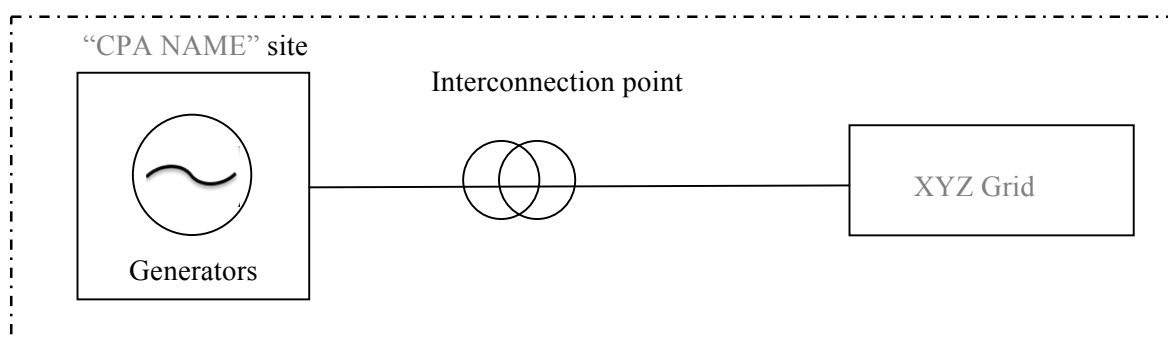
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O&M -10 %	XX	
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B.4. Description of the sources and gases included in the project boundary and proof that the small-scale CPA is located within the geographical boundary of the registered PoA.

SSC-CPA “CPA NAME” is located within the geographical boundaries of India. The project boundary for SSC-CPA Dante is visualized below in the figure below:



SSC-CPA “CPA NAME” is a renewable and clean energy and does not involve any project emissions. Gases and emissions in the project boundary source exclusively from fossil fuel fired power plants connected to the XYZ Grid.

The GHG emission sources included in or excluded from the project boundary are as follows:

Table 5: GHG Sources included to within project boundary

	Source	Gas	Included?	Justification/Explanation
Baseline	XYZ Grid	CO ₂	Included	According to AMS I.D. version 17, only CO ₂ emissions from electricity generation should be accounted for.
		CH ₄	Excluded	According AMS I.D. v17
		N ₂ O	Excluded	According AMS I.D. v17
Project Activity	Detailed Project Report of SSC-CPA “CPA NAME”	CO ₂	Excluded	According AMS I.D. v17
		CH ₄	Excluded	According AMS I.D. v17
		N ₂ O	Excluded	According AMS I.D. v17

B.5. Emission reductions:

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

Data / Parameter:	ID.2 / Py
Data unit:	MW
Description:	Installed Power Generation Capacity based on the nameplate capacity at the generator for Hydro & Wind projects and based on supplier data for solar projects
Source of data to be used:	“Detailed Project Report/Purchase contracts if available”

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Value applied	XX
Justification of the choice of data or description of measurement methods and procedures actually applied :	The values reflect the expected capacity to be installed at the power plant according to the plant design parameters.
Any comment:	The final capacity that will be installed at the plant might differ from the value declared in the CPA-DD since the technical parameters planned initially at the time of preparation of the SSC-CPA DD might undergo alterations during project implementation

If CPA complies a hydro power plant and consists of a reservoir

Data / Parameter:	ID.1 / Cap _{PJ}
Data unit:	MW
Description:	Installed capacity of the hydro power plant project activity.
Source of data to be used:	“Feasibility Study report /Purchase orders/ EPC contracts if available”
Value applied	XX
Justification of the choice of data or description of measurement methods and procedures actually applied :	The values reflect the expected capacity to be installed at the power plant according to the plant design parameters.
Any comment:	The final capacity that will be installed at the plant might differ from the value declared in the CPA-DD since the technical parameters planned initially at the time of preparation of the CPA-DD might undergo alterations during project implementation. This parameter shall be rechecked during the first verification of the CPA to revalidate eligibility criteria no. 12 in case generator purchase order has not yet been signed at the time of CPA inclusion

Data / Parameter:	ID.3 / A _{PJ}
Data unit:	m ²
Description:	Area of the reservoir from the hydro power plants, measured in the surface of the water
Source of data to be used:	“Project Site (measured from topographical surveys, maps, satellite pictures, etc.)”
Value applied	XX
Justification of the choice of data or description of measurement methods and procedures actually	The design of the hydro power plant, including its dam, clearly defines the expected water surface area

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applied :	
Any comment:	The final capacity that will be installed at the plant might differ from the value declared in the CPA-DD since the technical parameters planned initially at the time of preparation of the CPA-DD might undergo alterations during project implementation. This parameter shall be rechecked during the first verification of the CPA to revalidate eligibility criteria no. 12 in case generator purchase order has not yet been signed at the time of CPA inclusion.

If CPA uses fossil fuels

Data / Parameter:	ID.4 / COEF _{i,y}
Data unit:	t.CO ₂ /t.fuel
Description:	CO ₂ emission factor from fuel type I
Source of data used:	IPCC 2006 value.
Value applied:	Diesel: 3.185 Residual Fuel Oil (RFO): 3.1107 Coal: 2.6488 LPG: 2.9853
Justification of the choice of data or description of measurement methods and procedures actually applied:	Calculated by multiplying the following two values: i) Emission factor for Gas/Diesel oil: 74.10 tCO ₂ /TJ; for RFO: 77.4 tCO ₂ /TJ; for coking coal: 94.6 tCO ₂ /TJ; for LPG: 63.1 tCO ₂ /TJ and other fuels (Source: IPCC 2006, vol2, 2006 - Table 2.2 page 2.16 cited at: http://www.ipcc-nggip.iges.or.jp/public/2006gl/pdf/2_Volume2/V2_2_Ch2_Stationary_Combustion.pdf) ii) NCV for Gas/Diesel oil: 43.33 TJ/10 ³ tonnes; for RFO: 40.19 tCO ₂ /TJ; for coking coal: 28.00 tCO ₂ /TJ; for LPG: 47.31 tCO ₂ /TJ and other fuels (Source: Revised 1996 IPCC Guidelines for National Greenhouse Gas Inventories: Workbook cited at http://www.ipcc-nggip.iges.or.jp/public/gl/guidelin/ch1wb1.pdf)
Any comment:	-

NEWNE Grid Calculation:

Data/Parameter:	ID.5 / EF _{OM,y}
Data unit:	tCO ₂ /MWh
Description:	EF _{OM,y} is the average operating margin CO ₂ emission factor of power plant connected to the NEWNE electricity grid as calculated and defined in the PoA-DD
Source of data to be used:	CEA Database
Value applied	EF _{OM,y} = 0.99 tCO ₂ /MWh
Justification of the choice of data or description of measurement methods and procedures actually applied :	No measurement required. Data is obtained based on EF database provided by CEA

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Any comment:	The value of $EF_{OM,y}$ is fixed for the first crediting period of the CPA-DD and will be revised for each crediting period applying the latest value in the PoA-DD
Data/Parameter:	ID.6 / $EF_{BM,y}$
Data unit:	tCO ₂ /MWh
Description:	$EF_{BM,y}$ is the build margin CO ₂ emission factor of power plants in the sample group 'm' connected to NEWNE electricity grid as calculated and defined in the PoA-DD
Source of data to be used:	CEA Database
Value applied	$EF_{BM,y} = 0.81$ tCO ₂ /MWh
Justification of the choice of data or description of measurement methods and procedures actually applied :	No measurement required. Data is obtained from CEA published database.
Any comment:	The value of $EF_{BM,y}$ is fixed for the first crediting period of the CPA-DD and will be revised for each crediting period applying the latest value in the PoA-DD

Data/Parameter:	ID.7 / $EF_{CM,y}$
Data unit:	tCO ₂ /MWh
Description:	$EF_{CM,y}$ is the combined margin CO ₂ emission factor of power plants connected to the NEWNE electricity grid in year 'y', calculated and defined as per PoA-DD
Source of data to be used:	CEA Database
Value applied	$EF_{CM,y} = 0.94$ tCO ₂ /MWh for solar & wind projects $EF_{CM,y} = 0.9$ tCO ₂ /MWh for hydro projects
Justification of the choice of data or description of measurement methods and procedures actually applied :	No measurement required. Data is obtained based published database by CEA.
Any comment:	The value of $EF_{CM,y}$ is fixed for the first crediting period of the CPA-DD and will be revised for each crediting period applying the latest value in the PoA-DD

Southern Grid Calculation:

Data/Parameter:	ID.8 / $EF_{OM,y}$
Data unit:	tCO ₂ /MWh
Description:	$EF_{OM,y}$ is the average operating margin CO ₂ emission factor of power plant connected to the Southern electricity grid as calculated and defined in the PoA-DD

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Source of data to be used:	CEA Database
Value applied	$EF_{OM,y} = 0.97 \text{ tCO}_2/\text{MWh}$
Justification of the choice of data or description of measurement methods and procedures actually applied :	No measurement required. Data is obtained based on EF database provided by CEA
Any comment:	The value of $EF_{OM,y}$ is fixed for the first crediting period of the CPA-DD and will be revised for each crediting period applying the latest value in the PoA-DD

Data/Parameter:	ID.6 / $EF_{BM,y}$
Data unit:	tCO_2/MWh
Description:	$EF_{BM,y}$ is the build margin CO ₂ emission factor of power plants in the sample group 'm' connected to Southern electricity grid as calculated and defined in the PoA-DD
Source of data to be used:	CEA Database
Value applied	$EF_{BM,y} = 0.76 \text{ tCO}_2/\text{MWh}$
Justification of the choice of data or description of measurement methods and procedures actually applied :	No measurement required. Data is obtained from CEA published database.
Any comment:	The value of $EF_{BM,y}$ is fixed for the first crediting period of the CPA-DD and will be revised for each crediting period applying the latest value in the PoA-DD

Data/Parameter:	ID.7 / $EF_{CM,y}$
Data unit:	tCO_2/MWh
Description:	$EF_{CM,y}$ is the combined margin CO ₂ emission factor of power plants connected to the Southern electricity grid in year 'y', calculated and defined as per PoA-DD
Source of data to be used:	CEA Database
Value applied	$EF_{CM,y} = 0.92 \text{ tCO}_2/\text{MWh}$ for solar & wind projects $EF_{CM,y} = 0.86 \text{ tCO}_2/\text{MWh}$ for hydro projects
Justification of the choice of data or description of measurement methods and procedures actually applied :	No measurement required. Data is obtained based published database by CEA.
Any comment:	The value of $EF_{CM,y}$ is fixed for the first crediting period of the CPA-DD and will be revised for each crediting period applying the latest value in the PoA-DD



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

The total emission reduction quantum of the SSC-CPA is calculated on the basis of the equations and parameters presented and explained in the section E.6.1 of the SSC-PoA-DD and B.5.1 of this document.

Baseline emissions

Table 6: Net electricity generation of the project

Year	Y1	Y2	Y3	Y4	Y5	Y6	Y7
EG _{BL,y} (MWh/year)	XYZ	XYZ	XYZ	XYZ	XYZ	XYZ	XYZ

$$EF_{CO_2} = EF_{CM,y} = 0.XX \text{ tCO}_2/\text{MWh}^4$$

Equation:

$$BE_y = EG_{BL,y} * EF_{CO_2} \quad (1)$$

Where:

BE_y Baseline Emissions in year y; t CO₂

EG_{BL,y} Energy baseline in year y; MWh

EF_{CO₂} CO₂ Emission Factor in year y; t CO₂e/MWh

Result:

Table 7: Baseline emissions from electricity generation

Year	Y1	Y2	Y3	Y4	Y5	Y6	Y7
BE _y (tCO ₂ /year)	XYZ	XYZ	XYZ	XYZ	XYZ	XYZ	XYZ

Project Emissions

Emissions from fossil fuel consumption (PE_{FC,i,y})

PE_{FC,i,y} shall only be accounted for hydro project, which have a diesel generator as a back-up, or solar thermal power plants with a fossil fuel component, according to the following formula:

$$PE_{FC,j,y} = \sum_i FC_{i,j,y} \times COEF_{i,y} \quad (2)$$

Where:

PE_{FC,j,y} Are the CO₂ emissions from fossil fuel combustion in process j during the year y;

⁴ CEA published value.

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tCO₂/yr

FC_{i,j,y} Is the quantity of fuel type I combusted in process j during the year y; tonne/yr

COEF_{i,y} Is the CO₂ emission coefficient of fuel type I in year y; tCO₂/tonne

i Are the fuel types combusted in process i during the year y

“explanation of what applies to the SSC-CPA”.

Year	Y1	Y2	Y3	Y4	Y5	Y6	Y7
PE _{FC,i,y} (tCO ₂ /year)	XYZ	XYZ	XYZ	XYZ	XYZ	XYZ	XYZ
FC _{i,i,y} (tonne/year)	XYZ	XYZ	XYZ	XYZ	XYZ	XYZ	XYZ
COEF _{i,y} (t CO ₂ /tonne)	3.185	3.185	3.185	3.185	3.185	3.185	3.185

Emissions from water reservoirs of hydro power plants (PE_{HP,y})

The PoA only comprises of hydro power projects for which Power Density is greater than 10 W/m²

Hence, there would be no project emissions in this case.

The SSC-CPA is a “technology type with/without reservoir” and therefore “needs/does not need” to calculate the power density of hydro power plants.

Such criteria shall be checked as per formulas provided in methodology ACM0002, version 12.3.0:

$$PD = \frac{Cap_{PJ} - Cap_{BL}}{A_{PJ} - A_{BL}} \quad (3)$$

Where:

- PD = Power density of the project activity (W/m²)
- 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 and hence all CPAs, 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 (m²)
- 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 (m²). For new reservoirs and hence all CPAs, this value is zero

Year	Y1 – Y7
PD (W/m ²)	XYZ
Cap _{PJ} (W)	XYZ

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A _{PJ}	XYZ
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Leakage Emissions

LE_y = 0

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

Table 8: Ex-ante estimation of emission reductions

Year	Estimation of project activity emissions (tonnes of CO₂ e)	Estimation of baseline emissions (tonnes of CO₂ e)	Estimation of leakage (tonnes of CO₂ e)	Estimation of overall emission reductions (tonnes of CO₂ e)
Y1	XYZ	XYZ	XYZ	XYZ
Y2	XYZ	XYZ	XYZ	XYZ
Y3	XYZ	XYZ	XYZ	XYZ
Y4	XYZ	XYZ	XYZ	XYZ
Y5	XYZ	XYZ	XYZ	XYZ
Y6	XYZ	XYZ	XYZ	XYZ
Y7	XYZ	XYZ	XYZ	XYZ
Total estimated emissions and emission reductions in tonnes of CO ₂ e	XYZ	XYZ	XYZ	XYZ

B.6.1. Description of the monitoring plan:

The monitoring plan of "name of SSC-CPA" is consistent with methodology AMS 1.D. "Grid connected renewable electricity generation" (version 17). Description of the monitoring plan is presented below.

1. Monitoring Plan Objective and Organisation

The project implementer will monitor the electricity delivered to the XYZ Grid by the respective project. The project implementer personnel will be trained adequately for this task. The data will be archived electronically and be stored for 2 years after the end of the crediting period of the SSC-CPA.

To ensure that the data is reliable and transparent, the project implementer will also establish Quality Assurance and Quality Control (QA/QC) measures to effectively control and manage data reading, recording, auditing as well as archiving data and all relevant documents.

2. Monitoring Data

Data to be monitored is the net electricity delivered to the XYZ Grid and the fossil fuel consumption by the project. The monitoring of net electricity delivered as follows:

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- a) Every month or as per grid companies requirements, the CPA implementer personnel and the grid company will take a meter reading and record this figure in the operational data record. The operational data record will be used as the electricity invoice preparation.
- b) If electricity meter failed to record the exported electricity from the proposed SSC-CPA, the meter reading and record will be taken from the back-up meter reading that is installed near to the main meter. The entity responsible for monitoring, which is the CPA implementer, will provide the verifying DOE with meter readings for electricity delivered and calibration certificates. Net Electricity exported will also be crosschecked with the help of invoices available for power exported.

The monitoring of fossil fuel consumption is as follows:

Fuel consumption will be monitored by the CPA implementer through the collection of invoices or by monitoring the number of operation hours of the engine. In the latter case, the volume of fuel consumed will be calculated by multiplying the number operation hours by the specific consumption of the engine. Monthly records of fossil fuel purchase invoices would be maintained. In case of operation hours of the engine; monthly records would be maintained on number of operating hours.

The data will be archived electronically and be stored for 2 years after the end of the crediting period of each SSC-CPA by the coordinating entity.

Data / Parameter:	ID.8 / EG _{BL,y}
Data unit:	MWh
Description:	Electricity energy baseline in year y; (= Quantity of net electricity generation supplied by the project plant/unit to the grid in year y)
Source of data used:	Measured by electricity meter(s)
Value of applied:	“To be specified”
Description of measurement methods and procedures to be applied:	<p>The electricity production will be measured continuously by a bi-directional energy meter with high accuracy as per government regulation at the interconnection point or sub-station as per agreed PPA. The net electricity production will be calculated by subtracting the electricity exported with the electricity imported by the SSC-CPA.</p> <p>Electricity production would be measured continuously and recorded at least monthly including the calculation of net electricity exported. The meter installed would be of accuracy 0.5 class at least.</p> <p>Depending on the project type metering procedures might differ and is described in detail in point number 5 of E.7.2 of the PoA-DD.</p>
QA/QC procedures to be applied:	<p>Measuring equipment should be certified to national or IEC standards and calibrated according to the national standards and reference points or IEC standards and recalibrated at appropriate intervals according to manufacturer specifications, but at least once in three years.</p> <p>All the electricity meters installed at individual CPAs would be calibrated at least once in three years or as per the frequency stated in the PPA (whichever is lower). The meters would be calibrated according to the National Standards or IEC standards.</p>

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	Net Electricity exported will also be crosschecked with the help of invoices available for power exported.
Any comment:	Electricity meters installed would be at least of accuracy 0.5 class.

Data / Parameter:	$FC_{i,j,v}$
Data unit:	Litre
Description:	Fuel consumption of fuel type i
Source of data:	Fuel invoices
Value applied	“To be specified”
Description of measurement methods and procedures to be applied:	Fuel consumption will be monitored through the collection of diesel invoices or by monitoring the number of operation hours of the diesel engine. In the latter case, the volume of fuel consumed will be calculated by multiplying the number operation hours by the specific consumption of the engine. Monthly records of fossil fuel purchase invoices would be maintained. In case of operation hours of the engine; monthly records would be maintained on number of operating hours.
QA/QC procedures to be applied:	None
Any comment:	If the project emission of fossil fuel is less than 1% of total emission reduction, then this project emission could be excluded.

3. Quality Assurance and Quality Control

QA&QC procedures for recording, maintaining and archiving data shall be implemented as part of this SSC-CPA.

The installation location of the meters will be at the first interconnected point with the “XX kV XYZ” Grid transmission line. The CPA implementer will implement QA&QC measures to calibrate and guarantee the accuracy of metering and safety of the project operation.

The electricity meter will be calibrated at least once per 3 years (as per General Guidelines to SSC CDM methodologies (Version 17). to guarantee its accuracy in metering and recording the net electricity production of the SSC-CPA.

4. Verification of Monitoring Results

The CPA implementer, with the help of the coordinating entity will carry the responsibility for providing the DOE with all required necessary information, before, during and in the event of queries, after the verification.

The CME will follow the procedures during the PoA verification, as per section A.4.4.2 of the PoA-DD.

As part of the PoA, the CPA implementer shall follow the instructions given by the CME and the DOE in the course of the verification.

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

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

Local and focalized impacts of each “solar/wind/hydro” power project (depending on the location, capacity, and construction) justify a separate environmental assessment for each SSC-CPA. Environmental analysis will therefore be conducted for each “solar/wind/hydro” power plant included in an SSC-CPA according to the applicable environmental policies at the time of inclusion of SSC-CPA to the SSC-PoA.

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

In relation to the baseline scenario no negative environmental impacts will arise as a result of the project activity.

“Environmental Impacts to be elaborated here”

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

“EIA requirements to be elaborated here”

SECTION D. Stakeholders’ comments

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

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

Local and focalized impacts of each renewable energy project (depending on the location, capacity, and construction) justify an Local Stakeholder Consultation at CPA level.

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

“Invitation procedure to be summarised here”

D.3. Summary of the comments received:

“Summary of all comments received will be listed here”

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

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All comments were considered and there was no need to amend the SSC-CPA-DD in order to take those comments in to account.

Annex 1

**CONTACT INFORMATION ON ENTITY/INDIVIDUAL RESPONSIBLE FOR THE small-scale
CPA**

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

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Annex 2

INFORMATION REGARDING PUBLIC FUNDING

The project does not receive any public funding.

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Annex 3

BASELINE INFORMATION

“The baseline information was retrieved from CEA website as further defined in the PoA-DD or newly calculated in case of a not defined grid”

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Annex 4

MONITORING INFORMATION
