



**CLEAN DEVELOPMENT MECHANISM
PROGRAM ACTIVITY DESIGN DOCUMENT FORM (CDM-CPA-DD)
Version 01**

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NOTE:

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


SECTION A. General description of CDM programme activity (CPA)
A.1. Title of the CPA:

CPA ‘###’ under PoA ‘South African Large Scale Grid Connected Solar Park Programme’

Version number: ‘###’

Date: ‘Date of completion of drafting of a CPA-DD in format DD/MM/YYYY’

A.2. Description of the CPA:

This CPA falls under sectorial scope: Energy industries (renewable-/ non renewable sources); Type: Renewable energy; and category: Electricity generation and supply.

The purpose of the CPA is ‘specify the purpose’

CPA ‘###’ envisages [select appropriate]

1. the installation of a new grid connected solar park at a site where no solar park was operated prior to the implementation of the CPA; or
2. the capacity addition of an existing grid connected solar park.

‘Provide a description of the CPA according to the following criteria:

- CPA capacity;
- Technology to be employed;
- Information on the Power Purchase Agreement which the CPA developer is going to sign (Government PPA or Private PPA);
- Location of the CPA;
- CPA developer’s name;
- Implementation schedule (in date format DD/MM/YYYY);
- A description of the scenario prior to the CPA and how the CPA reduces greenhouse gas emissions; and
- View of the CPA developer on the sustainable development; as well as
- Other relevant information (if required).’

A.3. Entity/individual responsible for CPA:

‘Solar park developer name’ (Specify whether the “Entity/individual responsible for CPA” is a private or public entity)

‘Briefly describe the entity’

A.4. Technical description of the CPA:

This CPA falls under sectorial scope: Energy industries (renewable-/ non renewable sources); Type: Renewable energy; and category: Electricity generation and supply.

‘Brief description of the CPA, type of technology, expected technology supplier (if possible)’



The present CPA generates ‘Capacity of CPA’ MW and annually produces ‘Net electricity production’ MWh of electricity. The generated renewable electricity is then distributed to the national grid of the RSA.

A.4.1. Identification of the CPA:

CPA ‘###’ (under the South African Large Scale Grid Connected Solar Park Programme)

A.4.1.1. Host Party:

The Republic of South Africa (RSA)

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

‘Insert a description of the location of the CPA. As a minimum the information should include the region/province and GPS co-ordinates.’



Figure A.4-1: CPA location within the RSA [Indicate CPA location with a red dot]

[Insert the detailed map(s)]

A.4.2. Duration of the CPA:

A.4.2.1. Starting date of the CPA:

‘CPA starting date: dd/mm/yyyy (add description)’



A.4.2.2. Expected operational lifetime of the CPA:

‘CPA technical lifetime in format (years, months) with reference’

A.4.3. Choice of the crediting period and related information:

Renewable crediting period

A.4.3.1. Starting date of the crediting period:

‘Expected starting date of operation of CPA in format ‘dd/mm/yyyy’ or the date of inclusion of the CPA in the PoA; whichever is later.

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

7 year

A.4.4. Estimated amount of emission reductions over the chosen crediting period:

Years	Annual estimation of emission reductions in tonnes of CO ₂ e
‘Year 1’ (From ‘starting date of CPA’ to 31/12/ ‘Year1’)	
‘Year 2’	
‘Year 3’	
‘Year 4’	
‘Year 5’	
‘Year 6’	
‘Year 7’	
‘Year 8’ (From 01/01/‘Year 8’ to ‘end of month preceding month of starting date of crediting period) ³	
Total estimated reductions (tonnes of CO₂ e)	
Total number of crediting years	7
Annual average over the crediting period of estimated reductions (tonnes of CO₂ e)	

A.4.5. Public funding of the CPA:

No public funding will be applied to the CPA⁴.

A.4.6. Confirmation that CPA is neither registered as an individual CDM project activity nor is part of another Registered PoA:

CPA ‘###’ is not registered as an individual CDM project activity or as part of another registered PoA⁵.

³ NOTE: In the event that the crediting period starts on 1st of January of ‘Year1’ there will be no overlap between years. In this case ‘Year 8’ will be omitted.

⁴ See section B.2 – eligibility criterion 10.



SECTION B. Eligibility of CPA and Estimation of emissions reductions

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

South African Large Scale Grid Connected Solar Park Programme⁶ - CPA ‘###’

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

Compliance with the eligibility criteria according to the CDM-PoA-DD are demonstrated in Table B.2-1.

Table B.2-1: Compliance with Eligibility criteria (also refer to Table A.4-2 in CDM-PoA-DD)

PoA Eligibility criteria (Table A.4-2 in CDM-PoA-DD)	Compliance with eligibility criteria
1. The CPA is in the geographical area of the Republic of South Africa (RSA).	‘Provide description and reference’
2. The location of the CPA is uniquely identified by the GPS coordinates. The GPS coordinates has been crosschecked with previous records of GPS coordinates of existing CPAs under this PoA to ensure that no overlap between activities can occur.	‘Provide description and reference’
3. The CPA owner has contractually agreed and signed the following: a) The CPA has neither been and will not be registered as a CDM project activity, nor as a CPA under another PoA; and b) The owner is aware that the activity will be subscribed to the present PoA.	‘Provide description and reference’
4. The CME has checked the UNFCCC CDM project database to verify that the proposed CPA has not been previously submitted to the UNFCCC.	‘Provide description and reference’

⁵ See section B.2 – eligibility criterion 3.

⁶ hereinafter “the PoA”



<p>5. The CPA is one of the following:</p> <p>a) The installation of a new grid connected solar park at a site where no solar park was operated prior to the implementation of the CPA; or</p> <p>b) The capacity addition of an existing grid connected solar park.</p>	<p>The CPA is “insert one a), b)”</p>
<p>6. The CPA is connected to the national grid of the RSA via either:</p> <p>a) The national transmission, distribution or reticulation lines;⁷ or</p> <p>b) A municipal electricity network that is connected to the national transmission, distribution or reticulation lines.</p>	<p>The CPA is connected to the national grid of the RSA via “insert one a) or b)”</p>
<p>7. The CPA is in line with the applicability conditions of ACM0002 (version 12.2.0).</p>	<p>‘Provide description and reference’</p>
<p>8. The start date of the CPA is clearly defined in the CPA-DD with supporting documentary evidence and is later than the date of start of global stakeholder process for the PoA (05/04/2012).</p>	<p>‘Provide description and reference’</p>
<p>9. Additionally was demonstrated individually for the CPA according to the procedures described in the Section E.5.1 of the CDM-CPA-DD.</p>	<p>‘Provide description and reference’</p>
<p>10. The environmental impact assessment required by RSA’s legislation and local stakeholder consultations has been completed.</p>	<p>‘Provide description and reference’</p>
<p>11. No official Development Aid will be involved or diverted as a result of the CPA. The official declaration of ‘no development aid’ has been provided by the solar park developer.</p>	<p>‘Provide description and reference’</p>
<p>12. A CME has checked that the CPA satisfies the eligibility criteria of the latest version of the PoA-DD.⁸</p>	<p>“Provide description”</p>

⁷ ‘Eskom grid’ at the time of drafting of the PoA-DD

⁸ Additional criterion identified by the CME



CPA '####' is eligible to the PoA because it complies with the eligibility criteria as defined in section A.4.2.2 of the CDM-PoA-DD.

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

The additionality of the CPA is demonstrated and assessed using the procedures described in the PoA-DD.

Step 1: Identification of alternatives to the project activity⁹ consistent with current laws and regulations

For CPA '####' the following alternatives are considered, which complies with all applicable mandatory legal and regulatory requirements:

Alternative 1	The proposed CPA is undertaken without CDM revenue 'Provide a brief description'
Alternative 2	The CPA participant does not undertake an investment but an investment to provide comparable outputs or services is undertaken by a third party (or parties). The electricity delivered to the grid by CPA '####' would have otherwise been generated by the operation of grid-connected Eskom power plants and by the addition of new generation sources. This alternative is a business as usual scenario and corresponds to the baseline scenario.

Step 2: Investment analysis

Sub-step 2a: Determine appropriate analysis method

It has to be determined whether to apply simple cost analysis (Option I), investment comparison analysis (Option II) or benchmark analysis (Option III).

The benchmark analysis (Option III) is chosen.

Sub-step 2b: Apply benchmark analysis (Option III)

For the benchmark analysis, the project Internal Rate of Return (project IRR) before tax is used to determine the CPA financial viability.

'Establish the benchmark for the CPA'

Sub-step 2c: Calculation and comparison of financial indicators

CPA '####' will obtain revenue by selling electricity at a contractually determined price according to a **[select appropriate]**

1. Government PPA

⁹ The 'Tool for the demonstration and assessment of additionality' refers to a "project activity". In the case of a PoA the "project activity" is referred to as a CDM Programme Activity (CPA).



2. Private PPA

[If Government PPA is chosen, describe how CPAs benefit from national and/or sectoral policies or regulations that give comparative advantages to less emissions-intensive technologies (RE technologies) over more emissions-intensive technologies]

‘Show the input data that is required to calculate the project IRR for the CPA. Present the result and the calculations (in Annex 3).’

‘Display project IRR of CPA’

Outcome of Sub-step 2c: [Select appropriate and add description if necessary]

Project IRR of the CPA \geq Benchmark	The CPA is economically feasible without the revenue from the sale of CERs. Proceed to Step 3 (Barrier analysis)
Project IRR of the CPA $<$ Benchmark	The CPA is not economically feasible without the revenue from the sale of CERs. This serves as a strong argument in favour of additionality. Proceed to Sub-step 2d (Sensitivity analysis)

Sub-step 2d: Sensitivity analysis

The following variables are included in the sensitivity analysis:

- Income from electricity sale;
- Investment cost; and
- Operations and Maintenance (O&M) costs.

The results of the sensitivity analysis are displayed in Table ‘###’.

‘Insert the Table and give description if required’

Outcome of Sub-step 2d: [Select appropriate and add description if necessary]

Any one of the IRR values presented in the Table for the CPA \geq Benchmark	The investment analysis does not provide a valid argument in favour of additionality. Proceed to Step 3 (Barrier analysis)
All IRR values presented in the Table for the CPA $<$ Benchmark	The investment analysis provides a valid argument in favour of additionality. Proceed to Step 4 (Common practice analysis). (Step 3 is optional)

Step 3: Barrier analysis

The barrier analysis is optional. ‘Include only the chosen option’

Skip Step 3	The barrier analysis is not applied, proceed to Step 4 (Common practice analysis)
Apply Step 3	Apply barrier analysis



‘Apply Barrier analysis if needed’

Step 4: Common practice analysis

The CPA has demonstrated to be ‘first of its kind’ according to step 3	No common practice analysis is required
CPA is not ‘first of its kind’	Apply common practice analysis

Sub-step 4a: Analyse other activities similar to the proposed project activity

‘Analyse other activities similar to the proposed CPA’

Outcome of Sub-step 4a: [Select appropriate and add description if necessary]

There are no activities similar to the CPA in the RSA	The proposed CPA is additional
There are activities similar to the CPA in the RSA	Proceed to sub-step 4b

‘Carry out Step 4b if needed’

Outcome of Step 4: [Select appropriate and add description if necessary]

There are no activities similar to the CPA in the RSA as per <i>Sub-step 4a</i>	<i>The proposed CPA undertaken without being registered under this PoA is not a baseline scenario; the proposed CPA is additional.</i>
There are similar activities to the CPA in the RSA, and these projects enjoyed certain benefits that rendered them financial/economically attractive as per <i>Sub-step 4a and 4b</i>	<i>The proposed CPA undertaken without being registered under this PoA is not a baseline scenario; the proposed CPA is additional.</i>
There are similar project activities to CPA in the RSA, and these projects did not enjoy benefits that rendered them more financial/economically attractive as per <i>Sub-step 4b</i>	<i>The proposed CPA is not additional.</i>

B.4. Description of the sources and gases included in the project boundary and proof that the CPA is located within the geographical boundary of the registered PoA.

The spatial extent of the CPA boundary includes the proposed renewable energy power plant(s) and all power plants physically connected to the grid of the Republic of South Africa.

The greenhouse gases and emission sources that are included in or excluded from the CPA boundary are shown in Table B.4-1.



Table B.4-1: Emissions sources included in or excluded from the CPA boundary

<u>Source</u>		Gas	Included ?	Justification / Explanation
Baseline	CO ₂ emissions from electricity generation in fossil fuel fired power plants that are displaced due to the CPA	CO ₂	Yes	Main emission source
		CH ₄	No	Minor emission sources, which are not included in the baseline
		N ₂ O	No	
CPA	GHG emissions from the proposed CPA	CO ₂	No	GHG emissions for the present CPA are equal to zero and no fossil fuel combustion will occur as part of the operation of the solar park.
		CH ₄	No	
		N ₂ O	No	

CPA '###' is located within the boundaries of the Republic of South Africa as shown in Section A.4.1.2.

B.5. Emission reductions:

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

Data / Parameter:	<i>EF_{gridCM}</i>
Data unit:	tCO ₂ /MWh
Description:	Combined margin CO ₂ emission factor for grid connected power generation calculated ex ante
Source of data used:	CDM-PoA-DD
Value applied:	0.988
Justification of the choice of data or description of measurement methods and procedures actually applied :	Calculated <i>ex ante</i> based on the “Tool to calculate the emission factor for an electricity system”
Any comment:	This value was appointed as a constant for the whole crediting period.

Data / Parameter:	<i>P_y</i>
Data unit:	MW
Description:	Power capacity of the CPA in year y
Source of data used:	'Reference'
Value applied:	'###'
Justification of the choice of data or description of measurement methods and procedures	Evaluated by the solar park developer



actually applied :	
Any comment:	The value reflects the expected maximum power output of the CPA.
Data / Parameter:	LF
Data unit:	Ratio
Description:	Load factor of the CPA
Source of data used:	'Reference'
Value applied:	'###'
Justification of the choice of data or description of measurement methods and procedures actually applied :	[Specify]
Any comment:	This value will be used for the initial estimation of the amount of electricity that will be delivered to the grid by the CPA.

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

The total emission reductions of the CPA are calculated on the basis of the equations and parameters presented and explained in Section E.6 of the PoA-DD and B.5.1 of this document.

Emission reduction calculation

Emission reductions in year y are calculated as follows:

$$ER_y = EG_{CPA,y} \times EF_{grid,CM} \tag{B.5-1}$$

Where:

- ER_y = Emission reductions in year y (tCO₂e/yr)
- $EG_{CPA,y}$ = Quantity of net electricity generation that is produced and fed into the grid as a result of the implementation of the CPA in year y (MWh)
- $EF_{grid,CM}$ = Combined margin CO₂ emission factor for grid connected power generation calculated ex ante (tCO₂/MWh)

Combined margin CO₂ emission factor for grid connected power generation calculated ex ante is fixed for all CPAs of the PoA (see Section E.6 of the PoA-DD) and equal to '###' tCO₂/MWh.

Total quantity of electricity delivered by CPA '###' in year y ($EG_{CPA,y}$) is calculated as follows:

$$EG_{CPA,y} = \sum P_y \times LF \times 365 \left(\frac{days}{year} \right) \times 24 \left(\frac{h}{day} \right) \tag{B.5-2}$$

Where:

- $EG_{CPA,y}$ = Quantity of net electricity generation that is produced and fed into the grid as a result



of the implementation of the CPA in year y (MWh)
 P_y = Power capacity of the CPA in year y (MW)
 LF = Load factor of the CPA

‘Present results of calculation’

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

Year	Estimation of project emissions (tonnes of CO ₂ e)	Estimation of baseline emissions (tonnes of CO ₂ e)	Estimation of leakage (tonnes of CO ₂ e)	Estimation of overall emission reductions (tonnes of CO ₂ e)
‘Year 1’ (From ‘starting date of CPA’ to 31/12/ ‘Year 1’)	0		0	
‘Year 2’	0		0	
‘Year 3’	0		0	
‘Year 4’	0		0	
‘Year 5’	0		0	
‘Year 6’	0		0	
‘Year 7’	0		0	
‘Year 8’ (From 01/01/ ‘Year 8’ to ‘end of month preceding month of starting date of crediting period’) ¹⁰	0		0	
Total (tonnes of CO ₂ e)	0		0	

B.6. Application of the monitoring methodology and description of the monitoring plan:

B.6.1. Description of the monitoring plan:

The monitoring plan of CPA ‘###’ is devised as per approved consolidated baseline and monitoring methodology ACM0002 (Version 12.2.0) “Consolidated baseline methodology for grid-connected electricity generation from renewable sources”.

For the sake of clarification on the operational and management structure also refer to The Management System for the South African Large Scale Grid Connected Solar Park Programme (Version 1) and Section A.4.4.1 and E.7.2.1 of the PoA-DD.

The following monitoring procedures shall be applied:

¹⁰[NOTE: In the event that the crediting period starts on 1st of January of ‘Year 1’ there will be no overlap between years. In this case ‘Year 8’ will be omitted.]



1. Monitoring period

The monitoring period starts from the date of commissioning of the CPA or the date of registration of the proposed CPA under the PoA (whichever is later).

2. Data monitored and sources

The quantity of net electricity generation that is produced and fed into the grid by the CPA in year y shall be determined on the basis of electricity meters. The generated electricity will be continuously measured and recorded at least on a monthly basis by the CPA personnel. The metering instruments shall be installed in accordance with the requirements of the Grid and the Distribution Metering Codes at the point of supply which defines the commercial boundary between the solar park owner and the grid. Readings of the electricity meters shall be cross-checked with records for sold electricity. Data on electricity supply will be digitally archived and submitted to the CME.

The sources of data for calculation of GHG emission reductions in the course of monitoring shall be the internal electricity billing reports of the solar parks. The emission reductions shall be calculated using the Formula (B.5-1).

3. The monitoring team

[Specify]

4. Data storage

All data collected as part of monitoring plan should be archived electronically and be kept at least for 2 years after the end of the crediting period.

5. Instrumentation calibration

[Specify]

6. Emergency situations

If any instrument that is used in the monitoring process fails, 'Name of solar park developer(s)' shall remedy the situation as soon as possible and if necessary shall replace the instrument. In case of breakdown of any vital electricity generation equipment the electricity generation will go down, and amount of electricity supplied to the grid by the solar park will be reduced. All accidents that occur at the solar park shall be recorded by 'Name of solar park developer(s)'. Information on major accidents shall be included in the monitoring report.

The parameter to be monitored is:

Data / Parameter:	$EG_{CPA,y}$
Data unit:	MWh
Description:	Quantity of net electricity generation that is produced and fed into the grid as a result of the implementation of the CPA in year y
Source of data to be used:	On-site measurement by electricity meters
Value of data:	'Electricity delivered in respective year by CPA'



Description of measurement methods and procedures to be applied:	Measurement by means of electricity meters installed for each CPA at the point of supply which defines the commercial boundary between the national grid and the solar park owners. The generated electricity will be continuously measured and recorded at least on a monthly basis by the CPA personnel. Data on electricity supply will be digitally archived and submitted to the CME.
QA/QC procedures to be applied:	Electricity meters will be calibrated according to South African Bureau of Standards (SABS) ¹¹ (relevant industry standards in the RSA). Readings are cross-checked with records for sold electricity.
Any comment:	-

¹¹ According to the SABS the SANS 474 regulation should be followed.


SECTION C. Environmental analysis

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:

The environmental analysis is undertaken at the CPA level. The environmental impact of solar parks depends on the particular location, size, how the plant is embedded in its environment as well as its uptake in the local community.

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

‘Provide a summary of the findings of the environmental study¹²’

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

This section is addressed in the PoA-DD.

¹² Reference the relevant Environmental Assessment document


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

Stakeholder's comments are invited at CPA level. CPA specific information is required for assessing the environmental impact and therefore this process is conducted at CPA level. Since stakeholders comments forms part of the EIA process, it will therefore also be conducted at CPA level in order to include essential CPA specific information.

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

- 'Describe invitation procedure for public participation meeting'
- 'List invitees'
- 'Description of meeting and how comments were compiled'

D.3. Summary of the comments received:

'Provide a summary of comments received'

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

'Provide a description of the assessment and follow up of comments'



Annex 1

CONTACT INFORMATION ON ENTITY/INDIVIDUAL RESPONSIBLE FOR THE CPA

Organization:	
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:	



NAME /TITLE OF THE PoA: South African Large Scale Grid Connected Solar Park Programme



Annex 2

INFORMATION REGARDING PUBLIC FUNDING



Annex 3

BASELINE INFORMATION



NAME /TITLE OF THE PoA: South African Large Scale Grid Connected Solar Park Programme



Annex 4

MONITORING INFORMATION
