PoA Validation Report

"Grid Connected Photovoltaic (PV) Renewable Electricity Generating Facilities PoA"
in
South Africa

Report No. 2012-9432

Revision No. 01

Det Norske Veritas

POA VALIDATION REPORT

Date of first issue: 26 July 2012	ConCert Project No.: PRJC-385586-2012-CCS-ITA
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Summary:

Title of PoA: Grid Connected Photovoltaic (PV) Renewable Electricity Generating Facilities PoA
Country: South Africa
Methodology: ACM0002 **Version:** 13.0.0
GHG reducing Measure/Technology: Solar photovoltaic electricity generation
ER estimate of PoA: 200 000 tCO_2e per year (average)

Size

☒ Large Scale ☐ Small Scale

Validation Phases:

☒ Desk Review
☒ Follow up interviews
☒ Resolution of outstanding issues

Validation Status

☐ Corrective Actions Requested ☐ Clarifications Requested
☒ Approval and submission for registration ☐ Rejected

In summary, it is DNV's opinion that the programme of activity "Grid Connected Photovoltaic (PV) Renewable Electricity Generating Facilities PoA" in South Africa, as described in the PoA-DD, version 1.5 of 1 December 2012, meets all relevant UNFCCC requirements for the CDM and correctly applies the baseline and monitoring methodology ACM0002, version 13.0.0. Hence DNV requests the registration of the project as a CDM project activity.

Report No.: 2012-9432	Subject Group: Environment
Report title: "Grid Connected Photovoltaic (PV) Renewable Electricity Generating Facilities PoA" in South Africa	
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Date of this revision:	Rev. No.:	Number of pages:
11 December 2012	01	29

Indexing terms

Key words
Climate Change
Kyoto Protocol
Validation
Clean Development Mechanism

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Abbreviations

CAR	Corrective Action Request
CDM	Clean Development Mechanism
CPA-DD	CDM component project activity design document
CH_4	Methane
CL	Clarification request
CME	Coordinating/Managing Entity
CO_2	Carbon dioxide
CO_2e	Carbon dioxide equivalent
CPA	Component project activity
DNV	Det Norske Veritas
DNA	Designated National Authority
FAR	Forward Action Request
GHG	Greenhouse gas(es)
GWP	Global Warming Potential
IPCC	Intergovernmental Panel on Climate Change
IPP	Independent Power Producer
LoA	Letter of approval
N_2O	Nitrous oxide
NGO	Non-governmental Organisation
MoC	Modalities of communication
ODA	Official Development Assistance
PoA	Programme of activities
PoA-DD	CDM programme of activities design document
PS	Clean Development Mechanism Project Standard
PV	Photovoltaic
tCO_2e	Tonnes of CO_2 equivalents
UNFCCC	United Nations Framework Convention on Climate Change
VVS	Clean Development Mechanism Validation and Verification Standard

1 EXECUTIVE SUMMARY – VALIDATION OPINION

DNV Climate Change Services AS (DNV) has performed a validation of the programme of activity (PoA) "Grid Connected Photovoltaic (PV) Renewable Electricity Generating Facilities PoA" in South Africa including generic information relevant to all component project activities (CPAs) to be included in this PoA. The validation was performed on the basis of UNFCCC criteria for the Clean Development Mechanism as well as criteria given to provide for consistent project operations, monitoring and reporting.

The review of the project design documentation and the subsequent follow-up interviews have provided DNV with sufficient evidence to determine the fulfilment of stated criteria.

The host Party is South Africa and no Annex I Party has yet been identified. This Party fulfils the participation criteria and has approved the PoA and authorized the project participant Carbon Protocol of SA. The DNA from South Africa confirmed that the project assists in achieving sustainable development.

The PoA correctly applies the baseline and monitoring methodology ACM0002, version 13.0.0 "*Consolidated baseline methodology for grid-connected electricity generation from renewable sources*".

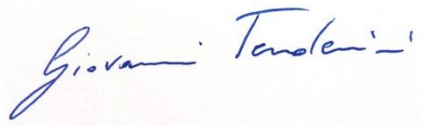
As a result, the PoA results in reductions of CO_2 emissions that are real, measurable and give long-term benefits to the mitigation of climate change. It is demonstrated that the PoA and typical component project activities (CPAs) are not a likely baseline scenario. Emission reductions attributable to the PoA are hence additional to any that would occur in the absence of the project activity.

The total emission reductions of all CPAs expected to be included in the PoA are estimated to be on the average 200 000 tCO_2e per year. This amount is based on an estimation that 10 CPAs of 20 000 tCO_2e per year are foreseen for the PoA.

The monitoring plan provides for the monitoring of the PoA's emission reductions. The monitoring arrangements described in the monitoring plan are feasible within the PoA design and it is DNV's opinion that the project participants are able to implement the monitoring plan.

In summary, it is DNV's opinion that the PoA "Grid Connected Photovoltaic (PV) Renewable Electricity Generating Facilities PoA" in South Africa, as described in the PoA-DD, version 1.5 dated 1 December 2012 meets all relevant UNFCCC requirements for the CDM and correctly applies the baseline and monitoring methodology ACM0002, version 13.0.0. Hence, DNV requests the registration of the PoA as a CDM project activity.

Venice and Oslo, 11 December 2012



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2 INTRODUCTION

Cennergi (Pty) Ltd (entity implementing the CPA1 /2/) has commissioned DNV Climate Change Services AS (DNV) to perform a validation of the proposed CDM Programme of Activities (PoA) "Grid Connected Photovoltaic (PV) Renewable Electricity Generating Facilities PoA" in South Africa (hereafter called "project"). Cennergi (Pty) Ltd signed with Carbon Protocol of SA (the project participant) and Promethium Carbon Ltd an operational agreement which is authorizing Cennergi (Pty) Ltd to contract the DOE on behalf of the CME for the validation of the proposed PoA /5/.

This report summarises the findings of the validation of the PoA including generic information relevant to all component project activities (CPAs) to be included in this PoA, performed on the basis of UNFCCC criteria for CDM PoAs, as well as criteria given to provide for consistent project operations, monitoring and reporting. UNFCCC criteria refer to Article 12 of the Kyoto Protocol, the CDM modalities and procedures, the simplified modalities and procedures for small-scale CDM project activities and the subsequent decisions by the CDM Executive Board.

2.1 Objective

The purpose of a validation is to have an independent third party assess the PoA design document (PoA-DD) including the description of the generic component project activity (CPA) with generic information relevant to all CPAs to be included in this PoA. In particular, the eligibility criteria for inclusion and demonstration of additionality of CPAs, the programme's baseline determination, monitoring plan, and the programme's compliance with relevant UNFCCC and host Party criteria are validated in order to confirm that the programme design, as documented, is sound and reasonable and meets the identified criteria. Validation is a requirement for all CDM PoAs and is seen as necessary to provide assurance to stakeholders of the quality of the programme and its intended generation of certified emission reductions (CERs).

2.2 Scope

The validation scope is defined as an independent and objective review of the PoA-DD including the description of the generic component project activity (CPA) with generic information relevant to all CPAs to be included in this PoA. The PoA-DD was reviewed against the criteria stated in Article 12 of the Kyoto Protocol, the CDM modalities and procedures as agreed in the Marrakech Accords, the simplified modalities and procedures for small-scale CDM project activities, Standard for the demonstration of additionality, development of eligibility criteria, and application of multiple methodologies for programme of activities /12/ and the relevant decisions by the CDM Executive Board, including the approved baseline and monitoring methodology ACM0002 (version 13.0.0).

The validation of the programme has also considered the completed CPA-DD for the CPA with the title *Grid Connected Photovoltaic (PV) Renewable Electricity Generating Facilities Programme CPA 1* submitted together with the PoA-DD.

The validation was carried out in accordance with the principles and the requirements for validation contained in the Validation and Verification Standard /9/.

The validation is not meant to provide any consulting towards the project participants. However, stated requests for clarifications and/or corrective actions may have provided input for improvement of the project design.

3 METHODOLOGY

The validation consisted of the following three phases:

I document review

II follow-up actions (e.g. on-site visit and telephone or email interviews)

III the closing out of validation findings and the issuance of the final validation report and opinion

The following sections outline each step in more detail.

3.1 Document review

The following tables list the documentation that was reviewed during the validation.

3.1.1 Documentation provided by the project participants

/1/ Promethium Carbon (Pty) Ltd: *CDM-PoA-DD for project activity "*Grid Connected Photovoltaic (PV) Renewable Electricity Generating Facilities PoA*" in South Africa*, Version 1.0 dated 24 April 2012 and version 1.5 dated 1 December 2012

/2/ Promethium Carbon (Pty) Ltd: *CDM-CPA-DD for CPA titled "Grid Connected Photovoltaic (PV) Renewable Electricity Generating Facilities Programme CPA 1"*, Version 1.0 dated 24 April 2012 and version 1.5 dated 1 December 2012

/3/ Promethium Carbon (Pty) Ltd: *Grid Emission Factor for South Africa*, Version 09, 22 November 2012

/4/ Carbon Protocol of SA: *Modalities of Communication Statement*, Version 2.1, 6 August 2012

/5/ Carbon Protocol of SA: *Coordinating/Managing Entity (CME) Manual for the Programme of Activities (PoA): Grid Connected Photovoltaic (PV) Renewable Electricity Generating Facilities PoA*, version draft 05, 30 August 2012

/6/ Carbon Protocol of SA: *Official Development Assistance declaration*, 16 August 2012

/7/ Carbon Protocol of SA: *Modalities of Communication – Board members resolution*, dated 18 September 2012

3.1.2 Letters of approval

/8/ Department of Energy (DNA of South Africa): *Letter of approval* dated 20 September 2012

3.1.3 Methodologies, tools and other guidance by the CDM Executive Board

/9/ CDM Executive Board: *Clean Development Mechanism Validation and Verification Standard*, version 02.0

/10/ CDM Executive Board: *Clean Development Mechanism Project Standard*, version 01.0

/11/ CDM Executive Board: *Clean Development Mechanism Project Cycle Procedure*, version 01.0

/12/ CDM Executive Board: *Standard for the demonstration of additionality, development of eligibility criteria, and application of multiple methodologies for programme of activities*, version 01.0, dated 25 November 2011

/13/ CDM Executive Board: *Guidelines for completing the programme design document form for CDM programmes of activities*, Version 02.0

/14/ CDM Executive Board: *Baseline and monitoring methodology ACM0002: "Consolidated baseline methodology for grid-connected electricity generation from renewable sources"*, version 13.0.0

/15/ CDM Executive Board: *Tool to calculate the emission factor for an electricity system*, version 02.2.1, dated 29 September 2011

/16/ CDM Executive Board: *Tool for the demonstration and assessment of additionality*, version 06.1.0, dated 13 September 2012

/17/ CDM Executive Board: *Attachment A of Appendix B*, version 08.0, dated 29 September 2011

/18/ CDM Executive Board: *Guidance on IPCC Default Values*, dated 28 July 2006

/19/ CDM Executive Board: *Procedures for registration of a programme of activities as a single CDM project activity and issuance of certified emission reductions for a programme of activities*, version 04.1, dated 2 August 2010

/20/ CDM Executive Board: *Guidelines on the assessment of investment analysis*, version 05, dated 15 July 2011

/21/ CDM Executive Board: *Guidelines for objective demonstration and assessment of barriers*, version 01, dated 16 October 2009

/22/ CDM Executive Board: *Guidelines on additionality of first-of-its-kind project activities*, version 01.0

/23/ CDM Executive Board: *Guidelines for the reporting and validation of plant load factors*, version 01, dated 17 July 2009

3.1.4 Documents used by DNV to validate / cross-check the information provided by the project participants

/24/ Intergovernmental Panel on Climate Change: *2006 IPCC Guidelines for National Greenhouse Gases Inventories*, 23 October 2006

/25/ Republic of South Africa: *National Environmental Management Act (Act No. 107 of 1998 regulation 386 & 387)*, 1998

/26/ UNFCCC: *CDM*, available at http://cdm.unfccc.int/

/27/ Eskom holdings Limited: Integrated Report 2011, available at http://financialresults.co.za/2011/eskom_ar2011/fact_sheets_11.php, 2011

/28/ Eskom: *CEF calculator*, available at: http://www.eskom.co.za/live/click.php?u=%2Fcontent%2FCEF_CalculatorFINAL2010-2011%7E2.xls&o=Item%2B236&v=62a438, 18 November 2011

/29/ Eskom: *Fact sheets - Pricing and the Inclined Block Tariff (IBT)*, available at: http://financialresults.co.za/2011/eskom_ar2011/fact_sheets_11.php, accessed 12 July 2012

/30/ DNV: *Decision tree for site visits (ICP-5-8-CDMJI-g9)*, 11 March 2011

/31/ NERSA (National Energy Regulator of South Africa): *The South African Grid Code – Metering Code*, version 7.0, dated March 2008

3.2 Follow-up actions

On 20 and 21 June 2012 DNV visited the Cennergi (Pty) Ltd office (implementer of the CPA1 /2/), and performed interviews with project stakeholders. DNV deemed that it was not necessary to conduct an on-site inspection as the project is a Greenfield project, and construction works at site had not yet commenced at the time of the site visit. Furthermore, DNV had enough evidences in order to assess the pre-project scenario /1//2/. Hence, following the provisions of paragraph 67 of the VVS /9/, DNV did not conduct an on-site inspection and validated the project description by reviewing available designs.
Moreover, on 12 March 2012, DNV visited the DNA of South Africa to mainly discuss about the national regulatory requirements related to several projects under validation in the country, including the proposed project activity.

	Date / Type of interview	Name / Organization	Topic
/32/	20, 21 June 2012 ☐ On-site ☒ Face-to-face at office ☐ Telephone ☐ E-mail	Sachin Thakurpersad / Cennergi (Pty) Ltd, Rob Short, Harmke Immink / Promethium Carbon (Pty) Ltd	• Management of PoA (responsibilities, management system, etc.) • Project design • Application of selected baseline and monitoring methodology • PoA boundary • CPA inclusion criteria • Baseline identification • Additionality • Algorithms and/or formulae used to determine emission reductions • Monitoring • Environmental impacts • Comments by local stakeholders • Telephonic consultation with I&APs
/33/	20, 21 June 2012 ☐ On-site ☒ Face-to-face at office ☐ Telephone ☐ E-mail	Carla Strydom / Cennergi (Pty) Ltd	• Environmental regulations compliance
/34/	12 March 2012 ☒ On-site ☒ Face-to-face at office ☐ Telephone ☐ E-mail	Ndiafhi Patrick Tuwani / DNA of South Africa	• Prior consideration • National legislation requirements (EIA) – Consistency with mandatory laws and regulations • Sustainable development indicators

3.3 Closing out of validation findings

The objective of this phase of the validation was to resolve any issues which needed to be clarified prior to DNV's conclusion on the PoA's compliance with applicable CDM requirements. In order to ensure transparency a validation protocol was customised for the project. The protocol shows in a transparent manner the criteria (requirements), means of verification and the results from validating the identified criteria. The validation protocol serves the following purposes:

- It organises, details and clarifies the requirements a PoA is expected to meet;
- It ensures a transparent validation process where the validator will document how a particular requirement has been validated and the result of the validation.

The validation protocol consists of four tables. The different columns in these tables are described in the figure below. The completed validation protocol for the project activity "Grid Connected Photovoltaic (PV) Renewable Electricity Generating Facilities PoA" in South Africa is enclosed in Appendix A to this report.

Table 2 of the validation protocol documents the findings of the desk review of the project design documentation and follow-up interviews with project stakeholders. Any findings raised in Table 2 are listed in Table 3 of the protocol, and changes to the description of the project design as a result of these findings are addressed in Table 3. Table 2 thus may not reflect all aspects of the project as described in the final PoA-DD submitted for registration.

A corrective action request (CAR) is raised if one of the following occurs:

(a) The project participants have made mistakes that will influence the ability of the PoA to achieve real, measurable additional emission reductions;

(b) Applicable CDM requirements have not been met;

(c) There is a risk that emission reductions cannot be monitored or calculated.

A clarification request (CL) is raised if information is insufficient or not clear enough to determine whether the applicable CDM requirements have been met.

A forward action request (FAR) is raised during validation to highlight issues related to project implementation that require review during the first verification of CPAs of the PoA. FARs shall not relate to the CDM requirements for registration.

The validation identified 5 (five) CARs and 7 (seven) CLs. The CARs and CLs were satisfactorily addressed by the project participants by among other revising the PoA-DD (please refer to Table 3 in Appendix A for further details). In addition to the changes made to the PoA-DD as a result of the validation findings, the following changes to the PoA-DD (version 1.5 of 1 December 2012) were made compared to the version of the PoA-DD published for stakeholder comments (version 1.0 dated 24 April 2012):

- The version of the "Tool for the demonstration and assessment of additionality" has been updated;
- The version of the methodology ACM0002 has been changed from 12.2.0 to 13.0.0;
- The emission reductions table has been modified;
- The name of the CME has been made consistent through the PoA-DD, as *"Carbon Protocol of SA*".

- The PoA has been re-designed to develop only grid-connected greenfield PV power generation facilities. Initially both greenfield and capacity additions were included in the PoA design.

Validation Protocol Table 1: Mandatory Requirements for CDM programme of activities (PoA)		
Requirement	***Reference***	***Conclusion***
The requirements the PoA must meet.	*Gives reference to the legislation or agreement where the requirement is found.*	*This is either acceptable based on evidence provided (**OK**) or a **corrective action request (CAR)** if a requirement is not met.*

Validation Protocol Table 2: Requirement Checklist				
Checklist question	***Reference***	***Means of verification (MoV)***	***Assessment by DNV***	***Draft and/or Final Conclusion***
The various requirements in Table 1 are linked to checklist questions the PoA should meet. The checklist is organised in different sections, following the logic of the PoA-DD	*Gives reference to documents where the answer to the checklist question or item is found.*	*Means of verification (MoV) are **document review (DR)**, **interview (I)** or any other follow-up actions (e.g., on site visit and telephone or email interviews) and **cross-checking (CC)** with available information relating to projects or technologies similar to the proposed CDM PoA under validation.*	*The discussion on how the conclusion is arrived at and the conclusion on the compliance with the checklist question so far.*	*OK is used if the information and evidence provided is adequate to demonstrate compliance with CDM requirements. A **corrective action request (CAR)** is raised when project participants have made mistakes, the CDM requirements have not been met or there is a risk that emission reductions cannot be monitored or calculated. A **clarification request (CL)** is raised if information is insufficient or not clear enough to determine whether the applicable CDM requirements have been met. A **forward action request (FAR)** during validation is raised to highlight issues related to project implementation that require review during the first verification of the project activity.*

Validation Protocol Table 3: Resolution of Corrective Action and Clarification Requests			
Corrective action and/ or clarification requests	***Ref. to checklist question in table 2***	***Response by project participants***	***Validation conclusion***
*The **CARs** and/ or **CLs** raised in Table 2 are repeated here.*	*Reference to the checklist question number in Table 2 where the CAR or CL is explained.*	*The responses given by the project participants to address the CARs and/or CLs.*	*The validation team's assessment and final conclusions of the CARs and/or CLs.*

Validation Protocol Table 4: Forward Action Requests		
Forward action request	***Ref. to checklist question in table 2***	***Response by project participants***
The FARs raised in Table 2 are repeated here.	*Reference to the checklist question number in Table 2 where the FAR is explained.*	*Response by project participants on how forward action request will be addressed prior to first verification.*

Figure 1: Validation protocol tables

3.4 Internal quality control

The validation report underwent a technical review performed by a technical reviewer qualified in accordance with DNV's qualification scheme for CDM validation and verification.

3.5 Validation team

				Type of involvement					
Role	***Last Name***	***First Name***	***Country***	Desk review	Site visit / Interviews	Reporting	Supervision of work	Technical review	TA 1.2 competence
Team leader (Validator)	Tenderini	Giovanni	Italy	✓		✓	✓		✓
Validator	Feller	Francesca	Italy	✓	✓	✓			✓
Assessor under training	El Takriti	Sammy	Italy	✓	✓	✓			
Technical reviewer	Flagstad	Ole A.	Norway					✓	
Technical reviewer	Lehmann	Michael	Norway					✓	✓

The qualification of each individual validation team member is detailed in Appendix C to this report.

4 VALIDATION FINDINGS

The findings of the validation are stated in the following sections. The validation criteria (requirements), the means of verification and the results from validating the identified criteria are documented in more detail in the validation protocol in Appendix A.

The final validation findings relate to the PoA design as documented and described in the PoA-DD, version 1.5 dated 1 December 2012.

4.1 Comments by Parties, stakeholders and NGOs

The PoA-DD, version 1.0 dated 24 April 2012, and the CPA-DD for CPA titled *Grid Connected Photovoltaic (PV) Renewable Electricity Generating Facilities Programme CPA 1* Version 1.0 dated 24 April 2012 were made publicly available on the CDM website and Parties, stakeholders and NGOs were through the CDM website (http://cdm.unfccc.int/ProgrammeOfActivities/Validation/DB/TTOUR6NFBFOTIK24VSMLZ0K3SY810J/view.html) invited to provide comments during a 30 days period from 1 May 2012 to 30 May 2012.

No comments were received.

4.2 Approval, authorization and contribution to sustainable development

The coordinating/managing entity of the PoA is the Carbon Protocol of SA, which is the entity that communicates with the Board.

The project participant is the Carbon Protocol of SA of host Party of South Africa. The host Party (South Africa) meets all relevant participation requirements. No Annex I Party project participant has yet been identified.

A letter of approval (LoA) /8/ was issued by DNA of South Africa on 20 September 2012, authorizing *Carbon Protocol of SA* of South Africa as project participant and confirming that the project assists in achieving sustainable development.

The coordinating/managing entity has obtained a letter of authorization of its coordination of the proposed CDM PoA from the host Party (South Africa).

The letter of approval was received from the project participants. DNV does not doubt the authenticity of the letter of approval. DNV considers the letter is in accordance with paragraphs 39-42 of the VVS /9/.

With regard to the use of public funding, the PoA requests all CPAs applying for inclusion that the proposed sources of funding for the project must be disclosed to the CME to ensure that the funding is not Official Development Assistance. This is addressed through one of the eligibility criteria for inclusion.

4.3 Modalities of communications

DNV has performed due diligence on the Modalities of Communications (MoC) statement submitted by the project participants in accordance with applicable requirements in the VVS as documented in section A.4 of Table 2 in the validation protocol in Appendix A to this report.

DNV has performed due diligence on the Modalities of Communications (MoC) statement /4/ in order to confirm that the corporate and personal details, employment status and specimen

signatures included in the MoC statement are valid and accurate and comply with the requirements of the VVS /9/. Mr. Lloyd Christie is focal point of the MoC and is an authorized signatory, as evidenced by the statement from the board members of the project participant Carbon Protocol of SA dated 18 September 2012, whereby they confirm that Mr. Lloyd Christie is authorized to be signatory on the MoC /7/.

DNV was able to confirm the information contained in the MoC and that the MoC complies with all relevant forms and requirements.

4.4 PoA design and description of each generic CPA

This PoA involves the installation and operation of large-scale and small-scale grid connected PV renewable electricity generation facilities.

A typical CPA falling under this programme would be a new renewable electricity generating facility using Photovoltaic (PV) technology at a site where no renewable power plant was operated prior to the implementation of the CPA (greenfield plant).

As verified during the site visit and during interviews with the stakeholders /32//33/ the CPA1 /2/ complies with the description of the technology, therefore the accuracy of the project description is deemed adequate for this type of CPA.

With regards to how training needs will be addressed to assure appropriate operation and maintenance, the PoA-DD indicates as part of the monitoring plan management that all elements of the monitoring plan will be supported by formal procedures and regular training of delegated personnel /1/.

The programme's spatial boundaries are clearly defined in the PoA-DD, and consist of the boundaries of the Republic of South Africa.

The starting date of the PoA is defined as 1 May 2012 (the date of publication of the PoA-DD for GSP). The starting date of the first CPA is 19 July 2013 /2/, therefore DNV confirms that the PoA starting date is earlier than the starting date of the first CPA. Moreover according to the eligibility criteria (d), the start date of each CPA must be after the date of the GSC.

The length of the PoA is defined as 28 years. This is in accordance with the paragraph 197 of the VVS /9/.

DNV considers the project description of the project contained in the PoA-DD to be complete and accurate. The PoA-DD complies with the relevant forms and guidance for completing the CDM-PoA-DD: version 02 of the *Programme design document form for CDM programmes of activities* and the *Guidelines for completing the programme design document form for CDM programmes of activities* /13/.

4.5 Demonstration of additionality for PoA

The development of solar PV power plants by IPPs (Independent Power Producers) is not mandated by the South African Government. Participation under this PoA is voluntary. This was confirmed by the DNA of South Africa in the course of an interview /34/.

4.6 Demonstration of additionality of each generic CPA

The additionality of the CPA will be demonstrated using the *Tool for the demonstration and assessment of additionality*, version 06.1.0 /16/. A stepwise approach is used to demonstrate additionality of each CPA.

4.6.1 Identification of alternatives to each generic CPAs

Individual CPAs must identify realistic and credible alternative scenarios to the project activity. The list of alternatives available must include the following:

a) The project activity not implemented as a CDM project; and
b) The continuation of the current situation.

The continuation of the current situation is the baseline scenario defined in the methodology ACM0002 version 13.0.0 /14/:

If the CPA is the installation of a new grid-connected renewable power plant/unit, the baseline scenario is the following:

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 the "Tool to calculate the emission factor for an electricity system".

As further described here below, the project participant demonstrated that the continuation of the business as usual (the power will be solely supplied by the operation of grid connected power plants and by the addition of new power plants) is a credible and feasible alternative that would be more attractive than the proposed project activity.

The project and its alternatives comply with all applicable legislation. DNV considers the listed alternatives to be credible and complete.

4.6.2 Investment analysis

A generic CPA may decide to apply an investment analysis to comply with the eligibility criteria related to the additionality. A generic CPA has also the possibility to present a barrier analysis to comply with the eligibility criteria related to the additionality.

Choice of approach

A typical CPA generates revenues apart from CDM, indeed, as properly reflected in the PoA-DD, the electricity generated by the project activity will be sold to the organ of state designated by the Minister of Energy, which is likely to be Eskom.

The alternative to the project activity is the continuation of the business as usual (the power will be solely supplied by the operation of grid connected power plants and by the addition of new power plants).

According to Guidelines on the assessment of investment analysis /20/ if the alternative to the project activity is the supply of electricity from a grid this is not to be considered an investment and a benchmark approach is considered appropriate.

As properly reflected in the PoA-DD, the alternative to the project activity does not involve an investment and a typical CPA will apply a benchmark analysis (without excluding the possibility of a future CPA claiming an investment barrier or a barrier due to prevailing practice as described below). Simple cost analysis was not the appropriate choice because the project activity generates revenues apart from CDM; investment comparison analysis was not the appropriate choice because the alternative to the project activity does not involve an investment.

Benchmark selection

The benchmark to be used will be the after-tax expected return on equity for the host country for energy industries (Group 1), as defined in the Appendix to the Guidelines on the assessment of investment analysis /20/.

The type of benchmark applied is suitable for the type of financial indicator presented, which is an after-tax equity IRR.

Input parameters

The financial model used to carry out the investment analysis will use the following input parameters:

- Net Annual Electricity Generation (MWh/year). It will be calculated using a plant load factor (PLF) obtained following the provision of the Guidelines for the reporting and validation of plant load factors /23/, which are requiring the PLF to be determined ex-ante in accordance with the following options:
  - (a) The plant load factor provided to banks and/or equity financiers while applying the project activity for project financing, or to the government while applying the project activity for implementation approval;
  - (b) The plant load factor determined by a third party contracted by the project participants (e.g. an engineering company);
- Electricity Tariff (Rand per MWh). It will be calculated using the latest available information on the average price of grid electricity using one of the following three sources of information, using the hierarchy (i) the energy regulator (ii) grid operator and\or utility, or (iii) government departments at the start date of the CPA.
- Revenue from Electricity Sales (Rands per year). It will be calculated as a result of combining information with regard to net annual electricity generation and electricity tariffs.
- Anticipated increase in electricity tariff over anticipated lifetime of the project (% per year). It will be based on information from the following three sources of information using the hierarchy (i) energy regulator (ii) grid operator or (iii) the utility. If no such information is available for part of the period, then the rate of inflation shall be used.
- Inflation Rate (% per year). It will be based on the latest available information on the mid-point of the inflation target, based on information from the South African Reserve Bank (SARB) and national treasury government sources at the start date of the CPA.
- Capital Cost (Rands). It will be based on information from the following three sources, using the hierarchy (i) feasibility related studies (ii) third party opinions or (iii) supplier quotes.
- Operation and Maintenance Cost (Rands). It will be based on information from the following three sources, using the hierarchy (i) feasibility related studies (ii) third party opinions or (iii) supplier quotes.
- Period of Investment Analysis (Years). It will be equal to the technical lifetime, which will be based on information from the following three sources, using the hierarchy (i) feasibility related studies (ii) third party opinions or (iii) equipment suppliers.
- Fair Value of Assets at end of Investment Analysis (Rand). It will be based on information from the following two sources, using the hierarchy (i) feasibility related studies or (ii) third party opinion.

- Depreciation (% per year). It will be based on information from the following three sources using the hierarchy (i) tax legislation (ii) South African Revenue Services or (iii) third party opinion.
- Corporate Tax Rate (%). It will be based on information from the following three sources using the hierarchy (i) tax legislation (ii) South African Revenue Services or (iii) third party opinion.
- Cost of Debt (Rands). It will be taken as the prime interest rate as published by a bank registered as a licensed financial services provider in South Africa.
- Financing from Debt (%). It will be based on information from potential debt providers and the CPA implementer.
- Financing from Equity (%). It will be based on information from potential equity investors and CPA implementer.
- Investment Decision Date (Date). It will be based on the following four sources of information using the hierarchy (i) board decisions, (ii) submission of tender documents, (iii) PPA conclusion, or (iv) signing of debt agreements.
- Construction Start Date (Date). It will be based on information from the following three sources using the hierarchy (i) a project plan, (ii) feasibility studies, or (iii) contracts.
- Date Project Starts Producing (Date). It will be based on information from the following three sources using the hierarchy (i) a project plan, (ii) feasibility studies, or (iii) contracts.

Those parameters are deemed suitable to conduct an investment analysis as described in the *Tool for the demonstration and assessment of additionality*, version 06.1.0 /16/

Calculation and conclusion

It will be demonstrated that the calculated after-tax equity IRR is below the adopted after-tax equity benchmark, showing that the proposed CDM project activity is not financially/economically attractive. This conclusion is further supported by the sensitivity analysis described in the paragraph here below.

Sensitivity analysis

The sensitivity analysis will be conducted by altering parameters that are more than 20% of either total project costs or total project revenues. These parameters shall be altered by a range of +10% and -10%. Moreover the key parameters will be varied to reach the benchmark and the likelihood of this to happen will be justified to be small.

If in any scenario the benchmark is exceeded then the CPA-DD should provide evidence as to the likelihood of this occurring. If evidence is provided that shows that the scenario(s) where the IRR has exceeded the benchmark is unlikely to have occurred then the investment analysis can continue.

4.6.3 Barrier analysis

As indicated in the *Tool for the demonstration and assessment of additionality*, version 06.1.0 /16/, the project participant may choose to demonstrate the additionality either applying the investment analysis or barrier analysis (the project participant may also select to complete both analyses).

Therefore a barrier analysis can be used to demonstrate additionality of a CPA. The following barriers are considered:

- An investment barrier; and,
- Barriers due to prevailing practise, as reflected by the project being "first-of-its kind".

Investment barrier

CPAs that perform an investment barrier analysis will provide documented evidence to substantiate the barrier, and to demonstrate that the CPA is unable to secure either debt finance and/or an equity investment without the CDM, and that the CDM has enabled the project to secure financing for it to be able to move into implementation. This documentary evidence could include, but is not limited to, loan agreements.

This is in accordance with paragraph 9 of the *Guidelines for objective demonstration and assessment of barriers* /21/, which states: *"In case the PPs make the claim for investment barriers, they should demonstrate in the PDD that the financing of the project was assured only due to the benefit of the CDM. Therefore, it should be demonstrated that the loan approval (or other significant financing decision(s)) by the lender takes explicitly the CDM registration into account."*

For a CPA that uses the investment barrier analysis it will need to demonstrate that the investment barrier does not prevent the implementation of at least one of the alternatives. In this case the only other alternative is the baseline scenario.

Barrier due to prevailing practice

CPAs that perform a barrier analysis will provide documents to demonstrate that they comply with the definition of "first-of-its-kind", as described in the *Tool for the demonstration and assessment of additionality*, version 06.1.0 /16/, and in the *Guidelines on additionality of first-of-its-kind project activities* /22/, version 01.0:

a) The project is the first in the applicable geographical area that applies a technology that is different from technologies that are implemented by any other project, which are able to deliver the same output and that have started commercial operation in the applicable geographical area before the start date of the proposed project activity;
b) The project implements one or more of the measures; and
c) Project participants selected a crediting period for the project activity that is "a maximum of 10 years with no option of renewal".

In order to comply with this definition, the CPA must fulfil the conditions:

- *Applicable geographical area*: The CPA must be situated in the host country South Africa.
- *Measure*: The measure implemented must comply with *Option B. Switch of technology with change of energy source*.
- *Output*: The CPA must produce grid electricity, and provide the supporting documentation: contractual or regulatory documents, e.g. application for grid connection or draft PPA.
- *Different technologies*: The CPA must define differentiating aspects of the technology: energy source/fuel (wind energy) or size of installation (large or small scale).

To substantiate the point a) defined above, the CPA must provide the following evidence:

Written documentation of independent expert judgments from industry, educational institutions (e.g. universities, technical schools, training centres), industry associations and others.

4.6.4 Common practice analysis

According to the Tool for the demonstration and assessment of additionality /16/, the geographical scope of the common practice analysis has been defined as the entire host country (South Africa) as a default.

The project activity involves the installation and operation of a grid-connected solar PV power plant, i.e. involves the use of renewable energies.

According to the Tool for the demonstration and assessment of additionality /16/, for a switch of technology with or without change of energy source (including energy efficiency improvement as well as use of renewable energies), the common practice analysis has to be carried following a stepwise procedure described here below:

Data will be obtained from either the Department of Energy or the National Energy Regulator of South Africa (NERSA).

Step 1: Calculate applicable output range as +/-50% of the design output or capacity of the proposed project activity.

Step 2: In the applicable geographical area, identify all plants that deliver the same output or capacity, within the applicable output range calculated in Step 1, as the proposed project activity and have started commercial operation before the start date of the project. Note their number N_{all}. Registered CDM project activities and projects activities undergoing validation shall not be included in this step.

Step 3: Within plants identified in Step 2, identify those that apply technologies different that the technology applied in the proposed project activity. Note their number N_{diff}.

Step 4: Calculate factor $F = 1 - N_{diff}/N_{all}$ representing the share of plants using technology similar to the technology used in the proposed project activity in all plants that deliver the same output or capacity as the proposed project activity.

The proposed project activity is a "common practice" within a sector in the applicable geographical area if both the following conditions are fulfilled:
(a) the factor F is greater than 0.2, and
(b) N_{all}-N_{diff} is greater than 3.

The common practice analysis has been correctly planned according to the provisions of the Tool for the demonstration and assessment of additionality (version 6.1.0) /16/.

4.6.5 Additionality – Conclusion

The demonstration of additionality of typical CPAs to be included to the PoA is in accordance with section A of the "Standard for demonstration of additionality, development of eligibility criteria, and application of multiple methodologies for programme of activities" /12/. The following eligibility criteria (refer to section 4.7 for the complete list of eligibility criteria)

ensure that a CPA meets the conditions that ensure that CPAs meet the requirements pertaining to the demonstration of additionality as described above:

ACM0002 (Version 13.0.0) directs that the additionality of the project activity (in this case a CPA) shall be demonstrated and assessed using the "Tool for the demonstration and assessment of additionality" (Version 06.1.0). Additionality will be demonstrated at the CPA level in the CPA-DD and checked by the CME. A demonstration of the additionality of a generic CPA is described in PART II Section B.5 of this PoA.

1. If the CPA is using an Investment Analysis approach to demonstrate additionality then it must be shown that:
   (i) The CPA has a lower after-tax equity IRR than the benchmark for expected return on equity for Group 1 projects in South Africa; and,
   (ii) The CPA is not common practice.

2. If the CPA is using an Investment Barrier Analysis to demonstrate additionality then it must be shown that:
   (i) The CPA is unable to secure either debt finance and\or an equity investment without the CDM and that the CDM has enabled the project to secure financing for it to be able to move into implementation; and,
   (ii) The CPA is not common practice.

3. If a "First of its Kind" Analysis is being used to demonstrate additionality then it must be shown that the CPA has been identified as a "First of its Kind" project activity.

4.7 Eligibility criteria for including CPAs to the PoA

The eligibility criteria for including CPAs are in accordance with section B of the "Standard for demonstration of additionality, development of eligibility criteria, and application of multiple methodologies for programme of activities" /12/.

CPAs requesting inclusion will need to demonstrate that they meet all criteria for inclusion as follows:

a) Any CPA must be located within the internationally recognised boundaries of the Republic of South Africa and be grid-connected.

   This criterion is sufficient to ensure that the geographical boundary of the CPA is consistent with the geographical boundary of the PoA.

b) Each CPA must be linked to specific geographical co-ordinates supported by a description of its location (the description should include a reference to a land registry system, if such a system exists).

   This criterion is sufficient to ensure that double counting of emission reductions is avoided.

c) Each CPA will use PV renewable energy generation technology only. The technology will have to satisfy all relevant national testing and certification requirements, including the requirements specified in any PPA.

This is considered adequate specification of the technology/measure to be used by CPAs.

d) Each CPA will show that the first earliest date of its first real action or implementation or construction was after the date of commencing the validation of the PoA and the publication of the PoA-DD for global stakeholder consultation process (1 May 2012).

This criterion is considered adequate to ensure the starting date of the CPA can be checked through documentary evidence.

e) Each CPA will be a solar PV grid-connected renewable power generation project that is an installation of a new power plant at a site where no renewable power plant was operated prior to the implementation of the project activity (greenfield plant).

This criterion makes it possible to ensure compliance with applicability of methodology ACM0002 version 13.0.0 /14/.

f) ACM0002 (Version 13.0.0) directs that the additionality of the project activity (in this case a CPA) shall be demonstrated and assessed using the "Tool for the demonstration and assessment of additionality" (Version 06.1.0). Additionality will be demonstrated at the CPA level in the CPA-DD and checked by the CME.

1. If the CPA is using an Investment Analysis approach to demonstrate additionality then it must be shown that:
   (i) The CPA has a lower after-tax equity IRR than the benchmark for expected return on equity for Group 1 projects in South Africa; and,
   (ii) The CPA is not common practice.
2. If the CPA is using an Investment Barrier Analysis to demonstrate additionality then it must be shown that:
   (i) The CPA is unable to secure either debt finance and\or an equity investment without the CDM and that the CDM has enabled the project to secure financing for it to be able to move into implementation; and,
   (ii) The CPA is not common practice.
3. If a "First of its Kind" Analysis is being used to demonstrate additionality then it must be shown that the CPA has been identified as a "First of its Kind" project activity.

This criterion is considered sufficient to ensure CPAs meet the requirements pertaining to the demonstration of additionality. The requirements pertaining to the demonstration of the additionality are further assessed in section 4.6 of this validation report.

g) CPAs will have undertaken stakeholder consultations, which will have been formally recorded.

CPAs will have undertaken an analysis of their environmental impacts, which will have been formally recorded.

This criterion clearly defines the conditions related to undertaking local stakeholder consultations and environmental impact analysis.

h) CPAs will need to choose one of the following two options:

1. For CPAs that have not received any public funding from Annex I parties, the CPA will need to confirm this in writing; or,
2. For CPAs that have received public funding from Annex 1 parties, the Annex 1 country funding source will confirm in writing that it has not resulted in a diversion of official development assistance.

This criterion sufficiently ensures that eventual use of public funding will not result in a diversion of official development assistance.

i) Technical parameter: the CPA should be grid-connected.

Economic parameter: The CPA should be of a scale that it can fund the following:

- Separate Meters;
- A formal environmental analysis; and,
- Formal public consultation.

Investment parameter: Each CPA should be in the process of negotiating or applying for a power purchase agreement (PPA) with an off-taker that includes content addressing at least one of the following issues:

- Tariff;
- Metering;
- Record keeping; and,
- Generation Forecasts.

This criterion sufficiently ensures that the provisions of the methodology /14/ regarding project activities under a programme of activities are adequately taken into account.

As required by the methodology /14/, this criterion will be updated every two years in order to correctly reflect the technical and market circumstances of the CPA implementation.

The identified criteria for the CPA to be included under the PoA have been found to be adequate to the intent of the PoA, verifiable, and sufficiently objective and comprehensive to permit the assessment of the inclusion of CPAs in the PoA.

4.8 Application of methodologies

The proposed PoA is adopting the approved baseline and monitoring methodology ACM0002 version 13.0.0 /14/, titled "Consolidated baseline methodology for grid-connected electricity generation from renewable sources". This is an approved methodology, and the version is valid at the time of the validation process

4.9 Management system of the PoA

The management system of the proposed PoA contains the following points, in accordance with the *"Standard for demonstration of additionality, development of eligibility criteria, and application of multiple methodologies for programme of activities"* /12/:

a) *A clear definition of roles and responsibilities of personnel involved in the process of inclusion of CPAs, including a review of their competencies* /12/*;*

All the details regarding a management system are contained in the CME contract (Operational Agreement between the CME and the CPA implementer) that will be signed by each CPA /5/. The contract includes:

"the development and implementation of a management system comprising, inter alia:

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

The authority and responsibility of overall programme management is clearly described in the management system of the PoA-DD /1/: *CPAs applying for inclusion to the PoA will be evaluated on two levels:*

Technical Inclusion: The eligibility of the proposed new CPA will be assessed by the carbon specialist, with specific reference to the project, the latest requirements of Executive Board of the CDM, latest version of the approved methodology and the eligibility criteria. The carbon specialist will prepare a report demonstrating compliance of the CPA with all applicable requirements for the PoA Management Committee, for them to make a decision as to whether to include the CPA or not.

Commercial Inclusion: Once it has been verified that the new CPA is technically eligible for inclusion, the commercial conditions of inclusion will be negotiated between the CPA owner and the PoA Management Committee

b) *Records of arrangements for training and capacity development for personnel* /12/*:*

With regards to how training needs will be addressed to assure appropriate operation and maintenance, part II of the PoA-DD /1/ indicates as part of the monitoring plan management that all elements of the monitoring plan will be supported by formal procedures and regular training of delegated personnel.

c) *Procedures for technical review of inclusion of CPAs* /12/:

The CME contract includes /5/:

the development and implementation of a management system comprising, inter alia: procedures for technical review of inclusion of CPAs.

The PoA-DD describes a procedure for technical review of inclusion of CPAs. This procedure is detailed in the point a) above.

d) *A procedure to avoid double counting (e.g. to avoid the case of including a new CPA that has already been registered either as a CDM project activity or as a CPA of another PoA)* /12/:

The CME has established clear procedures to avoid double counting of emission reductions.

The PoA-DD describes the following procedure, in section C *Management System* /1/:

Prior to the inclusion of a new CPA within the PoA, the carbon specialist will check the CPA project database to establish whether a CDM project activity or CPA of another PoA has already been registered. This search will cover registered project activities, project activities

requesting registration, project activities under review and project activities for which either a review or corrections have been requested within the geographical boundary of the PoA.

Each CPA will also not overlap the geographical boundary of another CPA registered under the same PoA.

Unique identification code(s) for the site and the CPA meter(s) that record the amount of electricity exported to the South African national grid will also be provided, as well as GPS reference points for the site and meter(s).

It is DNV's opinion that this criterion ensures sufficient conditions that avoid double counting of emission reductions.

e) *Records and documentation control process for each CPA under the PoA* /12/:

The CME will operate a PoA monitoring database including all the CPAs for the PoA. Each CPA will be uniquely identified within the PoA monitoring database of all CPAs. The database will include the following information for each CPA /1/:

1) The name of the CPA;
2) Name of the CPA developer;
3) Contact details of the CPA developer including contact person, address, landline, cellphone and email address;
4) Installed capacity and other relevant technical specifications of each CPA;
5) Location of the CPA (Description and GPS coordinates);
6) Project start date of the CPA;
7) The commissioning date of the equipment;
8) The crediting period for each CPA;
9) The signed agreement with the CME to participate in the programme;
10) Verification status, CPA monitoring records and monitoring reports of each CPA.

The signed contract between the managing entity and the CPA implementers will be recorded and stored by the CME.

The database contains all the data necessary to record and monitor emission reductions.

f) *Measures for continuous improvements of the PoA management system* /12/:

The CME contract includes /5/:

the development and implementation of a management system comprising, inter alia: measures for continuous improvements of the PoA management system.

The management system of the proposed PoA is therefore complete and in accordance with the *"Standard for demonstration of additionality, development of eligibility criteria, and application of multiple methodologies for programme of activities"* /12/.

4.10 Environmental impacts

The Environmental Impact analysis is performed at CPA level. This is justified since the impacts of each solar farm will be dependent on location.

The PoA-DD provides the following condition to conduct an environmental impact assessment at the CPA level:

In terms of South African law, with regard to Environmental Impact Assessments (the Environmental Impact Assessment Regulations in terms of the National Environmental Management Act, NEMA, No. 107 of 1998) /25/, CPAs that fall under this PoA will require formal environmental analysis to be done on them. This and the fact that local conditions in which the CPAs are located will vary, requiring site specific environmental analysis and mitigation measures, are the reasons why environmental analysis is to be done at the CPA level.

DNV confirms that the analysis of the environmental impacts of the first CPA was described in the CPA-DD /2/ and following the above-mentioned condition specified in the PoA-DD. This is described in the validation report of the first CPA.

DNV considers that the above arrangement for the analysis of environmental impacts is adequate.

4.11 Local stakeholder consultation

The consultation of local stakeholders is performed at CPA level. This is justified since the impacts of a solar PV farm are localized and the stakeholders (or interested and affected parties) will differ depending on the location of the solar PV farm.

The PoA-DD provides the following condition to conduct a stakeholder consultation at the CPA level:

In terms of South African law with regard to Environmental Impact Assessments (the Environmental Impact Assessment Regulations in terms of the National Environmental Management Act, NEMA, No. 107 of 1998) /25/, CPAs that fall under this PoA will require formal environmental analysis to be done on them. Part of the environmental assessment process involves formal consultation with stakeholders. This, and the fact there will be different sets of stakeholders as a result of the different geographical locations within South Africa that the PoAs CPAs will be located, provide the rationale for stakeholder comments being invited at this level.

The stakeholder consultation of the first CPA was described in the CPA-DD /2/ and following the above-mentioned condition specified in the PoA-DD. This is described in the validation report of the first CPA.

DNV considers that the above arrangement for local stakeholder consultation is adequate.

4.12 Application of selected baseline and monitoring methodology(ies) by each generic CPA

The PoA-DD indicates the baseline and monitoring methodology applied to the CPAs included in the PoA, ACM0002 version 13.0.0. The methodology is used in conjunction with the 'Tool to calculate the emission factor for an electricity system' (version 02.2.1) /15/.

With regards to the applicability of the methodology, the PoA-DD details how CPAs comply with each applicability criteria:

The methodology is applicable to grid-connected renewable power generation project activities that (a) install a new power plant at a site where no renewable power plant was

operated prior to the implementation of the project activity (greenfield plant); (b) involve a capacity addition; (c) involve a retrofit of (an) existing plant(s); or (d) involve a replacement of (an) existing plant(s).
Applicable: The CPAs under this PoA will be grid-connected renewable electricity power generation projects that involve the installation of PV technology at sites that had no renewable energy plant operated previously.
This was confirmed on site visit by consultation with the project participant and the stakeholders /32/.

The methodology is applicable under the following conditions: The project activity is the installation, capacity addition, retrofit or replacement of a power plant/unit of one of the following types: hydro power plant/unit (either with a run-of-river reservoir or an accumulation reservoir), wind power plant/unit, geothermal power plant/unit, solar power plant/unit, wave power plant/unit or tidal power plant/unit;
Applicable: the CPAs will use solar power plant/units based on PV technology. This was confirmed on site visit by consultation with the project participant and the stakeholders /32/.

In the case of capacity additions, retrofits or replacements (except for wind, solar, wave or tidal power capacity addition projects which use Option 2: on page 10 to calculate the parameter EGPJ,y): the existing plant started commercial operation prior to the start of a minimum historical reference period of five years, used for the calculation of baseline emissions and defined in the baseline emission section, and no capacity expansion or retrofit of the plant has been undertaken between the start of this minimum historical reference period and the implementation of the project activity.

Not applicable: The Component Project Activities to be included in the proposed Program of Activities will be greenfield plant. The proposed CPA is neither a capacity addition, neither a retrofit or a replacement of a power plant /32/.

In the case of hydro power plants, at least one of the following conditions must apply:

· The project activity is implemented in an existing reservoir, with no change in the volume of the reservoir; or

· 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/m2 after the implementation of the project activity; or

· The project activity results in the new reservoirs and the power density of the power plant, as per definitions given the Project Emissions section, is greater than 4 W/m2 after the implementation of the project activity.

Not applicable: CPAs under this PoA will not be hydro projects /32/.

The methodology is not applicable to the following: • 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; • Biomass fired power plants; • A hydro power plant that results in the creation of a new single reservoir or in the increase in an existing single reservoir where the power density of the reservoir is less than 4 W/m2

Not applicable: CPAs under this PoA do not involve the switching from fossil fuels to renewable energy sources, nor a biomass fired power plant, nor a hydro power plant /32/.

In the case of retrofit, 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, i.e. 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: CPAs under this PoA will not be capacity additions /32/.

According to the methodology, ACM0002 version 13.0.0 /14/: *In addition, the applicability conditions included in the tools referred to above apply*. The *Tool to calculate the emission factor for an electricity system* /15/ is applied, and states the following applicability criteria:

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, i.e. 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).

Applicable: The CPAs under this PoA will supply electricity to a grid or a project activity that results in savings of electricity that would have been provided by the grid /32/.

The assessment of the generic CPA's compliance with the applicability criteria of ACM0002 (version 13.0.0) are documented in detail in section B.2 of Table 2 in the validation protocol in Appendix A to this report.

4.13 Project boundary of each generic CPA

According to the generic CPA-DD /1/, the CPA's system boundaries encompass the project power plant and all power plants connected physically to the electricity system which in this case is the South African electricity grid. The CPA's system boundaries are therefore in accordance with the methodology ACM0002, version 13.0.0 /14/.

The following table resumes the greenhouse gases involved in the calculations of the baseline, project and leakage emissions.

	GHGs involved	*Description*
Baseline emissions	CO_2	The main source of emissions in the baseline. The baseline emission factor from the electricity generated in fossil fuel fired power plants is calculated in accordance with the latest version of the "Tool to calculate the emission factor for an electricity system".

Project emissions	CO_2	No project emissions related to solar photovoltaic electricity generation projects, according to the methodology /14/.
Leakage	N/A	No leakage emissions are considered according to the methodology /14/.

The identified boundary and selected sources and gases are justified for the generic CPA. The validation of the generic CPA did not reveal other greenhouse gas emissions occurring within the proposed CPA boundary as a result of the implementation of the proposed project activity which are expected to contribute more than 1% of the overall expected average annual emission reduction, which are not addressed by ACM0002 (version 13.0.0). The project participant clarified that no back-up electricity generators are foreseen on site in case of failure of the grid electricity supply.

4.14 Baseline scenario identification and description for each generic CPA

The identified baselines are in accordance with the methodology ACM0002, version 13.0.0 /14/, and are described in the Generic CPA-DD section B.4:

> If the CPA is the installation of a new grid-connected renewable power plant/unit, 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 the "Tool to calculate the emission factor for an electricity system".*

The approved baseline methodology has been correctly applied to identify the baseline scenario, which most reasonably represents what would occur in the absence of the proposed CDM project activity. The generation of electricity *by the operation of grid-connected power plants and by the addition of new generation sources* sufficiently takes into account relevant national and/or sectoral policies and complies with all applicable and enforced legislation /29/.

All the assumptions and data used by the project participants are listed in the PoA-DD and/or supporting documents. All documentation relevant for establishing the baseline scenario and correctly quoted and interpreted in the PoA-DD. Assumptions and data used in the identification of the baseline scenario are justified appropriately, supported by evidence and can be deemed reasonable. Relevant national and/or sectoral policies and circumstances are considered and listed in the PoA-DD.

4.15 Algorithms and/or formulae used to determine emission reductions of each generic CPA

4.15.1 Explanation of methodological choices

Project emissions:

According to the methodology ACM0002, version 13.0.0 /14/, there are no project emissions related to solar photovoltaic electricity generation projects.

Baseline emissions:

Baseline emissions are calculated as per the methodology ACM0002, by multiplying the annual electricity production supplied to the grid by the combined margin CO_2 emission factor coefficient of the grid and according to the formula:

$$BE_y = EG_{PJ,y} \cdot EF_{grid,CM,y} \cdot$$

Where:

- $EG_{PJ,y}$: The electricity generated by the project activity and fed in the South African national grid. This energy will displace other electricity generated mainly by fossil fuel power plants.

- $EF_{grid,CM,y}$: The emission factor is calculated *ex ante* as per the methodological tool "Tool to calculate the emission factor for an electricity system" version 2.2.1 /15/; the grid emission factor has been calculated as the weighted average of OM and BM. The weight of OM and BM are selected for the first crediting period as 0.75 and 0.25 respectively as requested for project by the methodological tool. The combined factor of the South African national grid is equal to 0.91 tCO_2/MWh.

The calculation for $EG_{PJ,y}$ for project activity consisting in the installation of a new grid-connected renewable power plant/unit at a site where no renewable power plant was operated prior to the implementation of the project activity (greenfield renewable energy power plants):

$EG_{PJ,y} = EG_{facility,y}$

Where:

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

Leakage emissions:

According to the methodology ACM0002, version 13.0.0 /14/ no leakage emissions are considered. The main emissions potentially giving rise to leakage in the context of electric sector projects are emissions arising due to activities such as power plant construction and upstream emissions from fossil fuel use (e.g. extraction, processing, transport). These emissions sources are neglected.

Emission reductions:

The emission reduction (ER_y) by the CPA during the crediting period is the difference between baseline emissions (BE_y), project emissions (PE_y) and emissions due to leakage (L_y) as follows: $ER_y=BE_y-PE_y-LE_y$

4.15.2 Parameters determined ex-ante

The following parameters are determined ex-ante and verified by DNV.

- *Combined margin CO_2 emission factor for grid connected power generation in year y*

The baseline emission factor is determined *ex ante* according to the methodological tool "Tool to calculate emission factor for an electricity system" /15/ as the weighted average of OM and BM. The weights of OM and BM are selected for the crediting period as 0.75 and 0.25 respectively, as required by the methodological tool.

The OM was determined using the simple OM calculation approach. Its applicability as per the 'Tool to calculate the emission factor for an electricity system' (version 2.2.1) /15/ was confirmed as the power generation by low-cost/must-run power plants in the period 2007-2011 accounted for less than 50% of the total power generation (5 to 6% for hydro, wind and nuclear power generation) in South Africa /27/. The project participant has applied option A1 to calculate the simple OM.

The project participant chose to calculate the build margin emission factor following the method: Option 1 (*For the first crediting period, calculate the build margin emission factor ex ante based on the most recent information available on units already built for sample group m at the time of CDM-PDD submission to the DOE for validation*).

The power plants considered in the BM sample set are the following: Majuba (Coal, 1996), Kendal (Coal, 1988), Gourikwa (Kerosene, 2007) and Ankerlig (Kerosene, 2007). No registered CDM plants were included, as required by step (d), since no relevant data on annual electricity generation are available in the public domain.

For the determination of the OM the project participant has used the latest available 3 years of data that were available at the date moment of the commencement of the validation process (Eskom CEF calculator, providing data for years 2008-2009, 2009-2010 and 2010-2011 /28/).

The following parameters have been used to calculate the *Combined margin CO_2 emission factor*, and they have been verified by DNV:

- *Amount of fossil fuel type i consumed by power plant/unit m in year y:*

The fuel consumption was verified against the Eskom Grid information, from years 2008-2009, 2009-2010 and 2010-2011 /28/.

- *Net calorific value (energy content) of fossil fuel type i in year y:*

The net calorific values of kerosene and diesel oil were verified against the 2006 IPCC guidelines on National GHG Inventories (Chapter 1, Vol. 2) as the lower value of the 95% confidence interval for jet kerosene and diesel oil /24/.

The net calorific value of coal was verified against the Eskom Integrated Report 2011 /27/.

The report is providing national average values which are more accurate and conservative than the default values provided in the 2006 IPCC guidelines /24/.

- *CO_2 emission factor of fossil fuel type i used in power unit m in year y:*

The CO_2 emission factor of coal was verified against the 2006 IPCC guidelines on National GHG Inventories (provided in Table 1.4 of Chapter 1, Vol. 2) as the lower value of the 95% confidence interval for other bituminous coal /24/.

The CO_2 emission factor of kerosene was verified against the 2006 IPCC guidelines on National GHG Inventories (provided in Table 1.4 of Chapter 1, Vol. 2) as the lower value of the 95% confidence interval for jet Kerosene /24/.

The CO_2 emission factor of diesel oil was verified against the 2006 IPCC guidelines on National GHG Inventories (provided in Table 1.4 of Chapter 1, Vol. 2) as the lower value of the 95% confidence interval for diesel oil /24/.

- *Average net energy conversion efficiency of power unit m in year y:*

The average net energy conversion efficiency value was verified against the Tool to calculate the emission factor for an electricity system (annex 1) /15/. The project participant has correctly applied the efficiency provided in annex 1 of the mentioned tool for old units (before

2000) for a subcritical generation technology which is consistent with the information of the Eskom Integrated Report 2011 /27/.

Using the above references the OM for the vintage 2008-2009, 2009-2010 and 2010-2011 equals 0.92 tCO_2e/MWh while the BM for the power generated in 2010/2011 equals to 0.87 tCO_2e/MWh. Therefore, the CM would be equal to 0.91 tCO_2e/MWh /3/.

DNV confirms that the data used are acceptable and the combined margin grid emission factor of the South African grid has been calculated in an accurate manner.

4.16 Monitoring plan

The monitoring plan is in compliance with the monitoring methodology ACM0002 (version 13.0.0).

It is DNV's opinion, that the project participants are able to implement the monitoring plan.

4.16.1 Parameters monitored ex-post by each generic CPA

The following parameter will be monitored ex-post by each CPA:

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

This parameter comprises:

(i) The quantity of electricity supplied by the project plant/unit to the grid; and

(ii) The quantity of electricity delivered to the project plant/unit from the grid

According to the description of the monitoring plan provided in the part II of the PoA-DD:

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 the measurements taken by the electricity meters.

Measurement results will be cross checked with records for sold electricity. In the case of inconsistences, the most appropriate value will be chosen and justified in the monitoring report.

Meters will be calibrated in accordance with the manufacturer's requirements, by an accredited organisation.

4.16.2 Management system and quality assurance

The CPA facility manager is responsible for the effective implementation of the monitoring management plan elements with regard to metering. All elements of the monitoring plan will be supported by formal procedures and regular training of delegated personnel, as appropriate.

The CPA developer will record the required monitoring data (CPA monitoring records) and will ensure that the CPA monitoring records are made available to the CME. The CME will be responsible for the management of the PoA monitoring database, consisting of the basic data for inclusion and of all CPA monitoring records. All records will be stored for a period of two years after the end of the relevant crediting period. Relevant data capture, verification and storage procedures will be followed in maintaining the data to ensure its accuracy, validity and completeness.

All data collected will be archived electronically in two places for security purposes. All data will be kept for at least two years after the end of the crediting period.

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APPENDIX A

POA AND GENERIC CPA VALIDATION PROTOCOL

Table 1 Mandatory requirements for CDM programme of activities (PoA)

Requirement	Reference	Conclusion
About Parties		
1. The programme shall assist Parties included in Annex I in achieving compliance with part of their emission reduction commitment under Art. 3.	Kyoto Protocol Art.12.2	OK
2. The programme shall assist non-Annex I Parties in contributing to the ultimate objective of the UNFCCC.	Kyoto Protocol Art.12.2.	OK
3. The programme shall have the written approval of voluntary participation from the designated national authority of each Party involved.	Kyoto Protocol Art. 12.5a, CDM Modalities and Procedures §40a	OK
4. The programme shall assist non-Annex I Parties in achieving sustainable development and shall have obtained confirmation by the host country thereof.	Kyoto Protocol Art. 12.2, CDM Modalities and Procedures §40a	OK
5. In case public funding from Parties included in Annex I is used for the programme, these Parties shall provide an affirmation that such funding does not result in a diversion of official development assistance and is separate from and is not counted towards the financial obligations of these Parties.	Decision 17/CP.7, CDM Modalities and Procedures Appendix B, § 2	OK
6. Parties participating in the CDM shall designate a national authority for the CDM.	CDM Modalities and Procedures §29	OK
7. The host Party and the participating Annex I Party shall be a Party to the Kyoto Protocol.	CDM Modalities §30/31a	OK
8. The participating Annex I Party's assigned amount shall have been calculated and recorded.	CDM Modalities and Procedures §31b	N/A
9. The participating Annex I Party shall have in place a national system for estimating GHG emissions and a national registry in accordance with Kyoto Protocol Article 5 and 7.	CDM Modalities and Procedures §31b	N/A
About Design of Programme		

Requirement	Reference	Conclusion
10. The CDM-POA-DD sets a framework for the implementation of the PoA and defines unambiguously a CPA under the PoA.	PoA Procedures § 6	OK
11. The coordinating/managing entity shall be identified.	PoA Procedures § 6 (a)	OK
12. The boundary for the PoA in terms of a geographical area (e.g., municipality, region within a country, country or several countries) within which all CPAs included in the PoA will be implemented is defined.	PoA Procedures § 6 (b)	OK
13. Eligibility criteria are defined for inclusion of a project activity as a CPA under the PoA, which shall include criteria for demonstration of additionality, and the type and/or extent of information (e.g. criteria, indicators, variables, parameters or measurements) that shall be provided by each CPA in order to ensure its eligibility.	PoA Procedures § 6 (g)	OK
14. The length of the PoA is not exceeding 28 years.	PoA Procedures § 6 (h)	OK
15. The operational and management arrangements established by the coordinating/managing entity for the implementation of the PoA is described, including a description of a record keeping system for each CPA under the PoA, a system/procedure to avoid double accounting e.g. to 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, the provisions to ensure that those operating the CPA are aware and have agreed that their activity is being subscribed to the PoA.	PoA Procedures § 6 (i)	OK
16. The proposed statistically sound sampling method/procedure to be used by DOEs for verification of the amount of emission reductions achieved by CPAs under the PoA is described. In case the coordinating/managing entity opts for a verification method that does not use sampling but verifies each CPA there is a transparent system defined and described that ensures that no double accounting occurs and that the status of verification can be determined anytime for each CPA.	PoA Procedures § 6 (k)	OK
For large-scale projects only		
17. Documentation on the analysis of the environmental impacts of the project	CDM Modalities and Procedures §37c	OK

Requirement	Reference	Conclusion
activity, including transboundary impacts, shall be submitted, and, if those impacts are considered significant by the project participants or the host Party, an environmental impact assessment in accordance with procedures as required by the host Party shall be carried out.		
About additionality		
18. Additionality of the programme as a whole is demonstrated because in the absence of the CDM (i) the proposed voluntary measure would not be implemented, or (ii) the mandatory policy/regulation would be systematically not enforced and that non-compliance with those requirements is widespread in the country/region, or (iii) that the PoA will lead to a greater level of enforcement of the existing mandatory policy /regulation.	Kyoto Protocol Art. 12.5c, CDM Modalities and Procedures §43 PoA Procedures § 6 (e)	OK
19. It is demonstrated for the PoA and generic CPA that in the absence of CDM, none of the implemented CPAs would occur	PoA Standard § 7	OK
20. Additionality of a typical CPA is demonstrated through eligibility criteria for inclusion in the PoA.	PoA Procedures § 7 (g)	OK
About application of baseline and monitoring methodology		
21. The baseline and monitoring methodology shall be previously approved by the CDM Executive Board.	CDM Modalities and Procedures §37e	OK
22. A baseline shall be established on a project-specific basis, in a transparent manner and taking into account relevant national and/or sectoral policies and circumstances.	CDM Modalities and Procedures §45c,d	OK
23. The baseline methodology shall exclude to earn CERs for decreases in activity levels outside the project activity or due to force majeure.	CDM Modalities and Procedures §47	OK
24. The monitoring plan for a typical CPA is developed in accordance with the approved monitoring methodology, and identification of the monitoring provisions and data parameters a CPA has is to apply/monitor	PoA Procedures § 6 (j)	OK

Requirement	Reference	Conclusion
25. Provisions for monitoring, verification and reporting shall be in accordance with the modalities described in the Marrakech Accords and relevant decisions of the COP/MOP.	CDM Modalities and Procedures §37f	OK
About forecast emission reductions		
26. The emission reductions shall be real, measurable and give long-term benefits related to the mitigation of climate change.	Kyoto Protocol Art. 12.5b	OK
About environmental impacts		
27. Documentation on the analysis of the environmental impacts of the programme activity, including transboundary impacts, shall be submitted, and, if those impacts are considered significant by the programme participants or the host Party, an environmental impact assessment in accordance with procedures as required by the host Party shall be carried out.	CDM Modalities and Procedures §37c	☐ Analysis at PoA level ☒ Analysis at CPA level
About stakeholder comments		
28. Comments by local stakeholders shall be invited, a summary of these provided and how due account was taken of any comments received.	CDM Modalities and Procedures §37b	☐ Analysis at PoA level ☒ Analysis at CPA level
29. Parties, stakeholders and UNFCCC accredited NGOs shall have been invited to comment on the validation requirements for minimum 30 days, and the project design document and comments have been made publicly available.	CDM Modalities and Procedures §40	OK
Other		
30. The project design document shall be in conformance with the CDM-PoA-DD format.	CDM Modalities and Procedures Appendix B, EB Decision	OK

Table 2 Requirements checklist

Checklist Question	Ref	MoV	Assessment by DNV	Draft Concl.	Final Concl.
PART I. Programme of activities (PoA)					
A General description of project activity					
A.1 Title of the PoA (PS § 31, VVS § 62-63)					
A.1.1 Does section A.1 of the PoA-DD include a clearly identifiable project title, version number of the PoA-DD and date of the PoA-DD?	/1/	DR	☒ Clearly identifiable title of the project activity ☒ Version number of the PoA-DD is included ☒ Date of the PoA-DD is included.		OK
A.1.2 Is the PoA-DD is in accordance with the applicable requirements for completing PoA-DD?	/1/	DR	☒ Yes *If no, list where the PoA-DD is not in accordance:*		OK
A.2 Description of the PoA (VVS § 64-69, (PS § 138, VVS § 189 and VVS § 150-157 for small-scale project activities, as applicable)					
A.2.1 How was the design of the PoA assessed?	/1/ /2/ /9/ /30/	DR I	*What type is the project?* ☐ Project in existing facility or utilizing existing equipment(s) ☐ Project is either a large scale project or a small scale project with emission reductions exceeding 15 000 tCO_2e per year. In this case, a site visit must be performed. ☐ Project is a bundled small scale project, with each project in the bundle		OK

MoV = Means of Verification, DR= Document Review, I= Interview, CC= Cross-Checking

Checklist Question	Ref	MoV	Assessment by DNV	Draft Concl.	Final Concl.
			with emission reductions not exceeding 15,000 tCO_2e per year. In such case the number of physical site visits may be based on sampling, if the sampling size is appropriately justified through statistical analysis. ☐ The project is an individual small scale project activity with emission reductions not exceeding 15 000 tCO_2e per year. In this case, DOE may not conduct a physical site visit as appropriate. ☒ Greenfield project *How was the design of the project assessed?* ☐ Physical site inspection ☒ Reviewing available designs and feasibility studies *If a physical site inspection is not undertaken, justify why no site visit was undertaken:* The decision not to conduct a physical site visit for the CPA1 *Grid Connected Photovoltaic (PV) Renewable Electricity Generating Facilities Programme CPA 1* /2/ has been taken following the internal procedure *Decision Tree for site visit* /30/, which is based on paragraphs 65 to 67 of the VVS /9/. This comprises the following steps:		

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Checklist Question		Ref	MoV	Assessment by DNV	Draft Concl.	Final Concl.
				• The CPA1 is a greenfield project. • According to the telephonic interviews held during the site visit, and according to the EIA, the proposed project has not started to operate/commission, and does not cause any resettlement. This is further discussed in the CPA 1 Validation Report.		
A.2.2	If a greenfield project, describe the physical implementation of the project when the validation was commenced.	/1/	DR	This is discussed at the CPA level.		OK
A.2.3	If physical site visits were performed based on sampling (only applicable for bundled small scale projects, each with emission reductions not exceeding 15 000 tCO2e per year), justify the sampling through a statistical analysis:	/1/	DR	Not applicable since this is not a bundled small scale project.		OK
A.2.4	Does the PoA-DD and generic CPA-DD describe the framework for the implementation of the proposed CDM PoA and inclusion of CPAs under the PoA?	/1/ /12/	DR	The PoA-DD states that *A typical CPA falling under this programme would be one of the following:* *a) A new electricity generating facility at a site where no renewable power plant was operated prior to the implementation of the CPA (Greenfield plant); or,* *b) A capacity addition.* The PoA-DD includes eligibility criteria for including a CPA in the PoA under the requirements of the *Standard for the*		OK

MoV = Means of Verification, DR= Document Review, I= Interview, CC= Cross-Checking

	Checklist Question	Ref	MoV	Assessment by DNV	Draft Concl.	Final Concl.
				demonstration of additionality, development of eligibility criteria, and application of multiple methodologies for programme of activities /12/		
A.2.5	Does the PoA involve alteration of existing installations? If so, have the differences between pre-project and post-project activity been clearly described in the PoA-DD?	/1/	DR	The PoA-DD states that *A typical CPA falling under this programme would be one of the following:* *a) A new electricity generating facility at a site where no renewable power plant was operated prior to the implementation of the CPA (Greenfield plant); or,* *b) A capacity addition.* The first case does not involve alteration of existing installations. The capacity addition case involves alteration of existing installations.		OK
A.2.6	Does the PoA design engineering reflect current good practices?	/1/ /29/	DR	The South African electricity grid is mostly dependent on coal power generation /29/. The technology described in the PoA-DD would result in a reduction of dependence on coal for electricity generation in South Africa.		OK
A.2.7	Would the technology result in a significantly better performance than any commonly used technologies in the host country? Is any transfer of technology from any Annex-I Party involved?	/1/ /29/	DR	The South African electricity grid is mostly dependent on coal power generation /29/. The technology described in the PoA-DD would result in a reduction of dependence on coal for electricity generation in South Africa. No Annex-I party is involved in the PoA.		OK

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Checklist Question	Ref	MoV	Assessment by DNV	Draft Concl.	Final Concl.
A.3 Programme Boundaries (VVS § 191-192) *Programme Boundaries are the limits and borders defining the GHG emission reduction project.*					
A.3.1 Are the programme's spatial boundaries (geographical) clearly defined?	/1/	DR	The PoA-DD states that *the geographical boundaries of this PoA are the internationally recognised borders of the Republic of South Africa.*		OK
A.3.2 Are the programme's system boundaries (components and facilities used to mitigate GHGs) clearly defined?	/1/	DR	The PoA-DD states that the programme *will support the development and implementation of renewable electricity generating facilities using Photovoltaic (PV) technology*.		OK
A.3.3 Do the programme boundaries take into consideration all applicable national and/or sectoral policies and regulations within the chosen boundary?	/1/ /33/	DR I	According to Cennergi's responsible person for environmental compliance, the programme boundaries take into consideration all applicable national and sectoral policies and regulations within the boundaries of South Africa /33/.		OK
A.3.4 Can each CPA under the PoA be clearly identified individually including spatial boundaries (geographical) clearly defined?	/1/	DR	According to the eligibility criterion (2), *Each CPA must be linked to specific geographical co-ordinates supported by a description of its location (the description should include a reference to a national land registry system, if such a system exists)*		OK
A.4 Participation and authorization (VVS § 38-52) *Referring to Part A.3 and A.4, Appendix 1 and 2 of the PoA-DD as well as the CDM glossary with respect to the terms Party, Letter of Approval, Authorization and Project Participant.*					
A.4.1 Do all participating Parties fulfil the participation requirements as follows:	/1/	DR	The participating Party fulfils the participation requirements.		OK

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Checklist Question	Ref	MoV	Assessment by DNV	Draft Concl.	Final Concl.
	South Africa (host)				
a) Party has ratified the Kyoto Protocol	☒ Yes ☐ No				
b) Party has designated a Designated National Authority	☒ Yes ☐ No				
c) The assigned amount has been determined	☐ Yes ☒ No				
A.4.2 Do the letters of approval meet the following requirements?	/1/ /8/	DR	CAR 1: According to the CDM Modalities and Procedures §40a, the programme shall have the written approval of voluntary participation from the Designated National Authority of each Party involved. Moreover, according to the *Procedures for registration of a programme of activities as a single CDM project activity and issuance of certified emission reductions for a programme of activities* /19/, the coordinating/managing entity shall obtain letters of authorization of its coordination of the PoA from each host Party. Neither LoA or letter of authorization has been provided by the PP.	~~CAR 1~~	OK
	South Africa (host)				
a) LoA confirms that Party has ratified the Kyoto Protocol	☐ Yes ☐ No				
b) LoA confirms that participation is voluntary	☐ Yes ☐ No				
c) The LoA confirms that the project contributes to the sustainable development of the host country?	☐ Yes ☐ No				
d) The LoA refers to the precise project activity title	☐ Yes ☐ No				

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	Checklist Question	Ref	MoV	Assessment by DNV	Draft Concl.	Final Concl.
	e) The LoA is unconditional with respect to (a) to (d) above f) The LoA is issued by the respective Party's DNA g) The LoA was received directly by the DNA or the PP h) In case of doubt regarding the authenticity of the letter of approval, describe how it was verified that the letter of approval is authentic	☐ Yes ☐ No ☐ Yes ☐ No ☐ DNA ☐ PP				
A.4.3	Have all private/public project participants been authorized by an involved Party?	/1/	DR	See CAR 1	~~CAR 1~~	OK
A.4.4	Has the coordinating/managing entity of the programme been identified?	/1/	DR	The PoA-DD clearly indicates that the coordinating/managing entity of the programme is the Carbon Protocol of SA.		OK
A.4.5	Has the coordinating/managing entity provided letters of authorization of its coordination of the PoA from each host Party?	/1/	DR	See CAR 1	~~CAR 1~~	OK
A.5	**Modalities of communications (VVS § 53-61)**					
A.5.1	How has the corporate identity of all project participants and focal points included in the MoC, as well as the personal identities, including specimen signatures and employment status, of their authorized signatories, been validated?	/1/ /9/	DR	☐ Directly checking evidence for corporate, personal identity and other relevant documentation; ☐ Notarized documentation; ☐ Written confirmation from the project participant or the coordinating/managing entity that submits to it the MoC statement that all corporate and personal details, including specimen signatures, are valid and accurate. If this case was selected, DNV has confirmed that: ☐ the MoC statement was	~~CAR 2~~	OK

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Checklist Question	Ref	MoV	Assessment by DNV	Draft Concl.	Final Concl.
			received from a project participant with whom DNV has a contractual relationship. ☐ the official who submits the MoC statement to the DOE and the official who signed the written confirmation (if a different person) is/are duly authorized to do so on behalf of the respective project participant CAR 2: The CDM VVS /9/ paragraph 54 requires that the Modalities of Communication are clearly identified, including the specimen signatures, authorised signatories etc. This has not been provided.		
A.5.2 Has the MoC statement been correctly completed and duly authorized? Check that all three requirements listed in the next column are complied with.	/1/	DR	☐ The latest version of the form F-CDM-MOC has been used; ☐ The information required as per the F-CDM-MOC, including its annex 1, is correctly completed; ☐ The project participantís authorized signatories signing the F-CDM-MOC correspond to the project participantís authorized signatories included in F-CDM-MOC, annex 1. See CAR 2	~~CAR 2~~	OK

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Checklist Question	Ref	MoV	Assessment by DNV	Draft Concl.	Final Concl.
A.6 Public funding of the project activity (CDM Modalities and Procedures Appendix B § 2)					
A.6.1 In case public funding from Parties included in Annex I is used for the project activity, have these Parties provided an affirmation that such funding does not result in a diversion of official development assistance and is separate from and is not counted towards the financial obligations of these Parties?	/1/	DR	The PoA-DD states in section A.4.5 that *the PoA has not and will not use any public funding.* The eligibility criterion number 10 for inclusion of a CPA in the PoA states: *CPAs that have received development assistance will submit written confirmation from the assistance provider that this has not resulted in a diversion of official development assistance.* CL 1: The PP is requested to submit evidence that no official development assistance has been diverted from an Annex-1 Party.	~~CL 1~~	OK
A.7 Verification of CPAs (PoA procedure § 6 k)					
A.7.1 If case the coordinating /managing entity does not wish to have all CPAs verified, is there a description of the proposed statistically sound sampling method/procedure to be used by DOEs for verification of the amount of reductions of anthropogenic emissions by sources or removals by sinks of greenhouse gases achieved by CPAs under the PoA?	/1/	DR	As stated in an eligibility criterion for inclusion of a CPA in the PoA, this is not applicable to this PoA, *as all CPAs falling under the umbrella of the PoA will be verified.*		OK

MoV = Means of Verification, DR= Document Review, I= Interview, CC= Cross-Checking

Checklist Question	Ref	MoV	Assessment by DNV	Draft Concl.	Final Concl.
B Demonstration of additionality and development of eligibility criteria					
B.1 Additionality of the Programme of Activities (VVS § 195) *Assessment of the additionality of the PoA as a whole in accordance with the PoA standard*					
B.1.1 Has it been demonstrated that the programme is a voluntary coordinated action that would not be implemented in the absence of CDM?	/1/	DR	The PoA-DD states in section A.4.3: *It is confirmed by the project participants that the PoA is a voluntary co-ordinated action.* CL 2: The PP is requested to provide evidence that the programme is a voluntary coordinated action that would not be implemented in the absence of CDM.	~~CL 2~~	OK
B.1.2 If the programme is implementing a mandatory policy/regulation, has it been demonstrated whether the policy/regulation is being enforced? If it is enforced, has it been demonstrated that the programme will lead to a higher level of enforcement?	/1/ /34/	DR I	The PoA-DD states in section A.4.3: *There is no mandatory\policy regulation in South Africa that would require the development of the CPA types envisaged falling under the provisions of this PoA.* This was confirmed during an interview with the DNA of South Africa./34/		OK
B.2 Additionality determination of each generic CPA (VVS § 101-129 and VVS § 158-161 for small-scale project activities, as applicable)					
B.2.1 What approach/tool does the PoA use to demonstrate	/1/	DR	The PoA-DD states that the additionality of	~~CAR 3~~	OK

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Checklist Question	Ref	MoV	Assessment by DNV	Draft Concl.	Final Concl.
additionality of each generic CPA? Is this in line with the methodology? In case of small-scale CDM project activities, is Attachment A to Appendix B of the simplified modalities and procedures for small-scale CDM project activities applied considering also the "Non-binding best practice examples to demonstrate additionality for SSC project activities".	/14/ /16/ /17/		the CPAs with an installed capacity of more than 15MW shall be demonstrated and assessed using the latest available version of the *Tool for the demonstration and assessment of additionality,* version 06.1.0 /16/. The PoA-DD also states that *for those projects that are 15 MW or less additionality is shown as per eligibility criterion 7. in Section A.4.2.2. This links the demonstration of additionality to attachment A of Appendix B of the "Simplified modalities and procedures for small-scale CDM project activities". In the latest version of this document , Solar Technologies (photovoltaic and solar thermal electricity generation) of an installed capacity up to 15MW are included in the positive list of grid-connected renewable electricity generation technologies that are automatically defined as additional, without further documentation of barriers.* CAR 3: According to the applicable methodology ACM0002 Version 13.0.0 /14/, the additionality is demonstrated according to the *Tool for the demonstration and assessment of additionality,* version 06.1.0 /16/. The PoA-DD indicates that the *Attachment A*		

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Checklist Question		Ref	MoV	Assessment by DNV	Draft Concl.	Final Concl.
				of Appendix B /17/ and microscale automatic additionality will be used as well to demonstrate additionality of the small-scale and micro-scale CPAs included in the PoA. The demonstration of additionality of a CPA is therefore not in accordance with the requirements of the methodology.		
B.2.2	Have the regulatory requirements correctly been taken into account to evaluate the project activity and the alternatives?	/1/	DR	The PoA-DD states in section E.5.1, that *The alternatives shall be assessed in terms of their compliance with applicable mandatory legal and regulatory requirements.* The regulatory requirements will therefore be assessed at CPA level.		OK
B.2.3	Is sufficient evidence provided to support the relevance of the arguments made?	/1/	DR	The regulatory requirements will be assessed at CPA level.		OK
B.2.4	What is the additionality of each generic CPA mainly based on (Investment analysis or barrier analysis)?	/1/	DR	The PoA-DD states in section E.5.1: *Each CPA under this PoA will have the option to decide whether they proceed via Step 2 (Investment Analysis) or to Step 3 (Barrier Analysis).* See CAR 3	~~CAR 3~~	OK
	Investment analysis (VVS § 117-123) *The list of questions below must be adjusted to the parameters in the investment analysis relevant to the project under validation. All input parameters need to be assessed.*					
B.2.5	Does each generic CPA or any of the remaining alternatives generate revenues apart from CDM? Is this reflected in the PoA-DD?	/1/ /16/	DR	The CPAs and the remaining alternatives to the project activity generate revenues apart from CDM. The following alternatives have	~~CL 3~~	OK

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Checklist Question	Ref	MoV	Assessment by DNV	Draft Concl.	Final Concl.
			been identified in the PoA-DD: • For *Type One Typical CPA – New Grid-Connected Renewable Energy Plant* : the alternative is *The proposed project activity undertaken without being registered as a CPA i.e. with no carbon revenue.* • For *Type Two Typical CPA – Capacity Addition*, the alternative is: *There is a continuation of the current situation and the CPA is not implemented.* When identifying alternatives to the project activity, the additionality tool /16/ states: *project activities that apply this tool in the context of approved consolidated methodology ACM0002, only need to identify that there is at least one credible and feasible alternative that would be more attractive than the proposed project activity.* CL 3: In regard to the identification of the alternatives to the project activity for *Type One Typical CPA – New Grid-Connected Renewable Energy Plant*, the PP is requested to clarify how the identified alternative represents a more attractive alternative than the proposed project activity, in accordance with the guidance provided in the		

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				additionality tool /16/.		
B.2.6	Do any of the alternatives to each generic CPA involve investment? Is this reflected in the PoA-DD?	/1/	DR	The following alternatives have been identified in the PoA-DD: • For *Type One Typical CPA – New Grid-Connected Renewable Energy Plant* : the alternative is *The proposed project activity undertaken without being registered as a CPA i.e. with no carbon revenue.* • For *Type Two Typical CPA – Capacity Addition*, the alternative is: *There is a continuation of the current situation and the CPA is not implemented.* The alternative identified for *Type One Typical CPA* involves investment. The alternative identified for *Type Two Typical CPA* does not involve investment.		OK
B.2.7	Is the choice of benchmark analysis, investment comparison or simple cost analysis correct?	/1/	DR	Since the CDM project activity and the alternatives identified in Step 1 generate financial or economic benefits other than CDM revenues, a simple cost analysis cannot be performed. In order to determine whether the proposed project activity is economically or financially feasible without the revenues from the sale of CERs, the Project Participant correctly uses a		OK

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				benchmark analysis.		
B.2.8	Is the benchmark/discount rate the latest available at the time of decision?	/1/ /20/	DR	According to the *Standard for the demonstration of additionality, development of eligibility criteria, and application of multiple methodologies for programme of activities* /12/: *The CME shall demonstrate that compliance with the additionality-related eligibility criteria set in the PoA design document will ensure that all the relevant additionality-related guidelines, tools or any requirements embedded in the methodologies are met.* In the Investment analysis, the PoA-DD states that *The benchmarks may be nationally determined or reflect required expected returns on equity for such projects in South Africa.* CL 4: From the information provided in the PoA-DD regarding the benchmark analysis for a typical CPA, it is not possible to determine whether this is in compliance with requirements indicated in the *Guidelines on the assessment of investment analysis* /20/. The PP is requested to demonstrate how a typical CPA meets EB requirements applicable to investment analysis.	~~CL 4~~	OK
B.2.9	What is the financial indicator? Is it on equity/project basis? Before/after tax? Is the financial indicator in correspondence with the benchmark?	/1/	DR	See CL 4	~~CL 4~~	OK

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B.2.10	Are the underlying assumptions appropriate, e.g. what is considered as waste in the baseline is considered to have zero value?	/1/	DR	See CL 4	~~CL 4~~	OK
B.2.11	Does the income tax calculation take depreciation into account? Is the depreciation year in accordance with normal accounting practice in the host country?	/1/	DR	See CL 4	~~CL 4~~	OK
B.2.12	Is the time period of the investment analysis and operating time of each generic CPA realistic? Has salvage value been taken into account? Is working capital returned in the last year of operation?	/1/	DR	See CL 4	~~CL 4~~	OK
B.2.13	When a feasibility study report or similar approved by the government is used as the basis for the investment analysis: Can it be confirmed that the values used in the PoA-DD are fully consistent with the FSR and is the period of time between finalization of the FSR and the investment decision adequate?	/1/	DR	See CL 4	~~CL 4~~	OK
B.2.14	How was the amount of output (e.g. sales of electricity) assessed?	/1/	DR	☐ The plant load factor provided to banks and/or equity financiers while applying the project activity for project financing, or to the government while applying the project activity for implementation approval ☐ The plant load factor determined by a third party contracted by the project participants (e.g. an engineering company) ☐ Other approach. *Provide details on how the load factor was validated::* See CL 4	~~CL 4~~	OK

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B.2.15	How was the output price (e.g. electricity price) assessed?	/1/	DR	☐ Cross-check against third-party or publicly available sources (e.g. invoices or price indices) ☐ Review of feasibility reports, public announcements and annual financial reports related to the project and the project participants *Provide details on how the output price was validated:* See CL 4	~~CL 4~~	OK
B.2.16	How were the investment costs assessed? Were the data available and valid at the time of decision?	/1/	DR	☐ Cross-check against third-party or publicly available sources (e.g. invoices or price indices) ☐ Review of feasibility reports, public announcements, contracts and annual financial reports related to the project and the project participants *Provide details on how the investment costs were validated:* See CL 4	~~CL 4~~	OK
B.2.17	How were the O&M costs assessed? Were the data available and valid at the time of decision?	/1/	DR	☐ Cross-check against third-party or publicly available sources (e.g. invoices or price indices) ☐ Review of feasibility reports, public announcements and annual financial reports related to the project and the project participants	~~CL 4~~	OK

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Checklist Question		Ref	MoV	Assessment by DNV	Draft Concl.	Final Concl.
				Provide details on how the O&M costs were validated: See CL 4		
B.2.18	Describe the assessment of the other input parameters. Were the data available and valid at the time of decision?	/1/	DR	☐ Cross-check against third-party or publicly available sources (e.g. invoices or price indices) ☐ Review of feasibility reports, public announcements and annual financial reports related to the project and the project participants *Provide details on how other input parameters were validated:* See CL 4	~~CL 4~~	OK
B.2.19	Was the financial calculation spreadsheet verified and found to be correct?	/1/	DR	This is discussed at CPA level.		OK
B.2.20	Sensitivity analysis: Have the key parameters contributing to more than 20% of the revenue/costs during operating or implementation been identified? Has possible correlation between the parameters been considered?	/1/	DR	This is discussed at CPA level.		OK
B.2.21	Sensitivity analysis: Is the range of variations is reasonable in the project context?	/1/	DR	This is discussed at CPA level.		OK
B.2.22	Have the key parameters been varied to reach the benchmark and the likelihood of this to happen been justified to be small?	/1/	DR	This is discussed at CPA level.		OK

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	Checklist Question	Ref	MoV	Assessment by DNV	Draft Concl.	Final Concl.
	Barrier analysis (VVS § 124-127)					
B.2.23	Are the barriers identified complimentary to a potential investment analysis? Does the barrier have a clear impact on the financial returns so that it can be assessed in an investment analysis? Each barrier is discussed separately.	/1/ /21/	DR	The PoA-DD states, in section E.5.1, for *'Step 3: Barrier analysis'*, *Any CPA that falls under the ambit of the PoA will be able to utilize a barrier analysis as an alternative to an investment analysis. This Step will use the latest version of the "Guidelines for Objective Demonstration and Assessment of Barriers" to undertake the analysis, in conjunction with the latest version of the "tool for the demonstration and assessment of additionality"* CL 5: The PP is requested to demonstrate compliance with the *Guidelines for objective demonstration and assessment of barriers* /21/ on the use of Barrier analysis for the demonstration of additionality for a CPA.	~~CL 5~~	OK
B.2.24	How were the investment barriers assessed to be real? Are the investment barriers substantiated by a source independent of the project participants?	/1/	DR	See CL 5	~~CL 5~~	OK
B.2.25	How does CDM alleviate the investment barriers?	/1/	DR	See CL 5	~~CL 5~~	OK
B.2.26	Is each generic CPA prevented by the investment barriers and at least one of the possible alternatives to the project activity is feasible under the same circumstances?	/1/	DR	See CL 5	~~CL 5~~	OK
B.2.27	How were the technological barriers assessed to be real? Are the technological barriers substantiated by a source independent of the project participants?	/1/	DR	See CL 5	~~CL 5~~	OK

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Checklist Question		Ref	MoV	Assessment by DNV	Draft Concl.	Final Concl.
B.2.28	How does CDM alleviate the technological barriers?	/1/	DR	See CL 5	~~CL 5~~	OK
B.2.29	Is each generic CPA prevented by the technological barriers and at least one of the possible alternatives to the project activity is feasible under the same circumstances?	/1/	DR	See CL 5	~~CL 5~~	OK
B.2.30	How were the barriers due to prevailing practise assessed to be real? Are the barriers due to prevailing practise substantiated by a source independent of the project participants?	/1/	DR	See CL 5	~~CL 5~~	OK
B.2.31	How does CDM alleviate the barriers due to prevailing practise?	/1/	DR	See CL 5	~~CL 5~~	OK
B.2.32	Is each generic CPA prevented by the barriers due to prevailing practise and at least one of the possible alternatives to the project activity is feasible under the same circumstances?	/1/	DR	See CL 5	~~CL 5~~	OK
B.2.33	How were the other barriers assessed to be real? Are the other barriers substantiated by a source independent of the project participants?	/1/	DR	See CL 5	~~CL 5~~	OK
B.2.34	How does CDM alleviate the other barriers?	/1/	DR	See CL 5	~~CL 5~~	OK
B.2.35	Is each generic CPA prevented by the other barriers and at least one of the possible alternatives to the project activity is feasible under the same circumstances?	/1/	DR	See CL 5	~~CL 5~~	OK
Common practice analysis (VVS § 128-130)						
B.2.36	What is the geographical scope of the common practice analysis? Is this justified?	/1/	DR	The PoA-DD states, in section E.5.1, for *'Step 4: Common Practice analysis'*, *Each CPA will be analysed in terms of the extent to which the proposed type of typical CPA has already diffused in the applicable*		OK

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			geographical area. The applicable geographical area for this analysis will be the entire host country i.e. the Republic of South Africa. The geographical scope of the common practice analysis is therefore justified, since *the geographical boundaries of the PoA are the internationally recognised borders of the Republic of South Africa.*		
B.2.37 What is the scope of technology and size (e.g. capacity of power plant) for the common practice analysis and how has this been justified?	/1/	DR	The PoA-DD states, section E.5.1, in Sub-step 4a of the common practice analysis: *The tool indicates that for each CPA an analysis of other activities that are operational and that are similar to the CPA will be done. Projects are to be considered similar if they are in South Africa, and are large-scale or small-scale PV renewable electricity generation facilities. On the basis of documented evidence (and if possible quantitative information) the result of this analysis will be a description whether, and to what extent, similar activities have already diffused in the relevant region.* The technology and the size are therefore clearly defined		OK
B.2.38 What is the data source(s) used for the common practice analysis?	/1/	DR	This is assessed at CPA level.		OK

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B.2.39 How many similar non-CDM-projects exist in the region within the scope?	/1/	DR	This is assessed at CPA level.		OK
B.2.40 How were possible essential distinctions between the project activity and similar activities assessed?	/1/	DR	This is assessed at CPA level.		OK
B.2.41 What is the conclusion of the common practice analysis?	/1/	DR	This is assessed at CPA level.		OK
Conclusion					
B.2.42 What is the conclusion with regard to the additionality of the project activity?	/1/	DR	A conclusion on the additionality of a typical CPA will be reached once all relevant CAR and CL have been closed.	~~CL 3~~ ~~CL 4~~ ~~CL 5~~	OK
B.3 Eligibility Criteria (VVS § 196) *Eligibility criteria to assess eligibility of CPAs to be included to PoA.*					
B.3.1 Are the geographical boundary of the CPA including any time-induced boundary consistent with the geographical boundary set in the PoA?	/1/	DR	The eligibility criterion 1 states: *Any CPA must be located within the internationally recognised boundaries of the Republic of South Africa.* The geographical boundaries of the PoA are defined as *the internationally recognised borders of the Republic of South Africa*. The geographical boundary of the CPA is therefore consistent with the geographical boundary set in the PoA.		OK
B.3.2 Are there conditions that avoid double counting of emission reductions like unique identifications of product and end-user locations (e.g. programme logo)?	/1/	DR	The eligibility criterion 2 states: *Each CPA must be linked to specific geographical co-ordinates supported by a description of its location (the description*		OK

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				should include a reference to a national land registry system, if such a system exists). It is DNV's opinion that this criterion ensures sufficient conditions that avoid double counting of emission reductions.		
B.3.3	Are there specifications of technology/measure including the level and type of service, performance specifications including compliance with testing/certifications?	/1/	DR	The eligibility criterion 3 states: *Each CPA will use PV renewable energy generation technology only. The technology will satisfy all relevant national testing and certification requirements.* It is DNV's opinion that this criterion sufficiently specifies the technology and compliance with certifications.		OK
B.3.4	Are there conditions to check the start date of the CPA through documentary evidence?	/1/	DR	The eligibility criterion 4 states: *Each CPA will show that the first earliest date of its first real action or implementation or construction was after the date on which the CDM-PoA-DD was published for Global Stakeholder Consultation* It is DNV's opinion that this criterion ensures sufficient conditions to check the start date of the CPA.		OK
B.3.5	Are there conditions that ensure compliance with applicability and other requirements of single or multiple methodology/ies applied by CPAs?	/1/ /14/	DR	The eligibility criterion 5 states: *Each CPA will be a solar PV grid-connected renewable power generation project that is either (a) an installation of a new power plant at a site where no renewable power*		OK

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			plant was operated prior to the implementation of the project activity (greenfield plant) (b) or involve a capacity addition. The eligibility criterion 6 states: *In the case of a CPA that involves a capacity addition, the most plausible baseline scenario, as a result of the identification of baseline scenario, is the "continuation of the current situation i.e. 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"* Those criteria ensure compliance with the applicability of the methodology ACM0002 version 13.0.0 /14/, as described in section E.2 of the PoA-DD which lists the methodology applicability criteria.		
B.3.6 Are there conditions that ensure that CPAs meet the requirements pertaining to the demonstration of additionality, and are these in accordance with the requirements of the PoA Standard?	/1/	DR	The eligibility criterion 7 states: *CPAs will demonstrate additionality using the requirements specified in the "Tool for the demonstration and assessment of additionality" or, attachment A of Appendix B of the "Simplified modalities and procedures for small-scale CDM project activities".*	~~CAR 3~~	OK

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				See CAR 3		
B.3.7	Are there PoA-specific requirements stipulated by the CMEs including any conditions related to undertaking local stakeholder consultations and environmental impact analysis?	/1/	DR	The eligibility criterion 8 states: *CPAs will have undertaken stakeholder consultations, which will have been formally recorded.* The eligibility criterion 9 states: *CPAs will have undertaken an analysis of their environmental impacts, which will have been formally recorded.* It is DNV's opinion that this criterion ensures sufficient specific requirements stipulated by the CMEs including any conditions related to undertaking local stakeholder consultations and environmental impact analysis.		OK
B.3.8	Where applicable, are the target group (e.g. domestic/commercial/industrial, rural/urban, grid-connected/off-grid) and distribution mechanisms (e.g. direct installation) specified?	/1/	DR	The eligibility criteria for inclusion do not establish any requirement relative to the target group and distribution mechanism. This is acceptable due to the nature of the project.		OK
B.3.9	Where applicable, are there conditions related to sampling requirements for a PoA in accordance with the approved guidelines/standard from the Board pertaining to sampling and surveys?	/1/	DR	This is not applicable, as stated in the eligibility critera table: *all CPAs falling under the umbrella of the PoA will be verified.*		OK
B.3.10	Where applicable, are there conditions that ensure that CPA in aggregate meets the small-scale or micro-scale threshold criteria and remain within those thresholds throughout the crediting period of the CPA?	/1/ /12/	DR	For this eligibility criterion, the eligibility criteria table of the PoA-DD states: *Not applicable to the CPAs in this PoA due to the nature of the projects.*	~~CAR 4~~	OK

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			Since the PoA also includes small and micro scale CPAs, this eligibility criterion is applicable. Therefore this point is not in accordance with the requirements of the *Standard for the demonstration of additionality, development of eligibility criteria, and application of multiple methodologies for programme of activities* /12/. CAR 4: The PP is requested to provide an eligibility criterion related to '*conditions that ensure that CPA in aggregate meets the small-scale or micro-scale threshold criteria and remain within those thresholds throughout the crediting period of the CPA'*, in accordance with the *Standard for the demonstration of additionality, development of eligibility criteria, and application of multiple methodologies for programme of activities* /12/.		
B.3.11 Where applicable, are there requirements for the debundling check, in case CPAs belong to small-scale (SSC) or microscale project categories?	/1/	DR	Not applicable.		OK
B.3.12 Are there conditions to provide an affirmation that funding from Annex I parties, if any, does not result in a diversion of official development assistance?	/1/	DR	The eligibility criterion 10 states: *CPAs that have received development assistance will submit written confirmation from the assistance provider that this has not resulted in a diversion of official development assistance.*		OK

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				It is DNV's opinion that this criterion provides an affirmation that funding from Annex I parties, if any, does not result in a diversion of official development assistance.		
B.3.13	Are all eligibility criteria verifiable, and sufficiently objective and comprehensive to permit the assessment of the inclusion of CPAs in the PoA?	/1/	DR	See CAR 3 and CAR 4	~~CAR 3~~ ~~CAR 4~~	OK
B.4	**Application of methodologies by the PoA (VVS §190)**					
B.4.1	Does the PoA apply approved methodologies and the correct and valid version thereof? If during the course of validation the originally applied version of the methodology expires, a CAR shall be raised in Table 3 of the validation protocol. Any new requirements of the revised version of the methodology not yet validated in Table 2 of the validation protocol shall be validated in Table 3 as part of the assessment of the CAR raised.	/1/ /14/ /26/	DR	The baseline and monitoring methodology to be applied to the project activity is: ACM0002 "Consolidated Baseline Methodology for grid-connected electricity generation from renewable sources", (Version 13.0.0) /14/. This methodology is valid, according to the UNFCCC website, from 17 September 2010 to 10 May 2012, and requests for registration can be submitted until 11 Jan 2013 /26/. The methodology used by the project participant at the time of publication for Global Stakeholder Consultation (1 May 2012) was valid. The project participant decided not to use the latest version of the methodology available (Version 13.0.0). The version of the methodology used is therefore valid.		OK
B.4.2	If the programme applies multiple methodologies, is their application in accordance with the PoA Standard?	/1/	DR	The programme does not apply multiple methodologies.		OK

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B.4.3	If the PoA applies small-scale methodologies, does the PoA also comply with the general guidelines to SSC CDM methodologies, which provides guidelines on equipment capacity, equipment performance/lifetime, baseline identification for type-II/III Greenfield project activities, sampling and other monitoring-related issues?	/1/	DR	The programme does not apply small-scale methodologies.		OK
B.5	**Management system of the PoA (VVS § 186)** *Assessment of the PoA management systems in accordance with the PoA standard*					
B.5.1	Is there a clear definition of roles and responsibilities of personnel involved in the process of inclusion of CPAs, including a review of their competencies?	/1/	DR	The PoA-DD states in section A.4.4.1: *The PoA CME is the managing entity of the PoA. It is responsible for the documentation of the PoA and the CPAs that fall under its provisions. The CPA implementer(s) will manage the installation and operation of the PV renewable electricity generating facilities, including all information requirements as needed by the CME.*		OK
B.5.2	Are there records of arrangements for training and capacity development for personnel?	/1/	DR	The PoA-DD states in section E.7.2, point 3: *The CPA facility manager is responsible for the effective implementation of the monitoring management plan elements with regard to metering. All elements of the monitoring plan will be supported by formal procedures and regular training of delegated personnel, as appropriate.*		OK
B.5.3	Are there procedures for technical review of inclusion of CPAs?	/1/ /12/	DR	The Operational and management plan described in Section A.4.4 of the PoA-DD	~~CAR 5~~	OK

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			does not include procedures for technical review of inclusion of CPAs. The *Standard for the demonstration of additionality, development of eligibility criteria, and application of multiple methodologies for programme of activities* /12/ states, paragraph 17: *The CME shall have the competencies to check the features of potential CPAs and ensure that each CPA meets all requirements and eligibility criteria before inclusion in the registered PoA. The CME shall develop and implement a management system that includes the following made available to the DOE at the time of validation of the PoA:* *(c) Procedures for technical review of inclusion of CPAs;* CAR 5: The PP is requested to follow the guidance provided in the paragraph 17 of the *Standard for the demonstration of additionality, development of eligibility criteria, and application of multiple methodologies for programme of activities* /12/ for the management system of the PoA, concerning the *Procedures for technical review of inclusion of CPAs* and the *Measures for continuous improvements of the PoA management system*.		

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B.5.4	Is there a procedure to avoid double counting (e.g. to avoid the case of including a new CPA that has already been registered either as a CDM project activity or as a CPA of another PoA)?	/1/	DR	The PoA-DD describes in section A.4.4.1, section (ii) *Procedure to avoid double counting*: *The database ensures that each CPA is uniquely defined and is included in one PoA only, thereby avoiding double counting of emissions reductions generated by the CPA. However, prior to the registration of each CPA under the PoA, the CME will confirm that the proposed CPA is not registered, or not in the process of being registered, as a CDM project activity. Each CPA will also not overlap the geographical boundary of another CPA registered under the same PoA. Unique identification code(s) for the site and the CPA meter(s) that record the amount of electricity exported to the South African national grid will also be provided, as well as GPS reference points for the site and meter(s).* *Capacity additions will have to have separate meters that will also be identified through their GPS co-ordinates and a unique identification code. This will again be linked to a unique site identification code, with GPS co-ordinates.*		OK
B.5.5	Is there a records and documentation control process for each CPA under the PoA?	/1/	DR	The PoA-DD describes in section A.4.4.1, section (i): *The CME will operate a PoA monitoring database including all the CPAs for the PoA.*		OK

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			Each CPA will be uniquely identified within the PoA monitoring database of all CPAs. According to the eligibility criteria the following data must be provided to the CME prior to a CPAs inclusion in the PoA: *1. Name of the CPA* *2. Name of the CPA developer* *3. Contact details of the CPA developer including contact person, address, landline, cellphone and email address* *4. Installed capacity and other relevant technical specifications of each CPA* *5. Location of the CPA (Description and GPS coordinates)* *6. Project start date of the CPA* *7. The commissioning date of the equipment* *8. The crediting period for each CPA* *9. The signed agreement with the CME to participate in the programme* *The CME shall also keep records of the following:* *10. During the crediting period, the Verification status, CPA monitoring records and monitoring reports of each CPA.* The database contains all the data necessary to record and monitor emission reductions.		
B.5.6 Are there measures for continuous improvements of the	/1/	DR	The management system described in the	~~CAR 5~~	OK

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	Checklist Question	Ref	MoV	Assessment by DNV	Draft Concl.	Final Concl.
	PoA management system?	/12/		PoA-DD in section A.4.4 does not include measures for continuous improvements of the PoA management system, as required by the paragraph 17 of the *Standard for the demonstration of additionality, development of eligibility criteria, and application of multiple methodologies for programme of activities* /12/ See CAR 5		
B.5.7	Do the operational and management arrangements established by the coordinating entity include provisions to ensure that CPA implementers are aware and have agreed that their activity is being subscribed to the PoA?	/1/	DR	The PoA-DD describes in section A.4.4.1, section (iii): *The managing entity is responsible for identifying, registering, and managing all CPAs that will be registered under the proposed PoA. The managing entity will ensure that those operating the CPA are aware of, and have agreed that their activity is being subscribed to the PoA (through a signed agreement, as stipulated in section A.4.2.2.).*		OK
C Duration of the PoA, Crediting Period (VVS § 197)						
C.1.1	Is the PoA starting date and length of the PoA clearly defined and evidenced?	/1/	DR	The starting date of the PoA is defined as 1 May 2012 (the date of publication of the PoA-DD for GSP). The length of the PoA is defined as 28 years.		OK
C.1.2	D.2. Does the PoA design documentation confirm that the length of the PoA does not exceed 28 years (60	/1/ /19/	DR	The length of PoA is stated as 28 years 0 months.		OK

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Checklist Question		Ref	MoV	Assessment by DNV	Draft Concl.	Final Concl.
	years for A/R)?			This is in accordance with the requirements of the *Procedures for registration of a programme of activities as a single CDM project activity and issuance of certified emission reductions for a programme of activities* /19/		
D Environmental Impacts (VVS § 134-137, VVS § 199-200)				☐ Analysis at PoA level ☒ Analysis at CPA level This section must only be completed if the analysis of environmental impacts is at PoA level.		
D.1.1	Are there any host country requirements for an Environmental Impact Assessment (EIA), and if yes, is an EIA approved? Does the approval contain any conditions that need monitoring? For small-scale project activities, is an assessment of the environmental impacts of the proposed CDM project activity is required by the host Party?	/1/	DR	Not applicable: the Environmental Impact analysis is performed at CPA level.		OK
D.1.2	Does the PoA comply with environmental legislation in the host country?	/1/	DR	Not applicable: the Environmental Impact analysis is performed at CPA level.		OK
D.1.3	Will the PoA create any adverse environmental effects?	/1/	DR	Not applicable: the Environmental Impact analysis is performed at CPA level.		OK
D.1.4	Have identified environmental impacts been addressed in the PoA design?	/1/	DR	Not applicable: the Environmental Impact analysis is performed at CPA level.		OK
D.1.5	Has an analysis of the environmental impacts of the PoA and each generic CPA been sufficiently described?	/1/	DR	Not applicable: the Environmental Impact analysis is performed at CPA level.		OK
D.1.6	Are transboundary environmental impacts considered in the analysis?			Not applicable: the Environmental Impact analysis is performed at CPA level.		OK

MoV = Means of Verification, DR= Document Review, I= Interview, CC= Cross-Checking

Checklist Question		Ref	MoV	Assessment by DNV	Draft Concl.	Final Concl.
E Local stakeholder consultation (VVS § 138-140, VVS § 201-202)				☐ Consultation at PoA level ☒ Consultation at CPA level This section must only be completed if the analysis of environmental impacts is at PoA level.		
E.1.1	Have relevant stakeholders been consulted?	/1/	DR	Not applicable: the consultation of local stakeholders is performed at CPA level.		OK
E.1.2	Have appropriate media been used to invite comments by local stakeholders?	/1/	DR	Not applicable: the consultation of local stakeholders is performed at CPA level.		OK
E.1.3	If a stakeholder consultation process is required by regulations/laws in the host country, has the stakeholder consultation process been carried out in accordance with such regulations/laws?	/1/	DR	Not applicable: the consultation of local stakeholders is performed at CPA level.		OK
E.1.4	Is a summary of the stakeholder comments received provided?	/1/	DR	Not applicable: the consultation of local stakeholders is performed at CPA level.		OK
E.1.5	Has due account been taken of any stakeholder comments received?	/1/	DR	Not applicable: the consultation of local stakeholders is performed at CPA level.		OK

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PART II. Generic component project activity (CPA)						
A Description of each generic CPA (VVS § 189)						
A.1.1	Does the description of each generic CPA sufficiently cover all relevant elements, is accurate and does it provides the reader with a clear understanding of the nature of the proposed CPAs?	/1/	DR	The generic CPA-DD states, in section A.2: *The CPA is a [(insert number)] MW grid-connected renewable electricity generating facility using photovoltaic technology (Insert text indicating whether it is a new electricity generating facility at a site where no renewable power plant was operated prior to the implementation of the CPA [(Greenfield plant) or it is a capacity addition)]*.		OK
A.1.2	If applicable, are all different types of generic CPAs clearly described?	/1/	DR	The generic CPA-DD states, in section A.2: *The CPA is a [(insert number)] MW grid-connected renewable electricity generating facility using photovoltaic technology (Insert text indicating whether it is a new electricity generating facility at a site where no renewable power plant was operated prior to the implementation of the CPA [(Greenfield plant) or it is a capacity addition)]*. The two different types of CPAs that can be included in the PoA are therefore clearly described.		OK

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B Application of a baseline and monitoring methodology(ies)					
B.1 Title and reference of the approved baseline and monitoring methodology(ies) selected					
B.1.1 Are the exact reference and title of approved methodology(ies) and tools listed?	/1/ /14/ /15/ /16/	DR	The baseline and monitoring methodology to be applied to the project activity is: ACM0002 "Consolidated Baseline Methodology for grid-connected electricity generation from renewable sources", (Version 13.0.0) /14/. The *Tool to calculate the emission factor for an electricity system*, version 02.2.1 /15/ is used, as well as the *Tool for the demonstration and assessment of additionality*, version 06.1.0 /16/.		OK
B.1.2 Are valid version of approved methodology(ies) and tools applied?	/1/ /14/ /26/	DR	The baseline and monitoring methodology to be applied to the project activity is: ACM0002 "Consolidated Baseline Methodology for grid-connected electricity generation from renewable sources", (Version 13.0.0) /14/. This methodology is valid, according to the UNFCCC website, from 17 September 2010 to 10 May 2012, and requests for registration can be submitted until 11 Jan 2013 /26/. The methodology used by the project participant at the time of publication for Global Stakeholder Consultation (1 May 2012) was valid. The project participant decided not to use the		OK

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			latest version of the methodology available (Version 13.0.0). The version of the methodology used is therefore valid.		
B.2 Applicability of methodology (and tools) (VVS § 73-77) *Insert a row for each applicability criteria of the applied methodology (and tools)*					
B.2.1 How was it validated that each specific CPA complies with the following applicability criteria: *This methodology is applicable to grid-connected renewable power generated project activities that: a) Install a new power plant at the site where no renewable energy power plant was operated prior to the implementation of the project activity (Greenfield plant) b) Involve a capacity addition c) Involve a retrofit of an existing plant d) Involve a replacement of an existing plan* ?	/1/	DR	The Generic CPA-DD states in Table B.2.2: *CPA [(insert number)] will be a grid-connected renewable electricity power generation project that [(insert text indicating whether it is a greenfield plant or a capacity addition)]*.		OK
B.2.2 How was it validated that each specific CPA complies with the following applicability criteria: *The project activity is the installation, capacity addition, retrofit or replacement of a power plant/unit of one of the following types: hydro power plant/unit (either with a run-of-river reservoir or an accumulation reservoir), wind power plant/unit, geothermal power plant/unit, solar power plant/unit, wave power plant/unit or tidal power plant/unit* ?	/1/	DR	The Generic CPA-DD states in Table B.2.2: *CPA [(insert number)] will use solar power plant/units based on PV technology.*		OK
B.2.3 How was it validated that each specific CPA complies with the following applicability criteria: *In the case of capacity additions, retrofits or replacements (except for capacity addition projects for which the electricity generation of the existing power plant(s) or unit(s) is not affected): the existing plant started commercial*	/1/	DR	The Generic CPA-DD states in Table B.2.2: *Criteria not applicable to solar capacity addition projects.*		OK

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operation prior to the start of a minimum historical reference period of five years, used for the calculation of baseline emissions and defined in the baseline emission section, and no capacity addition or retrofit of the plant has been undertaken between the start of this minimum historical reference period and the implementation of the project activity?					
B.2.4 How was it validated that each specific CPA complies with the following applicability criteria:? *In the case of hydro power plants, at least one of the following conditions must apply:* *· The project activity is implemented in an existing reservoir, with no change in the volume of the reservoir; or* *· 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/m2 after the implementation of the project activity; or* *· The project activity results in the new reservoirs and the power density of the power plant, as per definitions given the Project Emissions section, is greater than 4 W/m2 after the implementation of the project activity.*	/1/	DR	The Generic CPA-DD states in Table B.2.2: *CPAs under this PoA will not be hydro projects.*		OK
B.2.5 How was it validated that each specific CPA complies with the following applicability criteria: *The methodology is not applicable to the following: • 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; • Biomass fired power plants; • A hydro power plant that results in the creation of a new single reservoir or in the increase in an existing single reservoir where the power density of*	/1/	DR	The Generic CPA-DD states in Table B.2.2: *CPAs under this PoA do not involve the switching from fossil fuels to renewable energy sources.* *CPAs under this PoA do not involve biomass fired power plants.* *CPAs under this PoA are not hydro power plants.*		OK

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	the reservoir is less than 4 W/m2					
B.2.6	How was it validated that each specific CPA complies with the following applicability criteria: *In the case of retrofit, 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, i.e. 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" ?*	/1/	DR	The Generic CPA-DD states in Table B.2.2: *(For a capacity addition indicate that criterion is applicable, if the most plausible baseline scenario is as detailed in the applicability criterion. Or in the case of a greenfield project indicate that the criterion is not relevant because the CPA does not involve a capacity addition)*		OK
B.2.7	Is the selected baseline on of the baseline(s) described in the methodology and this hence confirms the applicability of the methodology?	/1/	DR	This is determined in the PoA.		OK
B.3	**Project boundary of each generic CPA (VVS § 82-87)**					
B.3.1	What are each generic CPA's system boundaries (components and facilities used to mitigate GHGs)? Are they clearly defined and in accordance with the methodology?	/1/ /14/	DR	According to the methodology ACM0002, version 13.0.0 /14/, the spatial extent of the project boundary includes the project power plant and all power plants connected physically to the electricity system that the CDM project power plant is connected to. According to the generic CPA-DD /1/, the CPA's system boundaries encompass the project power plant and all power plants connected physically to the electricity system which in this case is the South African electricity grid. The CPA's system boundaries are therefore in accordance with the methodology.		OK
B.3.2	Which GHG sources are identified for the project? Does	/1/	DR	The GHG sources identified for the baseline		OK

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	the identified boundary cover all possible sources linked to the project activity? Give reference to documents considered to arrive at this conclusion.	/14/		are the CO2 emissions from electricity generation in fossil fuel fired power plants that are displaced due to the project activity. CH4 and N2O emissions linked to the above electricity generation are conservatively excluded for simplification because negligible. According to the methodology ACM0002, version 13.0.0 /14/, there are no projects emissions related to solar photovoltaic electricity generation projects. According to the methodology ACM0002, version 13.0.0 /14/ no leakage emissions are considered. The main emissions potentially giving rise to leakage in the context of electric sector projects are emissions arising due to activities such as power plant construction and upstream emissions from fossil fuel use (e.g. extraction, processing, transport). These emissions sources are neglected. According to the methodology /14/ and DNV professional experience, the identified boundary covers all possible sources linked to the project activity.		
B.3.3	Does the project involve other emissions sources not foreseen by the methodologies that may question the applicability of the methodology? Do these sources contribute with more than 1% of the estimated emission reductions of the project?	/1/	DR	The technology described does not involve other emissions sources not foreseen by the methodologies that may question the applicability of the methodology		OK

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B.4 Baseline scenario determination and description (VVS § 88-95 / Identification of alternatives to the project activity (VVS § 113-116) *Ensure that the evaluation of all alternatives provided and required by the methodology and also possible alternatives/offshoots of alternatives are discussed. If baseline alternatives required to be considered by the methodology are considered not applicable, please assess the justification for this.*						
B.4.1	Which baseline scenarios have been identified? Is the list of baseline scenarios complete? Does the list include as one of the options that the project activity is undertaken without being registered as a proposed project activity? Does the list contains all plausible alternatives which are viable means of supplying the comparable outputs or services that are to be supplied by the proposed project activity?	/1/	DR	This is determined in the PoA. See CL 3	~~CL 3~~	OK
B.4.2	How have the other baseline scenarios been eliminated in order to determine the baseline?	/1/	DR	This is determined in the PoA.		OK
B.4.3	What is the baseline scenario?	/1/	DR	This is determined in the PoA.		OK
B.4.4	Is the determination of the baseline scenario in accordance with the guidance in the methodology?	/1/	DR	This is determined in the PoA.		OK
B.4.5	Has the baseline scenario been determined using conservative assumptions where possible?	/1/	DR	This is determined in the PoA.		OK
B.4.6	Does the baseline scenario sufficiently take into account relevant national and/or sectoral policies? Does the baseline scenario comply with all applicable and enforced legislation?	/1/	DR	This is determined in the PoA.		OK
B.4.7	Is the baseline scenario determination compatible with the available data and are all literature and sources clearly referenced?	/1/	DR	This is determined in the PoA.		OK
B.4.8	Is the baseline determination adequately documented in	/1/	DR	This is determined in the PoA.		OK

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	the PoA-DD? • All assumptions and data used by the project participants are listed in the PoA-DD and related document to be submitted for registration. The data are properly referenced. • All documentation is relevant as well as correctly quoted and interpreted. • Assumptions and data can be deemed reasonable • Relevant national and/or sectoral policies and circumstances are considered and listed in the PoA-DD. • The methodology has been correctly applied to identify what would occurred in the absence of the proposed CDM project activity					
B.5	**Demonstration of eligibility for each generic CPA**					
B.5.1	Has it been sufficiently justified that each generic CPA complies with the following eligibility criteria? Any CPA must be located within the internationally recognised boundaries of South Africa	/1/	DR	The Generic CPA-DD states in Table B.2.1: *The CPA is located within the internationally recognised boundaries of South Africa.*		OK
B.5.2	Has it been sufficiently justified that each generic CPA complies with the following eligibility criteria? Each CPA must be linked to specific geographical co-ordinates supported by a description of its location (the description should include a reference to a national land registry system, if such a system exists)	/1/	DR	This is included in section A.4.1.2 of the Generic CPA-DD.		OK
B.5.3	Has it been sufficiently justified that each generic CPA complies with the following eligibility criteria?	/1/	DR	The Generic CPA-DD states in Table B.2.1: *The CPA is a [(insert number)] MW PV technology based renewable energy*		OK

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	Each CPA will use PV renewable energy generation technology only. The technology will satisfy all relevant national testing and certification requirements.			*generation facility.*		
B.5.4	Has it been sufficiently justified that each generic CPA complies with the following eligibility criteria? Each CPA will show that the first earliest date of its first real action or implementation or construction was after the date on which the CDM-PoA-DD was published for Global Stakeholder Consultation.	/1/	DR	The Generic CPA-DD states in Table B.2.1: *Insert text indicating date of and providing a description of the first real action.*		OK
B.5.5	Has it been sufficiently justified that each generic CPA complies with the following eligibility criteria? Each CPA will be a solar PV grid-connected renewable power generation project that is either (a) an installation of a new power plant at a site where no renewable power plant was operated prior to the implementation of the project activity (greenfield plant) (b) or involve a capacity addition.	/1/	DR	The Generic CPA-DD states in Table B.2.1: *Insert text indicating whether project is a greenfield plant or a capacity addition*		OK
B.5.6	Has it been sufficiently justified that each generic CPA complies with the following eligibility criteria? CPAs will demonstrate additionality using the requirements specified in the "Tool for the demonstration and assessment of additionality" if over 15 MW or, attachment A of Appendix B of the "Simplified modalities and procedures for small-scale CDM project activities" if 15 MW or less.	/1/	DR	See CAR 3	~~CAR 3~~	OK
B.5.7	Has it been sufficiently justified that each generic CPA complies with the following eligibility criteria?	/1/	DR	The Generic CPA-DD states in Table B.2.1: *Insert text confirming stakeholder consultations have taken place and how they*		OK

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	CPAs will have undertaken stakeholder consultations, which will have been formally recorded.			*have been formally recorded*		
B.5.8	Has it been sufficiently justified that each generic CPA complies with the following eligibility criteria? CPAs will have undertaken an analysis of their environmental impacts, which will have been formally recorded.	/1/	DR	The Generic CPA-DD states in Table B.2.1: *Insert text confirming environmental analysis of impacts has taken place and how it has been formally recorded.*		OK
B.5.9	Has it been sufficiently justified that each generic CPA complies with the following eligibility criteria? CPAs that have received development assistance will submit written confirmation from the assistance provider that this has not resulted in a diversion of official development assistance.	/1/	DR	The Generic CPA-DD states in Table B.2.1: *Insert text indicating whether the CPA has or has not received development assistance. If the CPA has received such assistance a clear statement that it has not resulted in a diversion of official development assistance should be made.*		OK
B.6 Algorithms and/or formulae used to determine emission reductions of each CPA (VVS § 96-100)						
	Data and parameters that are available at validation and that are not monitored					
	B.6.1 How was the *Combined margin CO2 emission factor for grid connected power generation in year y* available at validation verified?	/1/ /15/	DR	According to the Generic CPA-DD, this parameter will be determined by *Calculation using the latest version of the "Tool to calculate the emission factor of an electricity system"* (Version 02.2.1) /15/.		OK
B.6.2	In case any of the parameters above were determined based on sampling, was the sample adequate and did it comply with the specific guidance in the applicable methodology or, if no such guidance is available in methodology, did it achieve a 90/10 confidence/precision as the criteria for reliability of sampling efforts for small-scale project activities and	/1/	DR	No parameters above are determined based on sampling, therefore this is not applicable.		OK

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	95/10 for large scale project activities?					
	Baseline emissions					
B.6.3	Are the calculations documented according to the approved methodology and tool and in a complete and transparent manner?	/1/ /14/ /15/	DR	According to the methodology ACM0002, version 13.0.0 /14/, baseline emissions include only CO_2 emissions from electricity generation in fossil fuel fired 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: $BE_y = EG_{PJ,y} \times EF_{grid,CM,y}$ Where: BE_y: Baseline emissions in year y (tCO2/y) $EG_{PJ,y}$: 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/y). $EF_{grid,CM,y}$: 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 calculation documented in the Generic CPA-DD is in accordance with the methodology /14/ and the "Tool to calculate the emission factor for an electricity		OK

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				system”/15/		
B.6.4	Have conservative assumptions been used when calculating the baseline emissions?	/1/	DR	No assumptions were made when determining the procedure to be used to calculate the baseline emissions.		OK
B.6.5	Are uncertainties in the baseline emission estimates properly addressed?	/1/	DR	No uncertainties were identified in determining the procedure to be used to calculate the baseline emissions.		OK
B.6.6	If the calculations of baseline emissions are based on sampling, does this comply with the Standard for sampling and surveys?	/1/	DR	The baseline emissions calculations are not based on sampling.		OK
	Project emissions					
B.6.7	Are the calculations documented according to the approved methodology and tool and in a complete and transparent manner?	/1/ /14/	DR	According to the methodology ACM0002, version 13.0.0 /14/, there are no project emissions related to solar photovoltaic electricity generation projects.		OK
B.6.8	Have conservative assumptions been used when calculating the project emissions?	/1/	DR	No assumptions were made when determining the procedure to be used to calculate the project emissions.		OK
B.6.9	Are uncertainties in the project emission estimates properly addressed?	/1/	DR	No uncertainties were identified in determining the procedure to be used to calculate the project emissions.		OK
B.6.10	If the calculations of project emissions are based on sampling, does this comply with the Standard for sampling and surveys?	/1/	DR	The project emissions calculations are not based on sampling.		OK
	Leakage					
B.6.11	Are the leakage calculations documented according to the approved methodology and in a complete and transparent manner?	/1/ /14/	DR	According to the methodology ACM0002, version 13.0.0 /14/ no leakage emissions are considered. The main emissions potentially giving rise to leakage in the context of electric sector projects are emissions arising due to activities such as power plant		OK

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				construction and upstream emissions from fossil fuel use (e.g. extraction, processing, transport). These emissions sources are neglected.		
B.6.12	Have conservative assumptions been used when calculating the leakage emissions?	/1/	DR	Not applicable.		OK
B.6.13	Are uncertainties in the leakage emission estimates properly addressed?	/1/	DR	Not applicable.		OK
B.6.14	If the calculations of leakage emissions are based on sampling, does this comply with the Standard for sampling and surveys	/1/	DR	Not applicable.		OK
	Emission Reductions					
B.6.15	Algorithms and/or formulae used to determine emission reductions: • All assumptions and data used by the project participants are listed in the PoA-DD and related document submitted for registration. The data are properly referenced • All documentation is correctly quoted and interpreted. • All values used can be deemed reasonable in the context of the project activity • The methodology has been correctly applied to calculate the emission reductions and this can be replicated by the data provided in the PoA-DD and supporting files to be submitted for registration.	/1/ /14/	DR	According to the methodology ACM0002, version 13.0.0 /14/, emission reductions are calculated as follows: $ER_y = BE_y – PE_y$ Where: ER_y: Emission reductions in year y (tCO_2e/y) BE_y: Baseline emissions in year y (tCO_2/y) PE_y: Project emissions in year y (tCO_2e/y) Since according to the methodology /14/ there are no project emissions, the emission reductions of the proposed project activity are: $ER_y = BE_y$ This is correctly applied in the Generic CPA-DD, section B.5.2. Formula used to determine emission		OK

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			reductions: • All assumptions and data used by the project participants are listed in the Generic CPA-DD and related document submitted for registration. The data are properly referenced. • All documentation is correctly quoted and interpreted. • All values used can be deemed reasonable in the context of the project activity. • The methodology has been correctly applied to calculate the emission reductions and this can be replicated by the data provided in the Generic CPA-DD and supporting files to be submitted for registration.		
B.7 Monitoring plan (VVS § 131-133)					
Data and parameters monitored					
B.7.1 Do the means of monitoring described in the plan comply with the requirements of the methodology?	/1/ /14/ /31/	DR	According to the methodology ACM0002, version 13.0.0 /14/, a*ll data collected as part of monitoring should be archived electronically and be kept at least for 2 years after the end of the last crediting period. All measurements should be conducted with calibrated measurement equipment according to relevant industry standards.* According to the description of the monitoring plan provided in section B.6.1 of the Generic CPA-DD: *All data will be kept*		OK

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				for at least two years after the end of the crediting period. *Meters will be calibrated in accordance with the manufacturer's requirements, by an accredited organisation. The results of each calibration will be recorded in a formal report and the report archived. The equipment (and its associated accuracy) will be in line with the Metering Code of the South African Grid Code* /31/. Therefore the means of monitoring described in the plan comply with the requirements of the methodology.		
B.7.2	Does the monitoring plan contains all necessary parameters, and are they clearly described?	/1/ /14/	DR	According to the methodology /14/ the applicable data and parameters to be monitored are the following: $EG_{facility,y}$*: Quantity of net electricity generation supplied by the project plant/unit to the grid in year y.* $EG_{PJ_Add,y}$*: Quantity of net electricity generation supplied to the grid in year y by the project plant/unit that has been added under the project activity.* According to the description of the monitoring plan provided in section B.6.1 of the Generic CPA-DD: *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 the measurements taken by the electricity*	~~CL 6~~	OK

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				meters. CL 6: The PP is requested to clarify how the parameter $EG_{PJ_Add,y}$: *Quantity of net electricity generation supplied to the grid in year y by the project plant/unit that has been added under the project activity* will be monitored, according to the applied methodology /14/		
B.7.3	In case parameters are measured, is the measurement equipment described? Describe each relevant parameter.	/1/	DR	According to the description of the monitoring plan provided in section B.6.1 of the Generic CPA-DD: *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 the measurements taken by the electricity meters.*		OK
B.7.4	In case parameters are measured, is the measurement accuracy addressed and deemed appropriate? Describe each relevant parameter.	/1/ /31/	DR	According to the description of the monitoring plan provided in section B.6.1 of the Generic CPA-DD: *The equipment (and its associated accuracy) will be in line with the Metering Code of the South African Grid Code* /31/.		OK
B.7.5	In case parameters are measured, are the requirements for maintenance and calibration of measurement equipment described and deemed appropriate? Describe each relevant parameter.	/1/	DR	According to the description of the monitoring plan provided in section B.6.1 of the Generic CPA-DD: *Meters will be calibrated in accordance with the manufacturer's requirements, by an accredited organisation. The results of each calibration will be recorded in a formal report and the report archived.*		OK

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B.7.6	Is the monitoring frequency adequate for all monitoring parameters? Describe each parameter.	/1/ /14/	DR	CL 7: The project participant is requested to specify the monitoring frequency of the parameter $EG_{facility,y}$ in accordance with the requirements of the methodology ACM0002 /14/	~~CL 7~~	OK
B.7.7	Is the recording frequency adequate for all monitoring parameters? Describe each parameter.	/1/	DR	See CL 7	~~CL 7~~	OK
B.7.8	In case any of the parameters will be determined based on sampling, is the sample plan adequate and does it comply with the specific guidance in the applicable methodology or, if no such guidance is available in methodology, does it achieve a 90/10 confidence/precision as the criteria for reliability of sampling efforts for small-scale project activities and 95/10 for large scale project activities?	/1/	DR	The parameter to be monitored will not be determined based on sampling. This is not applicable.		OK
	Ability of project participants to implement monitoring plan					
B.7.9	How has it been assessed that the monitoring arrangements described in the monitoring plan are feasible within the project design?	/1/	DR	With only a single parameter being measured, the monitoring plan and arrangements for its implementation are deemed feasible.		OK
B.7.10	Are procedures identified for day-to-day records handling (including what records to keep, storage area of records and how to process performance documentation)?	/1/	DR	According to the description of the monitoring plan provided in section B.6.1 of the Generic CPA-DD: *All data collected will be archived electronically in two places for security purposes.*		OK
B.7.11	Are the data management and quality assurance and quality control procedures sufficient to ensure that the emission reductions achieved by/resulting from the project can be reported ex post and verified?	/1/	DR	According to the description of the monitoring plan provided in section B.6.1 of the Generic CPA-DD: *The quantity of net electricity generation that*		OK

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				is produced and fed into the grid by the CPA in year y shall be determined on the basis of the measurements taken by the electricity meters. As an accuracy check the meters will be cross-checked with records for sold electricity.		
B.7.12	Will all monitored data required for verification and issuance be kept for two years after the end of the crediting period or the last issuance of CERs, for this project activity, whichever occurs later?	/1/	DR	According to the description of the monitoring plan provided in section B.6.1 of the Generic CPA-DD: *All data will be kept for at least two years after the end of the crediting period.*		OK
	Monitoring of sustainable development indicators/ environmental impacts					
B.7.13	Is the monitoring of sustainable development indicators/ environmental impacts warranted by legislation in the host country?	/1/ /34/	DR I	The legislation of the Republic of South Africa and the DNA do not require any monitoring of sustainable development criteria, as confirmed in a meeting with Ndiafhi Patrick Tuwani of the South African DNA./34/		OK
B.7.14	Does the monitoring plan provide for the collection and archiving of relevant data concerning environmental, social and economic impacts?	/1/ /34/	DR I	The legislation of the Republic of South Africa and the DNA do not require any monitoring of sustainable development criteria, as confirmed in a meeting with Ndiafhi Patrick Tuwani of the South African DNA./34/		OK
B.7.15	Are the sustainable development indicators in line with stated national priorities in the host country?	/1/ /34/	DR I	The legislation of the Republic of South Africa and the DNA do not require any monitoring of sustainable development criteria, as confirmed in a meeting with Ndiafhi Patrick Tuwani of the South African DNA./34/		OK

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Table 3 Resolution of corrective action requests and clarification requests

Corrective action and/ or clarification requests	Reference to Table 2	Response by project participants	Validation conclusion
CAR 1: According to the CDM Modalities and Procedures §40a, the programme shall have the written approval of voluntary participation from the Designated National Authority of each Party involved. Moreover, according to the *Procedures for registration of a programme of activities as a single CDM project activity and issuance of certified emission reductions for a programme of activities* /19/, the coordinating/managing entity shall obtain letters of authorization of its coordination of the PoA from each host Party. Neither LoA or letter of authorization has been provided by the PP.	A.4.1	A letter of approval has been received from the South African Government's designated national authority. This has been reflected in Section G of the PoA-DD. Document Reference: 2012-09-27_POA_CAR1_LoA	A letter of approval (LoA) /8/ was issued by DNA of South Africa on 20 September 2012, authorizing Carbon Protocol of SA of host Party South Africa as project participant and confirming that the project assists in achieving sustainable development. The coordinating/managing entity has obtained a letter of authorization of its coordination of the proposed CDM PoA from each host Party /8/. The letter of approval was received from the project participants. DNV does not doubt the authenticity of the letters of approval. DNV considers the letters are in accordance with paragraphs 39-42 of the VVS /9/. **CAR 1 is closed.**
CAR 2: The CDM VVS /9/ paragraph 54 requires that the Modalities of Communication are clearly identified, including the specimen signatures, authorised signatories etc. This has not been provided.	A.5.1	This has now been provided to the DOE. Document reference: 2012-09-04_POA_CAR2_Signed MoC	DNV has performed due diligence on the Modalities of Communications (MoC) statement /4/ in order to confirm that the corporate and personal details, employment status and specimen signatures included in the MoC statement are valid and accurate and comply with the requirements of the VVS /9/. Mr. Lloyd Christie is focal

Corrective action and/ or clarification requests	Reference to Table 2	Response by project participants	Validation conclusion
			point of the MoC and is an authorized signatory, as evidenced by the statement from the board members of the project participant Carbon Protocol of SA dated 18 September 2012, whereby they confirm that Mr. Lloyd Christie is authorized to be signatory on the MoC /7/. DNV was able to confirm the information contained in the MoC and that the MoC complies with all relevant forms and requirements. **CAR 2 is closed.**
CAR 3: According to the applicable methodology ACM0002 Version 13.0.0 /14/, the additionality is demonstrated according to the *Tool for the demonstration and assessment of additionality*, version 06.1.0 /16/. The PoA-DD indicates that the *Attachment A of Appendix B* /17/and microscale automatic additionality will be used as well to demonstrate additionality of the small-scale and micro-scale CPAs included in the PoA. The demonstration of additionality of a CPA is therefore not in accordance with the requirements of the methodology.	B.2.1	The additionality approach and associated arguments in the PoA have been changed to reflect the requirements of ACM 0002 (the applicable version being used in the PoA is Version 13.0.0). This is reflected in the revision of Section B.1 of the PoA-DD,	The PoA-DD indicates that the additionality of a CPA will be demonstrated according to the *Tool for the Demonstration and Assessment of Additionality*, version 06.1.0. This is in accordance with the requirements of the methodology ACM0002 version 13.0.0. **CAR 3 is closed.**
CAR 4: The PP is requested to provide an	B.3.10	The PoA-DD has had an eligibility	It has been clarified in the course of the

Corrective action and/ or clarification requests	Reference to Table 2	Response by project participants	Validation conclusion
eligibility criterion related to '*conditions that ensure that CPA in aggregate meets the small-scale or micro-scale threshold criteria and remain within those thresholds throughout the crediting period of the CPA'*, in accordance with the *Standard for the demonstration of additionality, development of eligibility criteria, and application of multiple methodologies for programme of activities* /12/.		criteria No.14 added to it that clearly addresses this requirement. The CPA-DD has also been amended to reflect this criteria. It states that: "14. CPAs using the "Guidelines on the Demonstration of Additionality of Small-Scale Project Activities" will need to show that their installed capacity does not exceed 15MW".	validation that the CPAs included in this PoA will apply the large-scale methodology ACM0002, and as such will be defined as large-scale CPAs. This CAR 4 is therefore not applicable anymore. **CAR 4 is closed.**
CAR 5: The PP is requested to follow the guidance provided in the paragraph 17 of the *Standard for the demonstration of additionality, development of eligibility criteria, and application of multiple methodologies for programme of activities* /12/ for the management system of the PoA, concerning the *Procedures for technical review of inclusion of CPAs* and the *Measures for continuous improvements of the PoA management system*.	B.5.3	Section C of the PoA-DD has had additional text added to it to reflect the guidance of the standard with regard to the management system of the PoA. The standard's requirements have also been addressed in the CME's PoA Manual. Document Reference: 2012-08-30_POA_CAR5_CMEPOAManual	The PoA-DD has been modified, and the management system includes: • A procedure for technical review of inclusion of CPAs, • Measures for continuous improvements of the PoA management system, in accordance with the PoA standard /12/. Those are included in the draft CME Manual of Carbon Protocol of SA /5/. **CAR 5 is closed.**
CL 1: The PP is requested to submit evidence that no official development assistance has been diverted from an Annex-1 Party.	A.6.1	The Carbon Protocol of SA has confirmed that no official development assistance has been diverted from an Annex-1 party in the development of this PoA.	A letter from the CME Carbon Protocol of SA has been provided, dated 16 August 2012, stating that the PoA has not received official development assistance /6/.

Corrective action and/ or clarification requests	Reference to Table 2	Response by project participants	Validation conclusion
		The document reference is: 2012-23-08_POA_CL1_ODAVoluntaryletter	**CL 1 is closed.**
CL 2: The PP is requested to provide evidence that the programme is a voluntary coordinated action that would not be implemented in the absence of CDM.	B.1.1	The Carbon Protocol of SA confirms that this is a voluntary action. The document reference is: 2012-23-08_POA_CL1_ODAVoluntaryletter	A letter from the CME Carbon Protocol of SA has been provided, dated 16 August 2012, stating that the PoA is a voluntary coordinated action that would not be implemented in the absence of CDM /6/. **CL 2 is closed.**
CL 3: In regard to the identification of the alternatives to the project activity for *Type One Typical CPA – New Grid-Connected Renewable Energy Plant*, the PP is requested to clarify how the identified alternative represents a more attractive alternative than the proposed project activity, in accordance with the guidance provided in the additionality tool /16/.	B.2.5	The content of the POA-DD with regard to additionality has been rewritten to address this and several other issues with regard to arguing additionality. This has been captured in Section B.1	The PoA-DD has been modified, and the identification of the alternatives to the project activity for *Type One Typical CPA – New Grid-Connected Renewable Energy Plant*, includes: *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 the "Tool to calculate the emission factor for an electricity system"*, which is the baseline scenario defined in the methodology /14/.

Corrective action and/ or clarification requests	Reference to Table 2	Response by project participants	Validation conclusion
			This alternative represents a more attractive alternative than the proposed project activity, and is in accordance with the guidance provided in the additionality tool /16/. **CL 3 is closed.**
CL 4: From the information provided in the PoA-DD regarding the benchmark analysis for a typical CPA, it is not possible to determine whether this is in compliance with requirements indicated in the *Guidelines on the assessment of investment analysis*. The PP is requested to demonstrate how a typical CPA meets EB requirements applicable to investment analysis.	B.2.8	Additional text had been included in Section B.1 reflecting compliance with the "Guidelines on the assessment of investment analysis".	Information has been added in the generic CPA-DD, as described in section 4.6.2 of this report. This information allows demonstrating additionality of a typical CPA with an investment analysis, and in accordance with the *Guidelines on the assessment of investment analysis* /20/. **CL 4 is closed.**
CL 5: The PP is requested to demonstrate compliance with the *Guidelines for objective demonstration and assessment of barriers* /21/ on the use of Barrier analysis for the demonstration of additionality for a CPA.	B.2.23	Section B.1 in the PoA-DD indicates clearly how the "Guidelines for objective demonstration and assessment of barriers" have been complied with and will be applied when demonstrating CPA additionality.	Information has been added in the generic CPA-DD, as described in section 4.6.3 of this report. This information allows demonstrating additionality of a typical CPA with a barrier analysis, and in accordance with the *Guidelines for objective demonstration and assessment of barriers* /21/ and the *Guidelines on additionality of first-of-its-kind project activities* /22/.

Corrective action and/ or clarification requests	Reference to Table 2	Response by project participants	Validation conclusion
			CL 5 is closed.
CL 6: The PP is requested to clarify how the parameter $EG_{PJ_Add,y}$: *Quantity of net electricity generation supplied to the grid in year y by the project plant/unit that has been added under the project activity* will be monitored, according to the applied methodology /14/.	B.7.2	This has been clarified in Section B.7.1	The type 2 CPA 'Capacity Addition'has been removed from the PoA, hence this CL is not relevant anymore. **CL 6 is closed.**
CL 7: The project participant is requested to specify the monitoring frequency of the parameter $EG_{facility,y}$.in accordance with the requirements of the methodology ACM0002 /14/.	B.7.6	The monitoring frequency has been stated as follows in the PoA-DD, Section B.7.1: "Continuous measurement and at least monthly recording. The data will be aggregated monthly for monitoring purposes".	The monitoring frequency for the parameter $EG_{facility,y}$ is in accordance with the applied methodology /14/, which specifies for those parameters: *'Continuous measurement and at least monthly recording.'* **CL 7 is closed.**

Table 4 Forward action requests

Forward action request	Reference to Table 2	Response by project participants
No FAR have been identified during the validation.		Not applicable.

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APPENDIX B

PROTOCOL FOR ASSESSING COMPLIANCE OF SPECIFIC CPA WITH POA REQUIREMENTS

Checklist Question	Ref	MoV	Assessment by DNV	Draft Concl.	Final Concl.
A Description of CPA (PS § 31, VVS § 62-63, § 189)					
A.1. Title, Technical description of CPA and Parties involved					
A.1.1 Does section A.1 of the CPA-DD include a clearly identifiable project title, version number of the CPA-DD and date of the CPA-DD?			☐ Clearly identifiable title of the project activity ☐ Version number of the PoA-DD is included ☐ Date of the PoA-DD is included.		
A.1.2 Is the CPA-DD is in accordance with the applicable requirements for completing CPA-DDs?					
A.1.3 Does the description of the CPA sufficiently cover all relevant elements, is accurate and does it provides the reader with a clear understanding of the nature of the proposed CPA?					
A.1.4 Does the CPA-DD provide information on the CPA implementer(s)? CPA implementers can be project participants of the PoA, under which the CPA is submitted, provided the name is included in the registered PoA.					
A.1.5 Does the CPA-DD describe all the technologies and/or measures to be employed and/or implemented by the CPA including a list of the facilities, systems and equipment that will be installed and/or modified by the CPA					
A.1.6 Does the CPA-DD adequately list all Party(ies) and CPA implementer(s) involved in the CPA and provide contact information in Appendix 1? Are all listed Party(ies) and CPA implementer(s) included in the PoA?					
A.1.7 Does the CPA-DD provide geographic reference or other means of identification that allows for the unique identification of the CPA?					
A.2. Duration of the CPA and crediting period					

Checklist Question	Ref	MoV	Assessment by DNV	Draft Concl.	Final Concl.
A.2.1 Is the CPA starting date and operational lifetime clearly defined and evidenced?					
A.2.2 Has the crediting period been clearly defined and is the start of the crediting period deemed to be reasonable?					
A.2.3 Has it been confirmed that the length of the CPA crediting period does not exceed the end of PoA?					
A.3. Estimated amount of emission reductions from the CPA					
A.3.1 Has the emission reduction forecast been checked and is it deemed likely that the stated amount is achieved given that the underlying assumptions do not change?					
A.4. Public funding					
A.4.1 In case public funding from Parties included in Annex I is used for the project activity, have these Parties provided an affirmation that such funding does not result in a diversion of official development assistance and is separate from and is not counted towards the financial obligations of these Parties?					
A.5. Confirmation for CPA					
A.5.1 Has a confirmation been provided that the CPA is neither registered as an individual CDM project activity nor is part of another registered PoA?					
B Environmental impacts (PS § 63-64, VVS § 134-135) *It is assessed whether environmental impacts of the CPA have been properly addressed.*			☐ Analysis at PoA level ☐ Analysis at CPA level This section must only be completed if the analysis of environmental impacts must be at CPA level.		
D.1.2. Has an analysis of the environmental impacts of the CPA been sufficiently described?					

Checklist Question		Ref	MoV	Assessment by DNV	Draft Concl.	Final Concl.
D.1.3.	Are there any host Party requirements for an Environmental Impact Assessment (EIA)?					
D.1.4.	Will the programme create any adverse environmental effects?					
D.1.5.	Are transboundary environmental impacts considered in the analysis?					
D.1.6.	Have identified environmental impacts been addressed in the programme design?					
D.1.7.	Does the programme comply with environmental legislation in the host country?					
C Stakeholders' comments (PS § 65-69, VVS § 138-140) *It is assessed whether stakeholders have been properly consulted in the development of the CPA.*				☐ Consultation at PoA level ☐ Consultation at CPA level This section must only be completed if the analysis of environmental impacts is at PoA level.		
C.1.1.	Have relevant stakeholders been consulted?					
C.1.2.	Have appropriate media been used to invite comments by local stakeholders?					
C.1.3.	If a stakeholder consultation process is required by regulations/laws in the host country, has the stakeholder consultation process been carried out in accordance with such regulations/laws?					
C.1.4.	Is a summary of the stakeholder comments received provided?					
C.1.5.	Has due account been taken of any stakeholder comments received?					

Checklist Question	Ref	MoV	Assessment by DNV	Draft Concl.	Final Concl.
D Application of a baseline and monitoring methodology(ies)					
D.1. Title and reference of the approved baseline and monitoring methodology(ies) selected					
D.2.2. Are the exact reference and title of approved methodology(ies) and tools listed?					
D.2.3. Are valid version of approved methodology(ies) and tools applied?					
D.2. Applicability of methodology (and tools) (VVS § 73-77) *The applicability of the methodology is checked through the eligibility criteria specifying the the conditions that ensure compliance with applicability and other requirements of single or multiple methodologies applied by CPAs*					
D.3.2. Do the eligibility criteria in D.5 below, in particular the eligibility criteria specifying the conditions that ensure compliance with applicability and other requirements of single or multiple methodologies applied by the CPA, sufficiently demonstrate that the CPA complies with the applicability criteria of the applied methodology (and tools)? If not, provide below and assessment of the CPAs compliance with the applicability criteria.					
D.3.3. If not already sufficiently demonstrated through relevant eligibility criteria, how was it validated the CPA complies with the following applicability criteria: *The methodology is applicable to grid-connected renewable power generation project activities that (a) install a new power plant at a site where no renewable power plant was operated prior to the implementation of the project activity (greenfield plant); (b) involve a*					

Checklist Question	Ref	MoV	Assessment by DNV	Draft Concl.	Final Concl.
capacity addition; (c) involve a retrofit of (an) existing plant(s); or (d) involve a replacement of (an) existing plant(s).					
D.3.4. If not already sufficiently demonstrated through relevant eligibility criteria, how was it validated the CPA complies with the following applicability criteria: *The methodology is applicable under the following conditions: The project activity is the installation, capacity addition, retrofit or replacement of a power plant/unit of one of the following types: hydro power plant/unit (either with a run-of-river reservoir or an accumulation reservoir), wind power plant/unit, geothermal power plant/unit, solar power plant/unit, wave power plant/unit or tidal power plant/unit.*					
D.3.5. If not already sufficiently demonstrated through relevant eligibility criteria, how was it validated the CPA complies with the following applicability criteria: *In the case of capacity additions, retrofits or replacements (except for wind, solar, wave or tidal power capacity addition projects which use Option 2: on page 10 to calculate the parameter EGPJ,y): the existing plant started commercial operation prior to the start of a minimum historical reference period of five years, used for the calculation of baseline emissions and defined in the baseline emission section, and no capacity expansion or retrofit of the plant has been undertaken between the start of this minimum historical reference period and the implementation of the project activity.*					
D.3.6. If not already sufficiently demonstrated through relevant eligibility criteria, how was it validated the CPA complies with the following applicability criteria: *In the case of hydro power plants, at least one of the following conditions must apply:* *· The project activity is implemented in an existing reservoir, with no change in the volume of the reservoir; or* *· The project activity is implemented in an existing reservoir, where*					

Checklist Question	Ref	MoV	Assessment by DNV	Draft Concl.	Final Concl.
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/m2 after the implementation of the project activity; or *· The project activity results in the new reservoirs and the power density of the power plant, as per definitions given the Project Emissions section, is greater than 4 W/m2 after the implementation of the project activity.*					
D.3.7. If not already sufficiently demonstrated through relevant eligibility criteria, how was it validated the CPA complies with the following applicability criteria: *The methodology is not applicable to the following: • 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; • Biomass fired power plants; • A hydro power plant that results in the creation of a new single reservoir or in the increase in an existing single reservoir where the power density of the reservoir is less than 4 W/m2*					
D.3.8. If not already sufficiently demonstrated through relevant eligibility criteria, how was it validated the CPA complies with the following applicability criteria: *In the case of retrofit, 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, i.e. 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"*					
D.3. Project boundary of CPA (VVS § 82-87)					
D.3.1. What is the CPA's system boundaries (components and facilities used to mitigate GHGs)? Are they clearly defined and in accordance with the methodology?					
D.3.2. Is the CPA located within the geographical boundary of the					

Checklist Question		Ref	MoV	Assessment by DNV	Draft Concl.	Final Concl.
	proposed or registered PoA?					
D.3.3.	Which GHG sources are identified for the project? Does the identified boundary cover all possible sources linked to the project activity? Give reference to documents considered to arrive at this conclusion.					
D.3.4.	Does the project involve other emissions sources not foreseen by the methodologies that may question the applicability of the methodology? Do these sources contribute with more than 1% of the estimated emission reductions of the project?					
D.4. Baseline scenario determination and description (VVS § 88-95 / Identification of alternatives to the project activity (VVS § 113-116) *Ensure that the evaluation of all alternatives provided and required by the methodology and also possible alternatives/offshoots of alternatives are discussed. If baseline alternatives required to be considered by the methodology are considered not applicable, please assess the justification for this*						
D.5.2.	Which baseline scenarios have been identified? Is the list of baseline scenarios complete? Does the list include as one of the options that the project activity is undertaken without being registered as a proposed project activity? Does the list contains all plausible alternatives which are viable means of supplying the comparable outputs or services that are to be supplied by the proposed project activity?					
D.5.3.	How have the other baseline scenarios been eliminated in order to determine the baseline?					
D.5.4.	What is the baseline scenario?					
D.5.5.	Is the determination of the baseline scenario in accordance with the guidance in the methodology?					
D.5.6.	Has the baseline scenario been determined using					

Checklist Question	Ref	MoV	Assessment by DNV	Draft Concl.	Final Concl.
conservative assumptions where possible?					
D.5.7. Does the baseline scenario sufficiently take into account relevant national and/or sectoral policies? Does the baseline scenario comply with all applicable and enforced legislation?					
D.5.8. Is the baseline scenario determination compatible with the available data and are all literature and sources clearly referenced?					
D.5.9. Is the baseline determination adequately documented in the PoA-DD? • All assumptions and data used by the project participants are listed in the PoA-DD and related document to be submitted for registration. The data are properly referenced. • All documentation is relevant as well as correctly quoted and interpreted. • Assumptions and data can be deemed reasonable • Relevant national and/or sectoral policies and circumstances are considered and listed in the CPA-DD. • The methodology has been correctly applied to identify what would occurred in the absence of the proposed CDM project activity					
D.5. Demonstration of eligibility for the CPA					
D.6.2. Has it been sufficiently justified that the CPA complies with the following eligibility criteria? *Any CPA must be located within the internationally recognised boundaries of the Republic of South Africa and be grid-connected.*					
D.6.3. Has it been sufficiently justified that the CPA complies with the following eligibility criteria? *Each CPA must be linked to specific geographical co-ordinates*					

Checklist Question	Ref	MoV	Assessment by DNV	Draft Concl.	Final Concl.
supported by a description of its location (the description should include a reference to a land registry system, if such a system exists).					
D.6.4. Has it been sufficiently justified that the CPA complies with the following eligibility criteria? *Each CPA will use PV renewable energy generation technology only. The technology will have to satisfy all relevant national testing and certification requirements, including the requirements specified in any Power Purchase Agreement (PPA).*					
D.6.5. Has it been sufficiently justified that the CPA complies with the following eligibility criteria? *Each CPA will show that the first earliest date of its first real action or implementation or construction was after the date of commencing the validation of the PoA and the publication of the PoA-DD for global stakeholder consultation process (1 May 2012).*					
D.6.6. Has it been sufficiently justified that the CPA complies with the following eligibility criteria? *Each CPA will be a solar PV grid-connected renewable power generation project that is an installation of a new power plant at a site where no renewable power plant was operated prior to the implementation of the project activity (greenfield plant)*					
D.6.7. Has it been sufficiently justified that the CPA complies with the following eligibility criteria? *1. If the CPA is using an Investment Analysis approach to demonstrate additionality then it must be shown that:* *(iii) The CPA has a lower after-tax equity IRR than the benchmark for expected return on equity for Group 1*					

Checklist Question	Ref	MoV	Assessment by DNV	Draft Concl.	Final Concl.
projects in South Africa; and, *(iv) The CPA is not common practice.* *2. If the CPA is using an Investment Barrier Analysis to demonstrate additionality then it must be shown that:* *(iii) The CPA is unable to secure either debt finance and\or an equity investment without the CDM and that the CDM has enabled the project to secure financing for it to be able to move into implementation; and,* *(iv) The CPA is not common practice.* *3. If a "First of its Kind" Analysis is being used to demonstrate additionality then it must be shown that the CPA has been identified as a "First of its Kind" project activity.*					
D.6.8. Has it been sufficiently justified that the CPA complies with the following eligibility criteria? *CPAs will have undertaken stakeholder consultations, which will have been formally recorded.* *CPAs will have undertaken an analysis of their environmental impacts, which will have been formally recorded.*					
D.6.9. Has it been sufficiently justified that the CPA complies with the following eligibility criteria? *CPAs will need to choose one of the following two options:* *1. For CPAs that have not received any public funding from Annex I parties, the CPA will need to confirm this in writing; or,* *2. For CPAs that have received public funding from Annex 1 parties, the Annex 1 country funding source*					

Checklist Question	Ref	MoV	Assessment by DNV	Draft Concl.	Final Concl.
will confirm in writing that it has not resulted in a diversion of official development assistance.					
D.6.10. Has it been sufficiently justified that the CPA complies with the following eligibility criteria? *Technical parameter: the CPA should be grid-connected.* *Economic parameter: The CPA should be of a scale that it can fund the following:* - *Separate Meters;* - *A formal environmental analysis; and,* - *Formal public consultation.* *Investment parameter: Each CPA should be in the process of negotiating or applying for a power purchase agreement (PPA) with an off-taker that includes content addressing at least one of the following issues:* - *Tariff;* - *Metering;* - *Record keeping; and,* - *Generation Forecasts.*					
D.6. Algorithms and/or formulae used to determine emission reductions of the CPA (VVS § 96-100)					
Data and parameters that are available at validation and that are not monitored					
D.7.2. How was the insert parameter available at validation verified?					
D.7.3. How was the insert parameter available at validation verified?					
D.7.4. How was the insert parameter available at validation verified?					

Checklist Question	Ref	MoV	Assessment by DNV	Draft Concl.	Final Concl.
D.7.5. How was the insert parameter available at validation verified?					
D.7.6. In case any of the parameters above were determined based on sampling, was the sample adequate and did it comply with the specific guidance in the applicable methodology or, if no such guidance is available in methodology, did it achieve a 90/10 confidence/precision as the criteria for reliability of sampling efforts for small-scale project activities and 95/10 for large scale project activities?					
Baseline emissions					
D.7.7. Are the calculations documented according to the approved methodology and tool and in a complete and transparent manner?					
D.7.8. Have conservative assumptions been used when calculating the baseline emissions?					
D.7.9. Are uncertainties in the baseline emission estimates properly addressed?					
D.7.10. If the calculations of baseline emissions are based on sampling, does this comply with the Standard for sampling and surveys?					
Project emissions					
D.7.11. Are the calculations documented according to the approved methodology and tool and in a complete and transparent manner?					
D.7.12. Have conservative assumptions been used when calculating the project emissions?					
D.7.13. Are uncertainties in the project emission estimates properly addressed?					
D.7.14. If the calculations of project emissions are based on sampling, does this comply with the Standard for sampling and surveys?					

Checklist Question	Ref	MoV	Assessment by DNV	Draft Concl.	Final Concl.
Leakage					
D.7.15. Are the leakage calculations documented according to the approved methodology and in a complete and transparent manner?					
D.7.16. Have conservative assumptions been used when calculating the leakage emissions?					
D.7.17. Are uncertainties in the leakage emission estimates properly addressed?					
D.7.18. If the calculations of leakage emissions are based on sampling, does this comply with the Standard for sampling and surveys					
Emission Reductions					
D.7.19. Algorithms and/or formulae used to determine emission reductions: • All assumptions and data used by the project participants are listed in the CPA-DD and related document submitted for registration. The data are properly referenced • All documentation is correctly quoted and interpreted. • All values used can be deemed reasonable in the context of the project activity • The methodology has been correctly applied to calculate the emission reductions and this can be replicated by the data provided in the PoA-DD and supporting files to be submitted for registration.					
D.7. Monitoring plan (VVS § 131-133)					
Data and parameters monitored					
D.7.1. Do the means of monitoring described in the plan comply with the requirements of the methodology?					
D.7.2. Does the monitoring plan contains all necessary parameters, and are they clearly described?					

Checklist Question		Ref	MoV	Assessment by DNV	Draft Concl.	Final Concl.
D.7.3.	In case parameters are measured, is the measurement equipment described? Describe each relevant parameter.					
D.7.4.	In case parameters are measured, is the measurement accuracy addressed and deemed appropriate? Describe each relevant parameter.					
D.7.5.	In case parameters are measured, are the requirements for maintenance and calibration of measurement equipment described and deemed appropriate? Describe each relevant parameter.					
D.7.6.	Is the monitoring frequency adequate for all monitoring parameters? Describe each parameter.					
D.7.7.	Is the recording frequency adequate for all monitoring parameters? Describe each parameter.					
D.7.8.	In case any of the parameters will be determined based on sampling, is the sample plan adequate and does it comply with the specific guidance in the applicable methodology or, if no such guidance is available in methodology, does it achieve a 90/10 confidence/precision as the criteria for reliability of sampling efforts for small-scale project activities and 95/10 for large scale project activities?					
	Ability of project participants to implement monitoring plan					
D.7.9.	How has it been assessed that the monitoring arrangements described in the monitoring plan are feasible within the project design?					
D.7.10.	Are procedures identified for day-to-day records handling (including what records to keep, storage area of records and how to process performance documentation)?					
D.7.11.	Are the data management and quality assurance and quality control procedures sufficient to ensure that the emission reductions achieved by/resulting from the project can be					

	Checklist Question	Ref	MoV	Assessment by DNV	Draft Concl.	Final Concl.
	reported ex post and verified?					
D.7.12.	Will all monitored data required for verification and issuance be kept for two years after the end of the crediting period or the last issuance of CERs, for this project activity, whichever occurs later?					
	Monitoring of sustainable development indicators/ environmental impacts					
D.7.13.	Is the monitoring of sustainable development indicators/ environmental impacts warranted by legislation in the host country?					
D.7.14.	Does the monitoring plan provide for the collection and archiving of relevant data concerning environmental, social and economic impacts?					
D.7.15.	Are the sustainable development indicators in line with stated national priorities in the host country?					

APPENDIX C

CURRICULA VITAE OF THE VALIDATION TEAM MEMBERS

Francesca Feller

Francesca started working in 2004 on research and training on sustainable development and CSR for businesses in Italy. From 2007 she worked as Climate Change Officer in London, in a large urban regeneration project. The role involved achieving carbon reductions in all new developments (residential, schools, hospitals, commercial), by embedding energy efficiency, renewable energy technologies, and improved energy distribution in planning conditions. The role also included ensuring compatibility with a large district heating scheme under construction, and incorporating climate change adaptation measures in new developments. In 2009 Francesca moved to a company specialised in taking part to tenders financed by the United Nations, the World Bank, the European Union and the Italian Ministry of Foreign Affairs for development programmes. Her role as Project Manager focused on the supply of off-grid renewable energy technologies for rural electrification. The current Project Manager position involves executing and managing CDM/JI validation and verification assignments, executing and managing verification under voluntary schemes, and providing global support and training in the relevant specialized technical areas within the DNV global Climate Change Services team.

Sammy El Takriti

Sammy El Takriti completed a Master in Bioengineering in Environmental sciences and technologies, in Brussels and Madrid.

In Australia, he worked as a volunteer in organic farms and aboriginal communities.

He completed a training on international trade, followed by an internship in a Belgian company active in carbon credits. He continued this internship in Kenya and Uganda, to evaluate the situation of the renewable energy sector and the carbon market potential in those countries.

Giovanni Tenderini

Holds a master degree in Energy Engineering focused on energy generation and conversion. He gained his three years professional experience in the power sector where he became familiar with International Financing Institutions project implementation methodologies (ADB, WB, IBRD, EBRD and other international banks) for organization and management of tender procedures for the award of engineering services and construction in the field of hydro and thermal power plants.

Moreover, as Power Engineer he has been in charge of the electro-mechanical design review, construction supervision, preparation of due diligences, feasibility studies, technical specifications and cost estimate of power generation projects mainly located in the Middle East area.

The current Project Manager position involves executing and managing CDM/JI validation and verification assignments, executing and managing verification under voluntary schemes, and providing global support and training in the relevant specialized technical areas within the DNV KEMA global Climate Change Services team.

His qualification, industrial experience and experience in CDM demonstrate his sufficient financial expertise and sectoral competence in thermal energy generation from fossil fuels and biomass including thermal electricity from solar, energy generation from renewable energy sources, electricity distribution and energy demand.

Ole Andres Flagstad

Ole Andreas Flagstad holds a Master Degree in thermodynamics/energy efficiency and has an overall working experience of around 20 years. He has worked both in public and private sector, including 5 years with a research institute (IFE) where specific responsibilities included running an energy efficiency network in the food industry and direct intervention with the industry. Other work experience includes working in European research programmes, administering national research programmes and International Energy Agency annexes.

Ole Andreas Flagstad has more than 5 years experience in validation and verification of projects within CDM, JI and other carbon credit schemes. His qualifications and experience in carbon credit schemes (primarily CDM and JI), qualifies him for different roles in a broad group of technical areas.

Michael Lehmann

Michael Lehmann holds a Master Degree in Environmental Sciences with a specialisation in environmental chemistry. He has an overall working experience of around 13 years.

Since 1999 he has worked in the climate change field and has closely followed the international response to the climate change challenge (UNFCCC, Kyoto Protocol) and the responses by national governments (EU ETS, UK ETS) and business. He has managed the validation and verification of many CDM and JI projects and has carried out the technical review of numerous climate change project validations and verifications.

Through his extensive work with validation and verification of CDM and JI projects, he has acquired sectoral competence within energy generation from renewable energy sources.

Since October 2010 he has been chairing the VCS Steering Committee on Standardized Methods for Baselines and Additionality and developed VCS requirements for standardized methods over the course of 2011.

He has also experience with verifying corporate greenhouse gas emissions and emission reductions from verifying the emissions of the Norwegian process, paper & pulp and oil & gas industry.

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