



VALIDATION REPORT

PROGRAMME OF ACTIVITY

Green Power for South Africa

11 December 2012

Japan Consulting Institute

REPORT No. JCI-CDM-VAL-11/086

REVISION No.01



PoA Validation Report for "Green Power for South Africa"

JCI CDM Center

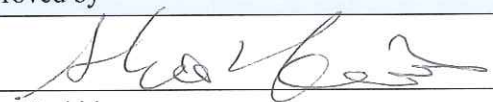

Validation Report No.	JCI CDM VAL-11/086
Date of revision	11 December 2012, Revision 01
Project name	Green Power for South Africa
Project Participant(s) / Organization	Mr.Geoff Sinclair/Standard Bank Plc Mr.Geoff Sinclair/Standard Bank of South Africa Limited
Host Country	Republic of South Africa
Project site Location	About 15 kilometres to the north-east of Hanover in Northern Cape province (CPA-001)
Methodology	ACM0002 Version 12.3.0
Scale	<input checked="" type="checkbox"/> Large Scale <input type="checkbox"/> Small Scale
Sectoral Scope/ Technical Area	Sectoral Scope : 1 / Technical Area: 1.2
GHG reducing measure/ Technology	Power generation with PV (Photovoltaic) solar power
Emission Reduction estimated	80,907 tCO ₂ e / year (average) (CPA-001)

Validation Team	Name
Team leader	Shigeo Aoki
Team member	Mitsuo Takano
Team member	--

Technical Reviewer	Hideyuki Sato
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Conclusion of validation
<input checked="" type="checkbox"/> Positive opinion: JCI's opinion is that the proposed CDM project meets all relevant UNFCCC requirements for the CDM and all relevant host country criteria and correctly applies the methodology. Hence, JCI provides a positive opinion and requests the registration of the proposed project as a CDM project activity.
<input type="checkbox"/> Negative opinion: JCI's opinion is that the proposed CDM project does not meet all relevant UNFCCC requirements for the CDM and all relevant host country criteria and the supportive evidences are not provided sufficiently. Hence, JCI will not provide a positive opinion and requests the registration of the proposed project as a CDM project activity.

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Approved by	Checked by
	
Akio Yoshida Executive Director, JCI CDM Center	Hideyuki Sato Evaluation Group Manager, JCI CDM Center

Abbreviations

BM	Build Margin
Capex	Capital expenditures
CAR	Corrective Action Request
CDM	Clean Development Mechanism
CEF	Carbon Emission Factor
CERs	Certified Emission Reductions
CIS	Co-operative Incentive Scheme
CL	Clarification Request
CM	Combined Margin
CME	Coordinating/Managing Entity
CO ₂	Carbon dioxide
CPA	CDM Programme Activity
CPI	Consumer Price Index
CSP	Concentrated Solar Power
DD	Design Document
DEA	Department of Environment Affairs
DNA	Designated National Authority
DOE	Designated Operation Entity
DoE	Department of Energy
EB	Executive Board
EIA	Environmental Impact Assessment
EPC	Engineering, Procurement and Construction
ERPA	Emission Reduction Purchase Agreement
ERs	Emissions Reductions
Eskom	Electricity Supply K(C)ommission
FIT	Fully Indexed Tariff
GHG	Greenhouse Gas
HV	High Voltage
IC	International Carbon Ltd
IPP	Independent Power Producer
IRP	Integrated Resource Plan
IRR	Internal Rate of Return
JCI	Japan Consulting Institute
KP	Kyoto Protocol
LoA	Letter of Approval
LSC	Local Stakeholder Consultation



NEMA	National Environmental Management Act
NERSA	National Regulator of South Africa
NPV	Net Present Value
OM	Operating Margin
Opex	Operational expenditures
PIT	Partially Indexed tariff
PoA	Programme of Activities
PP	Project Participants
PV	Photovoltaic
REFIT	Renewable Energy Feed-in Tariff
REIPP	Renewable Energy Independent Power Producer
REMT	Renewable Energy Market Transformation
RoE	Return on Equity
RFP	Request for (Qualification) and Proposals
SA	South Africa
SAPVIA	South African Photovoltaic Industry Association
SB	Standard Bank Plc
SCADA	Supervisory Control And Data Acquisition
SSL	Scatec Solar Linde
UNFCCC	United Nations Framework Convention on Climate Change
VVS	Clean Development Mechanism Validation and Verification Standard
ZAR	South African Rand



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Appendix A: Validation Protocol

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EXECUTIVE SUMMARY - VALIDATION OPINION

Japan Consulting Institute (JCI) has performed a validation of the Green Power for South Africa. The validation was performed on the basis of UNFCCC criteria for the Clean Development Mechanism and host country criteria, as well as criteria given to provide for consistent project operations, monitoring and reporting.

The reviews of the design documentation and the subsequent follow-up interviews have provided JCI with evidences to determine the fulfillment of stated criteria.

The host country is Republic of South Africa and the Annex I country is United Kingdom. Both countries fulfill the participation criteria.

The project applies “ACM0002 Consolidated baseline methodology for grid-connected electricity generation from renewable sources”, version 12.3.0 and referenced relevant Tools.

The total emission reductions from the first CPA (CPA-001) under the proposed PoA are estimated to be on the average 80,907tCO₂e per year (tentative) over the 10 year crediting period. The emission reduction has to be checked based on the validation work and JCI considers all relevant assumptions for the above estimated emission reduction is appropriate.

In summary, it is JCI’s validation conclusion that the PoA as described in the latest version of DDs which include the typical CPA-DD and specific real case CPA-DD (CPA-001), and meets all relevant UNFCCC requirements for PoA and all relevant host country criteria and currently applies the baseline and monitoring methodology ACM0002 “Consolidated baseline methodology for grid-connected electricity generation from renewable sources” (version 12.3.0).

JCI thus provides a positive validation opinion and the requests for the registration of the proposed project as a PoA.

I. INTRODUCTION OF VALIDATION

Standard Bank Plc has commissioned JCI to perform a validation of the Green Power for South Africa Programme in South Africa (hereafter called “the project”).

This report summarizes the findings of the validation of the project, performed on the basis of UNFCCC criteria for the CDM, 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, and the subsequent decisions by the CDM Executive Board.

1. Objective of CDM Validation

The objective of the validation is to have an independent assessment of proposed project activities against the applicable CDM requirements as set out in decision 3/CMP.1, its annex and relevant decisions of the COP/MOP, on the basis of the project design document.

In particular, the project's baseline, monitoring plan, and the project’s compliance with relevant UNFCCC and host Party criteria are validated in order to confirm that the project design, as documented, is sound and reasonable and meets the identified criteria.



Validation is a requirement for all CDM projects and is seen as necessary to provide assurance to stakeholders of the quality of the project and its intended generation of certified emission reductions (CERs).

2. Validation approach

The validation approach is to determine whether the proposed project activity complies with the requirements of paragraph 37 of the CDM M&Ps, the applicability conditions of the selected methodology and guidance issued by the Board and to assess the claims and assumptions made in the POA, CPA-DD.

The validation is not meant to provide any consultancy towards the project participants.

However, stated requests for clarifications and/or corrective actions may have provided input for improvement of the project design.

3. Means of validation

JCI applies the means of validation specified throughout the VVS and where appropriate standard auditing techniques, including, but not limited to:

- (a) Document review, involving:
 - (i) A review of data and information;
 - (ii) Cross checks between information provided in the PDD (PoA, CPA-DD) and information from sources other than those used, if available, the DOE's sectoral or local expertise and, if necessary, independent background investigations.
- (b) Follow-up actions (e.g. on-site visit and telephone or email interviews), including:
 - (i) Interviews with relevant stakeholders in the host country, personnel with knowledge of the project design and implementation;
 - (ii) Cross checks between information provided by interviewed personnel (i.e. by checking sources or other interviews) to ensure that no relevant information has been omitted.
- (c) Reference to available information relating to projects or technologies similar to the proposed CDM project activity registered and under validation; and
- (d) Review, based on the approved methodology being applied, of the appropriateness of formulae and correctness of calculations.

3.1 Corrective action requests, clarification requests and forward action requests

If, during the validation of a project activity, JCI identifies issues that need to be further elaborated upon, researched or added to in order to confirm that the project activity meets the CDM requirements and can achieve credible emission reductions, JCI shall ensure that these issues are correctly identified, discussed and concluded in the validation report.

JCI shall raise a corrective action request (CAR) if one of the following occurs:

- (a) The project participants have made mistakes that will influence the ability of the

- project activity to achieve real, measurable additional emission reductions;
- (b) The CDM requirements have not been met;
- (c) There is a risk that emission reductions cannot be monitored or calculated.

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

JCI shall raise a forward action request (FAR) during validation to highlight issues related to project implementation that require review during the first verification of the project activity. FARs shall not relate to the CDM requirements for registration.

JCI shall resolve or “close out” CARs and CLs only if the project participants modify the project design, rectify the PDD (PoA, CPA-DD) or provide adequate additional explanations or evidence that satisfies the DOE’s concerns. If this is not done, JCI shall not recommend the project activity for registration to the CDM Executive Board.

JCI shall reports on all CARs, CLs and FARs in its validation report. This reporting shall be undertaken in a transparent and unambiguous manner that allows the reader to understand the nature of the issue raised, the nature of the responses provided by the project participants, the means of validation of such responses and clear reference to any resulting changes in the PDD (PoA, CPA-DD) of supporting annexes.

The validation protocol consists of two tables. The different columns in these tables are described as followings.

Validation protocol tables

Table 1: Requirement checklist
<p>✧ Requirement (Checklist Question) :</p> <p>The various requirements in Table 1 are checklist questions the project should meet. The checklist is organised in different sections, following the logic of the latest VVS, the PoA-DD, CPA-DD Guidelines and the PoA-DD, CPA-DD templates. Each section is then further sub-divided.</p> <p>✧ Reference :</p> <p>Gives reference to documents where the checklist question or item is found. Paragraph No. of VVS is referred.</p> <p>✧ Check Comment :</p> <p>The column is used to elaborate and discuss the checklist question and/or the conformance to the question.</p> <p>✧ ID No. of CAR, CL and FAR :</p> <ul style="list-style-type: none"> · ID No. of CAR, CL and FAR is described. · Corrective Action Request (CAR) is used due to non-compliance with the checklist question. · Clarification Request (CL) is used when the validation team has identified a need for further clarification. · Forward Action Request (FAR) is used to highlight issues related to project implementation that require review during the first verification of the project activity.

Table 2: Resolution of Corrective Actions, Clarification Requests and Forward Action Requests

- ✧ Clarifications and corrective action requests :
If the conclusions from the draft Validation are a **CAR**, a **CL** or a **FAR**, these should be listed in this section.
- ✧ Ref. to checklist question in Table1 :
Reference to the checklist question number in Table1 where the **CAR**, **CL** or **FAR** is explained.
- ✧ Summary of project owner response :
The responses given by the project participants during the communications with the validation team should be summarised in this section.
- ✧ Validation team conclusion :
This section should summarise the validation team’s responses and final conclusions.

4. Global Stakeholder Consultation

JCI makes all DDs of the PoA publicly available in accordance with the latest version of the “Procedures for Processing and Reporting on Validation of CDM Project Activities”^{*1}.

^{*1} <http://cdm.unfccc.int/Reference/Procedures/valid_proc02.pdf>.

During the validation of the project activity, JCI takes into account the comments received and the validation report shall include details of actions taken to take due account of the comments during the validation process.

JCI made the PoA-DD version 01 dated 10 November 2011, CPA-DD version 01 dated 11 November 2011 for the first real CPA (CPA-001) and the typical CPA (CPAXXX) publicly available on UNFCCC CDM website, and Parties, stakeholders and NGOs were through the website invited to provide comments during a 30 days period from 18 November 2011 to 17 December 2011.

As a result of consultation, no comments were received during above 30 days period.

III. VALIDATION WORK

JCI carried out the validation work to ensure that the project activity complies with the requirements of paragraph 37 of the CDM modalities and procedures.

1. Validation Team

Details of the validation team are shown in below Table.

Table 3 Details of Validation Team members

Role/Qualification	Name	Qualified Technical Areas related to the Project	On-site Visit
All relevant issues / Team Leader	Shigeo AOKI	1.2 Energy generation from renewable energy source	✓



CDM auditor / Team Member	Mitsuo TAKANO	(Observation)	✓
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Details of the technical reviewer are shown in below Table.

Name	Qualified Technical Areas related to the Project
Hideyuki SATO	1. 2 Energy generation from renewable energy source

2. Appointment certificate of JCI validation team member

The certificate of appointment of validation team member will be attached in Appendix B to this report.

3. Quality Control within the team of the Validation Process

The validation report worked out by the team underwent an internal review process for the assurance of being in compliance with the applicable requirement of the latest version of VVS.

JCI applies internally established Quality Management Program for the required review process, which is defined as follows;

- 1) Internal Review for the interim check by the internal audit team and the technical reviewer
- 2) The evaluation of the validation work in the CDM evaluation committee consists of outside experts
- 3) Internal review for the final check by internal audit team and the technical reviewer

The review and evaluation including the technical review are implemented for every validation work by the competent personnel assigned in accordance with JCI’s qualification scheme for CDM validation and verification.

4. Desk Review

4.1 Document review

The PoA-DD, typical CPA-DD and specific CPA-DD were submitted to JCI in November 2011. The additional documents related to the PoA have been reviewed to verify the correctness, credibility and interpretation of the presented information. Furthermore, a cross-check between provided information and information from other sources has been done as an initial step of the validation process. A complete document list of all documents and evidence material is shown in below Table 4a.

4.2 Document list

All the relevant documentation to be reviewed through the whole validation process is listed in tabular form in the following table (Table 4a):

Table 4a Document list



PoA Validation Report for “Green Power for South Africa” JCI CDM Center

No.	Title
	<Project related Documents>
/1/	CDM-PoA-DD version 10, 05/12/2012 “Green Power for South Africa”
/2/	PoA Grid Factor Calculation, 25/04/2012
/3/	CDM-CPA-DD version 08, 05/12/2012 “Scatec Solar Linde CPA-001 (SSL CPA-001)”
/3-1/	IRR Sheet with full indexation tariff
/3-2/	IRR Sheet with partial indexation tariff
/4/	CPA-001 Emission Reductions Calculation sheet (Rev.01), 04/12/2012
/5/	CDM-PoA-DD version 01, 10/11/2011, CDM-CPA-DD (SSL CPA-001) version 01, 11/11/2011, CDM-CPA-DD Typical CPA version x, xx/xx/xxxx, for the Global Stakeholder Consultation
/7/	Northern Cape PV Projects Solar Resource Review, 11/10/2011
/8/	Technical Report, 19/10/2011 [75 MWp]
/9/	Revised Technical Report, 17/02/2012 [39.7 MWp]
/10/	Environmental Impact Assessment Report (Establishment of Photovoltaic (Solar Power) Farms in the Northern Cape), 08/2011
/11/	Tender Spec.:RFP for new generation capacity under the IPP procurement programme Part A:General Requirements, rules and provisions by Department of Energy, 03/08/2011
/12/	Tender Spec.:RFP for new generation capacity under the IPP procurement programme Part B:Qualification criteria by Department of Energy, 03/08/2011
/13/	Tender Spec.:RFP for new generation capacity under the IPP procurement programme - Part C:Evaluation Criteria by Department of Energy, 03/08/2011 - Updated RFP Part C, 03/02/2012
/14/	Environmental Management Plan for Northern Cape PVC (Draft), 05/2011
/15/	Linde ERPA summary signed, 27/01/2012
/16/	Linde_ Single Line Diagram_substation, 20/10/2011
/17/	Linde_ Single Line Diagram_park, 31/10/2011 [75 MWp]
/18/	Linde_Single Line Diagram_park, 31/05/2012 [39.7 MWp]
/19/	Standard Bank Linde Preliminary Credit Approved Term Sheet, 04/11/2011 [75 MWp]
/20/	Standard Bank Linde Preliminary Credit Approved Term Sheet, 05/03/2012 [39.7 MWp]
/21/	Linde Scatec PV Financial Model, 14/11/2011 [75 MWp]
/22/	Part C:Evaluation Criteria – Price (Equivalent Annual Tariff) [75 MWp]
/23/	Scatec Linde PV Revised Financial Model v3, 05/03/2012 [39.7 MWp]
/24/	Equivalent Annual Tariff [39.7 MWp]
/25/	Grid Electricity Internal Consumption – Linde [75 MWp]

No.	Title
/26/	Grid Electricity Internal Consumption – Linde [39.7 MWp]
/27/	Linde_2 Equivalent Annual Tariffs
/28/	Linde_Project Schedule and COD, 21/02/2012
/29/	Modalities of Communication Form
	<Approval letter >
/30/	Letter of Approval by Republic of South Africa DNA, 11/06/2012
/31/	Letter of Approval by United Kingdom DNA, 30/07/2012
/32/	Environmental Authorization by Department of Environmental Affairs , 13/10/2011
/33/	Notice of Application for Environmental Authorization ,
/34/	Linde Land lease option agreement with Skuilhoek Trust, 19/10/2011
/35/	Standard Bank_ International Carbon agreement, 20/09/2011
/36/	Standard Bank_ Scatec Solar mandate agreement, 15/03/2011
/37/	APPENDIX M - IPP Implementation Agreement (Final)_draft, 03/08/2011
/39/	APPENDIX K2 - IPP PPA (PV) Final, 03/08/2011
/40/	DoE_ Letter of Appointment_ Linde, 18/05/2012
/41/	Preferred Bidder Guarantee by Standard Bank, 29/05/2012
/42/	Scatec Solar Proposal as Bid response in Round 2 Bid
	<Referenced Documents (Methodology, Guidance, Criteria, etc. of UNFCCC)>
/50/	CDM Validation and Verification Standard (VVS) (Version 03.0), EB70 Annex 03
/51/	ACM0002 “Consolidated baseline methodology for grid-connected electricity generation from renewable sources” (Version 12.3.0)
/52/	Methodological tool “Tool to calculate the emission factor for an electricity system”, (Version 02.2.1) EB 63 Annex 19
/53/	Methodological tool “Tool to calculate project or leakage CO ₂ emission from fossil fuel combustion” (Version 02), EB41 Annex 11
/54/	Guidelines for the reporting and validation of plant load factors (Version 01), EB 48 Annex 11
/55/	Methodological tool “Tool for the demonstration and assessment of additionality” (Version 06.1.0), EB 69 Annex 20
/56/	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), EB 55 Annex 38
/57/	Standard for demonstration of additionality of GHG emission reduction achieved by a Programme of Activities (Version 01.0), EB 63 Annex 2
/58/	Procedures for processing and reporting on validation CDM Project Activities (Version 03), EB50 Annex 48
/59/	Glossary of CDM terms (Version 07.0), EB 70 Annex 07

No.	Title
/60/	Guidelines on the assessment of investment analysis (Version 05), EB 62 Annex5
/61/	Guidelines for completing the component project activity design document form (Version 01.0), EB 66 Annex 16
/62/	Guidelines for completing the programme design document form for CDM programmes of activities (Version 03.0), EB 70 Annex 06
/63/	Guidelines on the demonstration and assessment of prior consideration of the CDM (Version 04), EB62 Annex 13
/64/	Standard for demonstration of additionality, development of eligibility criteria and application of multiple methodologies for programme of activities (Version 02.1), EB70 Annex 05
/65/	F-CDM-MOC Modalities of Communication Statement (Version 02.1)
/66/	Guidelines on the demonstration and assessment of prior consideration of the CDM version 04, EB62 Report Annex 13
/67/	Methodological tool “Combined tool to identify the baseline scenario and demonstrate additionality”, (Version 04.0.0) EB 66 Annex 48
	<Referenced Documents (Books, Regulation, Code, of South Africa)>
/70/	NERSA Consultation Paper: Review of Renewable Energy Feed-In Tariffs, 03/2011
/71/	Exxaro Group interim financial results, 30/06/2011
/72/	Lereko Metier CSP finance presentation, 09/2010
/73/	Association for Saving and Investment SA CIS states, 30/06/2011
/74/	SAPVIA_NERSA REFIT_Public Consultation, 03/2011
/75/	EIA Regulations South Africa_2010 by Department of Environmental affairs
/76/	Scatec Solar EPCI presentation_V1_timelines, 06/10/2011
/77/	Scatec Solar Technical Information, 02/2012
/78/	Scatec Solar CDM Audit Presentation, 01/2012
/79/	Electricity Regulations on the Integrated Resource Plan 2010-2030, 06/05/2011
/80/	Hanwha Solarone CO., LTD. Limited Warranty for PV Module(s)
/81/	Solar Market Research and Analysis by Solarbuzz, 07/01/2012
/82/	Addressing Solar Photovoltaic Operations and Maintenance Challenges by EPRI (Electric Power Research Institute), 07/2011
/83/	CPA Inclusion Management System (Version 1.0) by Standard Bank, 02/2012
/84/	The training program for Linde by Scatec Solar
/85/	The letter for Training plan for the Scatec Solar PV Project by Scatec Solar SA, 09/08/2012
/86/	On-line Photovoltaic Power plant Database “Pvresources”
/87/	South Africa: Summary of Domestic Taxation Regime by Lowtax (Global Tax and Business Portal) http://www.lowtax.net/lowtax/html/offon/southafrica/sasummary.html
/88/	Agreement for the Operation and Maintenance of the Linde Solar PV project (EPC

No.	Title
	Contract)

Main changes in the PoA, CPA-DDs between the version published for the 30 days stakeholder commenting period and the final versions submitted for registration are summarized in the table below:

Table 4b. Major Changes in the Content of the PoA-DD/1/

Subject and section in the PoA-DD (Based on revised format)	Original content in the PoA-DD/5/	Revised content in the PoA-DD/1/	Note (Issued CAR or CL. Relevant methodology, tool, guidance, or guidelines applied.)
PoA-DD Form	(CDM-PoA-DD)	(F-CDM-PoA-DD)	Guidelines for completing the PDD form for CDM PoA /62/
Methodology ACM0002	Version 12.01.0	Version 12.03.0	CL-1 (PoA) Methodology ACM0002 /51/
SECTION B. B.2. Eligibility Criteria for inclusion of a CPA in the PoA	A.4.2.2 Eligibility Criteria items are 8 items (1-8)	Eligibility Criteria items are 13 items in accordance with Paragraph 16, and 2 additional items.	Paragraph 16 of Eligibility Criteria Standard /64/
SECTION B. B.5. Demonstration of eligibility for a generic CPA	B.2. Eligibility Criteria items are 8 items (1-8)	Eligibility Criteria items are 13 items in accordance with Paragraph 16, and 2 additional items.	Paragraph 16 of Eligibility Criteria Standard /64/
SECTION C. Management system	A.4.4.1 Operational and management plan	Added more information for *the combination technologies/measures *avoid double counting	Paragraph 16, 19 of Eligibility Criteria Standard /64/
SECTION D. D.1. Start date of PoA	20 September 2011, which is the signing date of the Engagement letter between Standard Bank and International Carbon Ltd.	18 November 2011, when the PoA-DD (Version 01) /5/ of this project activity has been published for GSC.	SECTION D. Duration of PoA D.1. Start date of PoA of Guideline for completing PDD form for CDM PoA /62/

Table 4c. Major Changes in the Content of the CPA-DD/3/

Subject and section in the CPA-DD (CPA-001) (Based on revised format)	Original content in the CPA-DD (CPA-001)/5/	Revised content in the CPA-DD (CPA-001)/3/	Note (ex. issued CAR or CL. Relevant methodology, tool, guidance, or guidelines applied, etc.)
CPA-DD Form	(CDM-CPA-DD)	(F-CDM-CPA-DD)	Guidelines for completing the component project activity design document form /61/
SECTION A. A.5. Table 1: CPA-001 parameters SECTION D. D.5. Figure 3: Summary of the Linde PV financials	Installed Capacity 75 MWp ----- Annual net electricity generation supplied to the grid (average) 130,971 MWh ----- Annual emission reduction (average) 124,755 tCO ₂	Installed Capacity 39.74 MWp ----- Annual net electricity generation supplied to the grid (average) 83,228 MWh ----- Annual emission reduction (average) 80,907 tCO ₂	CL-18 (CPA) PPs have redesigned the CPA project (Scatec Solar Linde CPA -001)
SECTION D. D.5. Table 16: Summary of the Linde PV financials D.5. Table 16: Capex sensitivity	Capex 1,679.05 million ZAR ----- Bid tariff 2,390 ZAR/MWh ----- Real equity IRR 13.93 %	Capex 810.07 million ZAR ----- Full Indexation tariff 1,771 ZAR/MWh ----- Partial Indexation tariff 2,379 ZAR/MWh ----- Real equity IRR in case of Full Indexation tariff 10.54 % ----- Real equity IRR in case of Partial Indexation tariff 12.28 %	
SECTION A. A.5 Technical description of the CPA	No description	a. Technology Description b. Energy and Mass Flows and Systems and Equipment List c. The Types and Levels of Services	CL-19 (CPA) Guidelines for completing the component project activity design document form /61/
SECTION A. A.6. Party (ies)	A.4.1.1. Host Party Republic of South Africa	Republic of South Africa, and United Kingdom	CL-20 (CPA) Guidelines for completing the component project activity design document form /61/
SECTION A. A.8.1. Start date of the CPA	A.4.2.1. Start date of the CPA 19 June 2012	29 May 2012 The Standard Bank of South Africa provided the Preferred Bidder Bank Guarantee to the	CL-1 (CPA) Glossary of CDM Terms /59/

		South African Department of Energy.	
SECTION D. D.5. Demonstration of eligibility for a CPA Table 13: Eligibility criteria	B.2 Table 1 Criteria/Analysis (1-8) 8 items	Criteria/Analysis (1- 15) are 13 items in accordance with Paragraph 16, and 2 additional items.	Paragraph 16 of Eligibility Criteria Standard EB70 Annex 5 /64/
SECTION D. STEP 2: Investment Analysis Table 16: Summary of the Linde PV financials	B.3 Figure 4 No description about tax	Tax rate, VAT rate and Secondary tax rate are added. Operating Costs (Partial (Indexation) Tariff) is added.	CL-8 (CPA)
SECTION D. STEP 2: Investment Analysis Table 17 - 19: Sensitivity	B.3 Figure 5 Table 5 - 7 Sensitivity analysis with only FIT (Full Indexation Tariff)	Sensitivity analysis with both tariffs, FIT (Full Indexation Tariff) and PIT (Partial Indexation Tariff)	CL-22 (CPA)
Appendix 1	Scatec Solar SA	1)Standard Bank Plc 2)The Standard Bank of South Africa Limited 3)Scatec Solar SA (Pty) Ltd	CL-21 (CPA) Guidelines for completing the component project activity design document form /61/

5. Follow-up actions (Interviews with relevant stakeholders in the host country)

The on-site assessment and interviews with project stakeholders were held from 06 to 08 February 2012 at the project site in Johannesburg, the Republic of South Africa, by Shigeo Aoki / Team Leader.

The names of interviewees are listed below.

Table 5. List of interviewees and follow-up actions

No.	Date	Name	Organization	Topic
1	06/02/2012 (PM)	Mr. Muiy Kazim Ms. Laura Lahti Ms. Olivia Tuchten	Standard Bank International Carbon	<u>Interview with CME</u> · Company profile and Financing model of Project <u>Interview with CDM Consultant</u> · Initial Findings Review · On-site schedule

No.	Date	Name	Organization	Topic
2	07/02/2012 (AM)	Mr. Christian Lie Hansen Mr. Simion C. Bundy Ms. Laura Lahti Ms. Olivia Tuchten	Scatec Solar Sustainable Development Projects CC International Carbon	<u>Interview with CPA developer</u> · Scatec Solar business scheme · Technical review <u>Interview with EIA author</u> · Environmental impact report for solar system in the northern cape · Local stakeholder consultation
3	07/02/2012 (PM)	Mr. Christian Lie Hansen Mr. Muyi Kazim Ms. Sherrill Byrne Ms. Laura Lahti Ms. Olivia Tuchten	Scatec Solar Standard Bank International Carbon	<u>Interview with CPA developer</u> · Technical review for Scatec Solar Linde SSL CPA-001 <u>Interview with Standard Bank</u> · Financial analysis for Scatec Solar Linde SSL CPA-001
4	08/02/ 2012 (AM)	Mr. Takalani Martin Rambau Mr. Lufuno Leonard Mukwevho Ms. Sandra Motshwanedi Ms. Adele Greyling Mr. Muyi Kazim Ms. Laura Lahti Ms. Olivia Tuchten	Energy Republic of South Africa ESKOM Standard Bank International Carbon	<u>Interview with South Africa DNA</u> · Profile of Department of Energy Republic of South Africa · Discussion of approval process and criteria <u>Interview with ESKOM</u> · South Africa electricity public utility · System operation and the planning in ESKOM
5	08/02/2012 (PM)	Mr. Enoch Lerato Liphoto Mr. Muyi Kazim Ms. Laura Lahti Ms. Olivia Tuchten	ESKOM Standard Bank International Carbon	<u>Interview with ESKOM</u> · Discussion about the environment of CDM in South Africa <u>Wrap-up meeting</u>

IV. VALIDATION FINDINGS

The findings of the validation are stated in the following sections. The validation criteria (requirements), the means of validation 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 project design as documented and described in the revised and resubmitted project design documentation.

Finding issued through the validation

JCI issued in total three (3) CARs, twenty-three (23) CLs and zero (0) FARs for the PoA and CPA as shown in the Validation Protocol, Appendix A of this report. All the CARs and the CLs were resolved and then closed as shown in the Table 3 (PoA) and Table 4 (CPA) of the Appendix A.

Major issues and their resolution processes through the CARs and CLs are described in following items according to VVS /50/.

1. Approval and authorization

1) Approval

JCI has received the Letters of Approval from the project participants, who were the Standard Bank Plc in United Kingdom and the Standard Bank of South Africa Limited. Those project participants which are clearly referenced by the letter itself and all supporting documentations;

- DNA of Republic of South Africa issued LoA dated 11/06/2012 /30/
- DNA of United Kingdom issued LoA dated 30/07/2012 /31/

JCI has received the LoA of South Africa from PP and confirmed the followings:

- (a) Republic of South Africa has ratified the Kyoto Protocol;
- (b) Participation is voluntary;
- (c) It authorizes the participation of the “Green Power for South Africa”, as the CDM Programme, and Standard Bank Plc as the project proponent and managing/coordinating entity, and the Standard Bank of South Africa Limited as the project participant to participate in the CDM project, and the Standard Bank to sell the title and all rights to the greenhouse gas emission reductions generated by this project;
- (d) It refers to the precise proposed PoA project activity title in the PoA-DD being submitted for registration.

JCI has received the LoA of the United Kingdom from PP and confirmed that the LoA confirmed the following:

- (a) United Kingdom has ratified the Kyoto Protocol in 31st May 2002;
- (b) It participates in the PoA on a voluntary basis;
- (c) It authorizes Standard Bank Plc as project participants in the PoA “Green Power for South Africa”, developed under Article 12 of the Kyoto Protocol of the United Nations Framework Convention on Climate Change;
- (d) It refers to the precise proposed PoA project activity title in the PoA-DD being submitted for registration.

No indication was found during the validation process that the project uses the official development assistance funding for Republic of South Africa.

JCI concludes that both LoAs are credible and comply fully with the requirements of the CDM.

2) Authorization

JCI confirmed that the project participants of the PoA are The Standard Bank of South Africa Limited of Republic of South Africa and Standard Bank Plc of United Kingdom as being listed in tabular form in section A.4 of the PoA-DD /1/ and also confirmed that this information is consistent with the contact details provided in Appendix 1 of the PoA-DD /1/.



As for the CPA-DD (CPA-001), JCI confirmed that The Standard Bank of South Africa Limited and Scatec Solar South Africa (Pty) Ltd, of Republic of South Africa, and Standard Bank Plc of the United Kingdom are the project participants as being listed in tabular form in section A.6 of the CPA-DD /3/ and confirmed that this information is consistent with the contact details provided in Appendix 1 of the CPA-DD /3/

It is also confirmed that no entities other than those approved as project participants are included in these sections of the PoA-DD /1/ and CPA-DD /3/.

As described above, the project participants are authorized with the LoAs issued by the relevant DNAs as a voluntary participant to the project activity.

3) Contribution to sustainable development

JCI confirmed that the contribution of the project to the sustainable development in South Africa is clearly described in LoA /30/ issued by the Department of Energy of Republic of South Africa on 11/06/2012.

2. Modalities of Communication

JCI confirmed the MoC (Modalities of Communication) /29/ issued by the project participants on 13/02/2012.

And it has performed due diligence on the MoC statement in accordance with the requirements established in the standard F-CDM-MOC “Modalities of Communication Statement (Version 02.1)” /65/.

JCI confirmed in writing that it has performed due diligence on the MoC statement in accordance with the requirements established in this standard and that the MoC statement complies with all relevant forms and requirements.

3. Management System

1) Coordinating/managing entity and participants in a PoA

Standard Bank Plc (hereon referred to as Standard Bank) is acting as the Coordinating / Managing Entity (CME) for the PoA, and provides an open platform for different technology and service suppliers to participate in the PoA by developing their own CDM Programme Activities (CPAs). As the CME for this PoA, Standard Bank is responsible for managing the CDM cycle and coordinating the issuance of CERs.

Standard Bank has issued the “CPA Inclusion Management System” (Version 01) /83/, in accordance with “Standard for Demonstration of Additionality, Development of Eligibility Criteria and Application of Multiple Methodologies for Programme of Activity” EB 65 Annex 3. This document includes:

1. Detailed process maps and process descriptions for CPA inclusion processes (e.g. procedures for technical review of inclusion of CPAs)
2. Description and detail of all CPA inclusion process supporting documents and tools
3. Clear definition of roles and responsibilities of personnel involved in the process of CPA inclusion

4. Description of record arrangements for training and capacity development of personnel, including a review of their competencies
5. Procedures to avoid double counting
6. Records and documentation control processes
7. Measures for continuous improvements of the management system
8. System compliance with EB requirements.

JCI confirmed that this document is correctly in accordance with requirement of EB 65 Annex 3.

2) Entity/individual responsible for CPA

The entity responsible for the proposed CPA (Scatec Solar Linde CPA-001) is Scatec Solar South Africa (Pty) Ltd. Scatec Solar South Africa (Pty) Ltd is the implementer of this project (IPP/Project owner) and described in the CPA-DD/3/ as a one of the project participants.

4. PoA/CPA design Document

Through desk reviews and Q&A sessions with the project participant (PP), JCI confirmed that the DDs are described based on and referring to the following relevant methodology, guidance, guidelines, and manual:

- (1) CDM Validation and Verification Standard (VVS) (Version 03.0) /50/
- (2) ACM0002 “Consolidated baseline methodology for grid-connected electricity generation from renewable sources” (Version 12.3.0) /51/
- (3) Methodological tool “Tool to calculate the emission factor for an electricity system” (Version 02.2.1), EB 63 Annex 19 /52/
- (4) Methodological tool “Tool to calculate project or leakage CO₂ emission from fossil fuel combustion” (Version 02), EB41 Annex 11 /53/
- (5) Methodological tool “Tool for the demonstration and assessment of additionality” (Version 06.1.0), EB 69 Annex 20 /55/
- (6) Glossary of CDM terms (Version 07.0), EB 70 Annex 7 /59/
- (7) Guidelines for completing the programme design document form for CDM programmes of activities (Version 03.0), EB 70 Annex 6 /62/
- (8) Guidelines for completing the component project activity design document form (Version 01.0), EB 66 Annex 16 /61/
- (9) Guideline on the demonstration and assessment of prior consideration of the CDM (Version 04), EB62 Annex13 /63/
- (10) 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), EB 55 Annex 38 /56/
- (11) Standard for demonstration of additionality of GHG emission reduction achieved by a Programme of Activities (Version 01.0), EB 63 Annex 2 /57/
- (12) Procedures for processing and reporting on validation CDM Project Activities (Version 03), EB50 Annex 48 /58/

The project design was described using the appropriate template (F-CDM-PoA-DD version 02.0 and F-CDM-CPA-DD version 01) as shown in the DDs, those were confirmed through comparison with the template listed on the UNFCCC website.

As described above, JCI judged that the DDs (PoA-DD and CPA-DD) compiled with the appropriate format and are described based on appropriate tools, guidelines, manual and guidance which are specified and requested by the PoA procedures.

5. Description of a PoA/CPAs

JCI undertook the following process to validate the accuracy and completeness of the project description:

Process: Document review through the whole validation stage and Follow-up actions during on-site assessment.

- Document review: Findings (CARs, CLs) on PoA-DD/1/ and CPA-DD/3/, EIA Report/10/, Technical Reports/8//9/, Solar Resource Review/7/, other relevant design data/drawings, relevant laws/regulations/codes, Internet websites information, etc.
- Follow-up action: Direct interview to the project owner, relevant stakeholders, CDM consultants etc during the on-site assessment of the proposed PoA, as shown in the section III. –Table 5.

Observation/inspection of the physical site was not conducted because the construction of the project has not started. (Refer to below 2))

As a result of the above process, JCI concluded that the descriptions of the PoA-DD/1/ and the first specific CPA-DD/3/ were accurate and their contexts were complete, and well outlined the nature and technical aspects of the project activity.

Followings are the confirmed outlines of description of PoA and CPA;

1) Description of a PoA

The Green Power for South Africa Programme of Activities (PoA) is designed to consist of projects applying technology of wind or solar power (photovoltaic or CSP) implemented by participating entities in South Africa. All wind and solar project activities in the CPAs included in this PoA will be installed within the borders of Republic of South Africa.

Standard Bank Plc acts as the CME for the PoA, and provides an open platform for different technology and service suppliers to participate in the PoA by developing their own CDM Programme Activities (CPAs).

Because each CPA proposal under the proposed PoA competes in the bidding process of the Renewable Energy IPP Procurement Programme held in South Africa by the Department of Energy, the financial model for the CPA should be very competitive. For that reason, Standard bank as CME designed the financial model that is commonly applicable to the respective CPA in advance, taking the conditions in the RFP prepared by DoE and CDM credit into consideration in order to make the project economically feasible. In initiation of the PoA, Standard Bank (CME) entered into the validation contract with DOE (JCI).

2) Description of a CPA

In November 2011, the First Bid Submission (**Round 1**) of Renewable Energy IPP Procurement Programme was invited by Department of Energy in South Africa. The proposed CPA (Scatec Solar Linde CPA-001) was submitted in the first bidding window by the project owner (Scatec Solar South Africa (Pty)). In accordance with the “Request for Qualification and Proposals” (RFP)/11//12//13/ issued by the Department of Energy, they designed the Scatec Solar Linde PV project, of which the capacity was 75MWp and the bid tariffs were 2,390 ZAR/MWh (100% indexation) and 2,850 ZAR/MWh (80% indexation). It is a requirement specified in the RFP to the bidders to provide two cases of tariff proposal, one of which is full CPI indexation and the other is partial CPI indexation. The degree of partiality may be voluntary decided by the bidder.

JCI started its validation in November 2011 by uploading the provided DDs to the UNFCCC web-site for GSC.

After the validation started, it was found that PP’s offer in the bidding was not selected as the preferred bidder in the First Bid Submission.

As scheduled by the South African Government of IPP Procurement Program, in May 2012, the Second Bid Submission (**Round 2**) was held. Taking this opportunity, the PPs of Scatec Solar Linde project decided to offer the project again, with considerable modification to the previous design and capacity of the plant, as well as and its financial proposal in order to secure success in the Second Bid Submission in consideration of their experience in the Round 1, especially in regards to the competitiveness of the tariff options.

As a result, it was decided that various design elements be changed (e.g. reducing capacity from 75MW in Bid Round 1 to 39.74MW in Bid Round 2) in conjunction with cutting respective party margins where possible, in order to bring down the tariff options to the desired market level.

The tariff options for Linde PV 39.74MW (for submission in Bid Round 2) were developed by the main project parties including the Scatec project development team, the EPC contractor, Linde debt provider (Standard Bank) and other equity participants that reconceptualised the project after rejection in Bid Round 1. The project parties discussed where they believed the tariff options should be set in order to be competitive in Bid Round 2, while still ensuring that the parties made sustainable returns.

As their conclusion, it was decided to compile and select the tariff options in Bid Round 2 as 1,771 ZAR/MWh for the fully indexed tariff option and 2,379ZAR/MWh for partially [19%] indexed tariff option, one of which will be selected by the Department of Energy for implementation as specified in the RFP which is same as for the Round 1 Bid.

As a result of the Department of Energy’s evaluation of the Bid response by Scatec Solar project owner, it is selected as a preferred bidder by the Department of Energy, and Department of Energy’s Letter of Appointment for Linde/40/ was issued on 18 May 2012.

Under the above change of situation of the proposed project, JCI has assessed the credibility and validity of all of claimed details above with submitted evidences/40/, /42/ and confirmed that the background of the change of the project (Capacity and tariff options) explained is true and credible. Therefore JCI continued the validation process of this project with the revised DDs, in which specifications of plant and financial model have all been correctly revised.

As for the on-site assessment, JCI conducted this in February 2012 as mentioned above, based on the proposal for the Round 1 Bid. This means that the project owner had not made the decision on how to revise their proposal for Round 2 Bid.

Accordingly JCI carried out an intense document review to validate the appropriateness of its considerable changes to the capacity and tariff options after completion of the on-site audit.

At the time of on-site assessment, JCI was informed that PPs would rechallenge towards Round 2, although the EPC works (Engineering, Procurement, Construction) have not yet started in the project site. So JCI confirmed the status of the plant site, such as an environmental condition and the local stakeholder's opinions, with the documents (EIA report/10/) and the interview with EIA author and the relevant entities instead of the observation of the plant site.

Furthermore, JCI performed a cross-check of the original project design work with relevant documents provided by the PPs, and interviews with the PPs and relevant organizations/entities. As the result of the above findings and through the clarifications of descriptions of the DDs, JCI judged that the descriptions of the DDs were correct and its context was sufficient, and well outlined the nature and technical aspects of the project activity which were designed for Round 1 bidding.

In regards to the above-mentioned modification on the capacity of the plant and the financial model for Round 2 bidding, JCI thought that the assessment of those changes could be completed through the document review without another on-site audit, since there were no differences in the location of the plant site and the constituted system (electricity generation, connection method with the grid, etc.) and the RFP for Round 2 is basically the same as stated above. So JCI did not conduct additional on-site audit because of this change.

The summarized major features of Round 2 compared with Round 1 for the first specific CPA (CPA-001) are shown in Table 6 below;

Table 6. Summarized major features of Round 2 compared with Round 1

Item		Round 1 (Not successful)	Round 2 (Successful)	
			Full Indexation Tariff ^(*1)	Patial Indexation Tariff ^(*2)
Capacity	MWp	75.00	39.74	
Total project cost	Million ZAR	2,196.21	1,084.83	1,091.71
Capex	Million ZAR	1,679.05	810.07	
O&M Cost	Million ZAR	35.67	21.23	18.59
Bid Tariff	ZAR/MWh	2,390	1,771	2,379
Net electricity feed-into grid	MWh/year	130,372	83,228	



Annual Average Emission Reduction	tCOe2/year	124,184	80,907	
Real Equity IRR (after tax)	%	13.93	10.54	12.28
Benchmark	%	17.90		

(^{*1}) Full Indexation Tariff / (^{*2}) Partial Indexation Tariff : Refer to 6.4 Investment Analysis

In consideration of the description above, finally JCI confirmed the framework developed for the implementation of the PoA, and defining the CPA under the PoA.

In this validation report, JCI validates the proposed project in accordance with the changed features in Round 2 only, for the CPA below.

6. Additionality of project activity

6.1 Demonstration of additionality of the PoA as a whole

As the PoA-DD /1/ applies the large-scale methodology ACM0002 “Consolidated baseline methodology for grid-connected electricity generation from renewable sources” (Version 12.3.0) /51/, the additionality can be demonstrated using the additionality tool “Tool for demonstration and assessment of additionality” (Version 06.1.0) /55/ in which the project participants are required to provide an explanation to show that the project activity would have occurred anyway due to at least one of following analysis:

- (1) Investment Analysis
- (2) Barrier Analysis
 - a) Investment Barriers (other than the economical/financial barriers in (1) Investment Analysis above)
 - b) Technological Barriers
 - c) Lack of prevailing practice
- (3) And as the next step, Common practice analysis

This demonstration of additionality is applied both large-scale solar project and large-scale wind project, and the additionality of each CPA using one of the above analysis is further discussed in the CPA-DD section D.5 Demonstration of eligibility for the CPA.

JCI reviewed each analysis in the PoA-DD /1/ and confirmed that the demonstration of additionality of the PoA is appropriately in accordance with methodology ACM0002 /51/ and the additionality tool /55/.

6.2 Start date of a PoA/CPA

The start date of the PoA is 18 November 2011 when the PoA-DD (Version 01) /5/ of this project activity has been published for GSC as described “4.Global Stakeholder Consultation”.

As for the CPA, the CPA-001 project implementer (Scatec Solar South Africa (Pty) Ltd) conducted technical feasibility of the project in 2011 and follows timeline provided by the Department of Energy (as per the IPP Procurement Programme) for financial close of the project, and requested date of commercial electricity generation.

In order to keep the timeline in Table 7, the start date of the project activity of CPA-001 was scheduled on 29 May 2012 when Preferred Bidder Guarantee was supplied to Department of Energy, by Standard Bank of SA /41/.

In addition, JCI confirmed that the notification of the commencement of the project activity is not necessary if PoA-DD has been published for GSC according to the “Guidelines on the demonstration and assessment of prior consideration of the CDM version 04”, EB62 Report Annex 13/66/.

Timeline for major key milestones relevant to prior consideration of CDM is as follows;

Table 7. Timeline of major key milestones relevant to prior consideration of CDM

Date	Key Milestone	Evidences
15 March 2011	Standard Bank and Scatec Solar financial agreement	Agreement /36/
03 August 2011	Tender Spec RFP under the IPP procurement programme was issued	RFP /11//12//13/
August 2011	The EIA of the Project was completed by Sustainable Development Projects CC.	EIA /10/
20 September 2011	Standard Bank and International Carbon (consultant) Confirmation	Agreement /35/
13 October 2011	The EIA was approved by Department of Environmental Affairs	Authorization /32/
19 October 2011	The Technical Report of the project was completed by Arup (Pty) Ltd.	Technical Report/8/
14 November 2011	Linde Scatec PV Financial Model by Standard Bank	Financial Model /21/
18 November 2011	The PoA-DD has published for GSC. Start date of PoA	Guideline EB 70 Annex 6 /62/
17 February 2012	Linde PV Projects Revised Technical Due Diligence Phase I Report	Revised Technical Report/9/
05 March 2012	Linde Scatec PV Revised Financial Model by Standard Bank	Revised Financial Model /23/
18 May 2012	Letter of appointment as a Preferred Bidder by Department of Energy	Letter of Appointment /40/
29 May 2012	Preferred Bidder Guarantee was supplied to Department of Energy, by Standard Bank of SA Start date of SSL CPA-001	Preferred Bidder Guarantee/41/

JCI has confirmed that other milestones also listed in the above table were supported with the documents which were provided by the project participants. Then JCI concluded that continuing and real actions were taken to secure CDM status for the project activity.

In conclusion, JCI concluded that the start dates of a PoA/CPA in the above timeline explained the actions/events taken by the project participants, and were appropriate in achieving CDM requirements.

6.3 Identification of alternative

JCI reviewed that the PoA-DD /1/ appropriately described the credible and feasible baseline scenario according to the selected methodology ACM0002 (version 12.3.0) /51/ and relevant Tool /55/.

The PoA-DD /1/ developed the following three (3) possible alternatives scenarios:

Scenario A : The proposed project activity undertaken without being registered as a CDM project activity

Scenario B : Other plausible and credible alternative scenario to the project activity scenario, including the common practices in the relevant sector, which deliver outputs or services

Scenario C : Continuation of the current situation

Due to the following reasons detailed in section B.1. of the PoA-DD /1/, Scenario A and B were appropriately rejected:

Scenario A

- It was a technically credible alternative but was not realistic alternative, since it was not financially attractive as demonstrated in the investment analysis.

Scenario B

- The alternative renewable energy technologies (to wind, solar PV and CSP) applicable to the IPP bid include:
Solar thermal, Biomass, Biogas, Landfill gas, Small hydro
- There are very few alternatives to Eskom’s coal-fired power stations existent in South Africa, proven by the fact that there are no large scale solar projects in operation in South Africa, even though there are various supporting mechanisms.

As a result, Scenario C “Continuation of the current situation” (i.e. electricity will continue to be generated by the existing generation mix feeding into the grid) was identified as the credible and feasible baseline scenario to the project activity.

JCI reviewed these scenarios of PoA-DD /1/, and confirmed the Scenario C is the most suitable as the baseline scenario.

6.4 Investment analysis

“Tool for the demonstration and assessment of additionality” (Version 06.1.0) /55/ provides three options (Option I, II and III) for the methods of investment analysis. Option I (Apply simple cost analysis) and II (Apply investment comparison analysis), however, were not applicable, since the project activity aimed to obtain revenue from electricity sale in addition to revenue from CERs, and the specified baseline was not an investment project. Only Option III (Apply benchmark analysis), therefore, could be applied to the project activity.

JCI has considered that the investment analysis was appropriately selected with reasonable justification as demonstrated below.

6.4.1 Benchmark analysis

1) Application of benchmark analysis

Selection of the benchmark analysis is justified appropriately as below, following the VVS /50/ and Additionality tool/55/ :

- a) As a default value of benchmark, the “Guidelines on the assessment of investment analysis” /60/ provides a value of 10.9% as the expected return on equity (RoE) in South Africa. But when the background of renewable energy industry in South Africa is taken into consideration, there is no large scale commercial solar power generation at present in the country. JCI confirmed this status with the submitted evidence (“Electricity Regulation on the Integrated Resource Plan 2010 – 2030”/79/, by Department of Energy). Considering such environment in South Africa, JCI has judged it is appropriate that such investments are high risk, and the risk premium is required by private investors to participate in local projects when it comes to the consideration of the benchmark value.
- b) PoA-DD/1/ shows the 5 examples of local benchmarks in the Table 8 below, because renewable energy projects are not common practice in South Africa and the financial analysis is based on parameters that are standard in the renewable energy market.

These examples of Real Equity IRR shown in the below Table 8 are publicly available as the benchmark issued by respective organizations which are credible participants of the renewable energy industry in South Africa.

Table 8. Examples of local Equity IRR values

	Organisation	Real Equity IRR
1	NERSA/70/	17%
2	Exxaro/71/	17%
3	Lereko Metier/72/	15 - 20%
4	Association for Saving and Investment SA/73/	18%
5	SAPVIA/74/	20%
	Average	17.9%

In the CPA-DD, the benchmark is estimated as an average of 5 locally accepted benchmarks in the Table 8, and it is 17.9%.

JCI checked documents provided as evidence in the above Table 8 and validated that the average value of the figures in the Table 8 (= 17.9%) can be used as the benchmark for the investment analysis for the renewable energy project in South Africa.

- c) In the case of Scatec Solar Linde SSL CPA-001, as there is no commercial solar power generation in South Africa, project participants have selected 17.9% which is the average of standard in the market, as a benchmark of the proposed project.

JCI has validated and concluded that the selection of benchmark analysis for investment analysis was appropriate and fully complied with VVS /50/ and Additionality tool/55/.

2) Validation of input values used for the IRR calculation

The Real Equity IRR after tax (hereafter IRR) is calculated to be 10.54% in case of full indexation (FIT) and 12.28% in case of partial indexation (PIT) (without CERs revenue) in Linde Scatec PV Revised Financial Model /23/ following the requirement in the RFP/11//12//13/.

JCI has checked this Revised Financial Model /23/ provided by the project owner and cross-checked the input parameters with relevant requirements and guidelines such as the Additionality tool/55/, Guidelines on the assessment of investment analysis /60/.

JCI has confirmed that the decision of the project participants to proceed with the project activity under the CDM application was surely made based on the Revised Technical Report/9/ and Revised Financial Model/23/.

Input values of the parameters used for the IRR in the CPA-DD “Scatec Solar Linde CPA-001 (SSL CPA-001)” /3/ are tabulated in the Table 9 below and compared with those estimated in the Revised Technical Report/9/ and Financial Model /23/, to check the consistency following the paragraph 122 (b) of VVS /50/.

As shown below, JCI concludes that the input values of the CPA-DD/2/ are fully consistent with those of the revised Technical Report/9/ and Financial Model /23/ satisfying the paragraph 122 (b) of VVS /50/.

Table 9. Comparison of input values used for investment analysis between Technical Report/9/, Financial Model/23/ and CPA-DD/3/

Parameters	Unit	Revised Technical Report/9/, Financial Model/23/		CPA-001/3, IRR Sheet/3-1//3-2/		Consistency
		FIT ^(*1)	PIT ^(*2)	FIT ^(*1)	PIT ^(*2)	
Total capacity	MWp	39.74		39.74		OK
Annual energy yield ^(*3)	kWh/kWp /year	2,341		2,341		OK
Bid tariff	ZAR/MWh	1,771	2,379	1,771	2,379	OK
Total project cost	Million ZAR	1,085	1,092	1,085	1,092	OK
Capex	million ZAR	810.07		810.07		OK
Annual O&M Cost	million ZAR/Year	21.23	18.59	21.23	18.59	OK
Tax rate	%	28		28		OK
VAT rate	%	14		14		OK
Secondary tax rate	%	10		10		OK
Real equity IRR (after tax)	%	10.54	12.28	10.54	12.28	OK

(^{*1}) FIT: Full Indexation Tariff (^{*2}) PIT: Partial Indexation Tariff

(^{*3}) Annual energy yield; Annual electricity generation per installed capacity

The input values of the parameters used for the IRR calculation are validated as below from a) to e).

And concerning the other input values, Tax rate, VAT rate and Secondary tax rate, JCI confirmed each tax rate with website of “South Africa: Summary of Domestic Taxation Regime by Lowtax (Global Tax and Business Portal)/87/”.

JCI has issued CL-9 in this regard to provide the evidences of these tax rates and those were provided appropriately, therefore CL-9 has been closed.

a) Capex (Capital Expenditure)

The Capex (Capital Expenditure) in Linde Scatec PV Financial Model by Standard Bank /23/ is about 810.07 million ZAR.

The breakdown value of the Capex is shown the Table 10 below.

Table 10. Capex (Capital Expenditure) breakdown

Item	million ZAR	%
PV Modules	308.16	38.04
Inverters and Transformers	92.18	11.38
Substructure	111.93	13.82
*Balance of System	172.67	21.31
HV Substation	19.17	2.37
Eskom Grid Connection	11.23	1.39
Construction Insurance	2.97	0.37
Trade/Bridge Finance	14.25	1.76
Initial Spare Parts	6.13	0.76
Internal Direct Costs and Other	71.39	8.81
Total	810.07	100

*Balance of System:

Foundation for transformer and inverter station, Equipotential system, Fences, Monitoring systems, DC cabling, AC cabling (Medium Voltage) / (Low Voltage), Construction roads, Construction facilities, Site preparation, All civil works

JCI validated the CAPEX above in accordance with following considerations;

- (1) There is no comparable project in the Republic of South Africa such as the proposed CDM project as large as of 39.74MWp capacity solar PV power plant. Accordingly it is not realistic to try to cross-check the figure of each cost items in the above Table 10 because there is no reference for cross-check in the relevant region.
Accordingly, JCI validated input values in the Table 10 in order to justify the figure of each cost items.
- (2) The proposed CDM project was budgeted for submission to the Department of Energy Renewable Energy IPP Procurement Programme tender, in accordance with RFP/11//12//13/ issued by the Department of Energy with the ceiling of Renewable Energy Feed-in Tariff (REFIT) of 2,850 ZAR/MWh (PIT), which is a mandatory requirement specified as the maximum tariff in the RFP issued by the Department of Energy /11/.

This is a part of the Renewable Energy Independent Power Producer (IPP) Procurement Programme under which South Africa will seek to produce the first 3,725 MW of renewable energy capacity by the year of 2016.

This means the figures in the above Table 10 are all competitive in order to be a successful bidder as already discussed in the section IV – 5. - 2) above.

The proposed tariff by IPP was thoroughly lowered offer to secure acceptance to the IPP programme from the IPPs’ point of view, and the proposed figures of the tariff for the Bid Round 2 were 1,771 ZAR/MWh (FIT) and 2,379 ZAR/MWh (PIT) while the proposed tariff options in the Bid Round 1 were 2,390 ZAR/MWh (FIT) and 2,850 ZAR/MWh (PIT), which were not accepted by the Department of Energy.

The IPP formed a project development team including parties such as the EPC contractor, Debt provider and other equity participants keeping certain returns for each entity. When the financial model was designed for Bid Round 2, the project owner invited the EPC contractors to submit their offer of estimated cost of equipment and all of other items shown in the Table 10 to implement the project. It was stressed that all of those estimated costs in the above Table 10 should be the best cost effective offer as the result of the project owner’s critical judgement under the estimated bid tariff in order to keep the project financially feasible, which is the usual business practice in the countries like South Africa.

- (3) In the consideration of thoughts in above (1) and (2), JCI deemed that the bid tariff and cost items taken up in the Table 10 should have been narrowed down to the necessary minimum and estimated figures of each are at nearly minimum cost because the project owner must have negotiated with EPC contractors and other entities involved to minimize their profit margins aiming to be a successful bidder as a team under the open competition with the rival bidders in Renewable Energy IPP Procurement Programme.

In conclusion, JCI considers that the financial model including total investment cost, the bid tariff proposed and other costs under the condition of assigned ceiling of tariff mentioned above can be deemed to be competitive by itself and accordingly can be validated as appropriate by nature.

b)Total Project Costs

JCI validated also other items included in Total Project Costs other than Capex. The breakdown of the Total Project Cost is shown in the Table 11 below.

Table 11. Total Project Costs Breakdown

Item	Full Indexation Tariff (FIT)	Partial Indexation Tariff (PIT)
	Million ZAR	
Capex	810.07	810.07
Transaction Costs	29.84	29.84
Department of Energy Contribution	10.85	10.85
Department Premium	51.40	51.40



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Interest Paid Via Drawdowns of Debt	80.52	80.52
Commitment Fees Paid	2.15	2.15
Operating Costs	2.70	2.70
Pre-fund of DSRA ^(*)	55.84	55.84
Pre-fund of MRA ^(*)	5.44	5.44
VAT Receipts Funding	7.25	7.25
Working Capital	28.77	35.65
Contingency	--	--
Total Project Costs	1,084.83	1,091.71

(*) DSRA: Debt Service Reserve Account (*) MRA: Maintenance Reserve Account

JCI confirmed each items by checking the Linde financial model /23/, the Linde term sheet /20/ and the Linde OM Agreement (EPC contract) /88/ which PP has submitted as follows;

a) Transaction Cost:

The Linde financial model /23/ in the Drawdown (Monthly) sheet from line 327.
Amounts not fixed in the Linde term sheet /20/, but reference is made on page 18.

b) Department of Energy Contribution:

The Linde financial model /23/ in the Capex Assumption sheet line 91.

c) Development Premium:

The Linde financial model /23/ in the Capex Assumption sheet lines 74-76. Amount not fixed in the Linde term sheet /20/, but reference is made on page 18.

d) Interest Paid via Drawdowns of Debt:

The Linde term sheet page 5. This figure is cross referenced in the Linde financial models in cell F389 of the General Assumption sheet.

Senior Debt Interest Rate Swap Credit Spread During Construction = 0.10%.

The Linde term sheet /20/ page 6. This figure is cross referenced in the Linde financial model /23/ in cell F411 of the General Assumption sheet.

e) Commitment Fees Paid:

The Linde term sheet /20/ in page 4. This figure is cross referenced in the Linde financial model /23/ in cell F381 of the General Assumption sheet.

f) Operating Costs:

The Linde OM Agreement (EPC contract) /88/ page 67.

The Fee shall include an EUR and a ZAR element, but shall be payable only in ZAR.

The EUR element shall be calculated as follows:

EUR 7.60 per kWp of the Nominal Capacity attained during the Tests on Completion under the EPC Contract /88/ and shall be converted to ZAR using the Average Rate.

The ZAR element shall be calculated as follows:

ZAR 130.36 per kWp of the Nominal Capacity attained during the Tests on Completion under the EPC Contract /88/.

These figures are cross referenced in the Linde financial model /23/ in the General Assumptions sheet in cells E152 and E153.

g) Pre-fund of DSRA:

The Linde term sheet /20/ pages 4, 9-10. These figures are cross referenced in the Linde financial model /23/ in cells F507-F509 of the General Assumption sheet.

h) Pre-fund of MRA:

The Linde term sheet /20/ page 9. These figures are cross referenced in the Linde financial model /23/ in cells F527-F530 of the General Assumption sheet.

i) VAT Receipts Funding:

The Linde financial model /23/ in the Drawdown (Monthly) sheet from line 641.
VAT is 14% of the revenues.

j) Working Capital:

The Linde financial model /23/ in the General Assumption sheet from line 227.
Amount not fixed in the Linde term sheet /20/, but reference is made on page 4 under the section titled “Purpose”.

k) Contingency:

The Linde financial model /23/ in the General Assumption sheet line 124 for the maintenance contingency.

Furthermore, JCI compared the total project costs as the model with the investment cost level in the global market, because no comparable project exists in the South African market. In order to compare the model with the cost in the global market, JCI referred to the total project cost which is 1,084.83 million ZAR (FIT) and 1,091.71million ZAR (PIT).

JCI referred to the statistics of the On-line Photovoltaic Power plant Database “Pvresources” /86/ as one of reference databases in the global market, it reads that “*Typically the cost of installing a photovoltaic system having a power of 1kWp from 3,500 € to 5,000 €/kWp (2009).*” Assuming the exchange rate of “1 €= 10.356 ZAR”, the installation cost index of photovoltaic power plant ranges from 36,246 ZAR/kWp to 51,780 ZAR/kWp in the global market.

In parallel, the installed capacity of the proposed photovoltaic power plant is 39.74 MWp, and the total project cost is 1,084.83 million ZAR (FIT) or 1,091.71 million ZAR (PIT), therefore the unit cost of installing the photovoltaic system is 27,298 ZAR/kWp (= 1,084.83 million ZAR/39,740 kWp) or 27,471 ZAR/kWp (= 1,091.71 million/39,740 kWp) in the Round 2.

This value is lower than the range of the above global PV power plant construction market (36,246 ZAR/kWp to 51,780 ZAR/kWp).

In the case of Round 1, this project was not selected as a preferred bidder as described 5. 2. The capacity of the proposal for Round 1 was 75MWp and the total project cost was 2,196.21 million ZAR according to its financial model/21/, therefore the unit cost of installing the photovoltaic system is 29,283 ZAR/kWp (2,196.21 million ZAR/75,000 kWp=29,283 ZAR/kWp) in the Round 1.

And this value was also lower than the range of the global market, which suggests the competition in the market in South Africa is so strict.

At the Round 2, in order to win the award of the preferred bidder, the total project cost and the bid tariff needed to be further lowered and the comparison between both cases for Round 1 and Round 2 is that the unit cost for Round 2 is lower by 6.8% than for Round 1.

JCI considers that this difference is within the reasonable range.

In considering all of the discussion above, JCI confirmed that the total project cost (including the Capex) estimated in the Financial Model /23/ is credible and conservative.

c) Bid Tariff (REFIT: Renewable Energy Feed-In Tariff)

In South Africa, the feed-in tariff to the grid is decided by the Republic of South Africa Department of Energy as a bid tariff. Maximum tariff for Solar Photovoltaic electricity generation is 2,850 ZAR/MWh (PIT) as per Department of Energy’s IPP Procurement Programme requirements “RFP for IPP procurement programme, Part A: General Requirements, rules and provisions” /11//12//13/.

As described above a) Capex, at the Round 1 bidding, the bid tariff was 2,390 ZAR/MWh (FIT) and 2,850 ZAR/MWh (PIT), and this project was not selected as a preferred bidder. But for the Round 2 bidding, PPs have redesigned the project and improved the financial model substantially to win the preferred bidder.

In order to avoid the risk of losing order again in Round 2, the project owner drastically lowered the offer of tariff in bidding to 1,771 ZAR/MWh (FIT) and to 2,379 ZAR/MWh (PIT), which is considerably lower than the figure in the case of Round 1. However JCI thought that this could be justifiable because the project owner was aware that the bidding tariff is a very high scoring factor in the evaluation process of the Round 2 bidding. Consequently, this project was fortunately selected as a preferred bidder by the Department of Energy.

JCI considers that the PP’s such judgement in the above-mentioned business environment (with a focus on becoming a successful bidder in the bidding system in South Africa) is quite usual and concluded that the bid tariff of 1,771/2,379 ZAR/MWh decided in the CPA-DD /3/ and indicated to the Revised Financial Model /23/ is credible and appropriate.

In addition, the PP provided the Department of Energy’s Appointment letter/40/ which ensures the Department of Energy’s acceptance of the proposed tariff options, and JCI considers that the letter can be a strong support to validate the value of the tariff proposed.

d) Opex (Annual O&M costs)

As for the justification of O&M costs, JCI issued the CL-7 to clarify the details of annual O&M costs. The Linde Scatec PV Revised Financial Model by Standard Bank /23/ which shows the breakdown data of annual O&M costs has been submitted.

In addition, “Agreement for the Operation and Maintenance of the Linde Solar PV project (EPC Contract)/88/ was provided. Referring to the relevant part of it (Schedule 5: Calculation of the Fee page 67), JCI confirmed that the O&M cost in the Table 11 below is reasonably estimated in the financial model with regard to the calculation of the fee consisting of the EUR element and ZAR element.

Therefore CL-7 has been resolved and closed.

The annual O&M costs in the Revised Financial Model/23/ is 21.23 million ZAR in case of full indexation tariff (FIT) and 18.59 million ZAR in case of partial indexation tariff (PIT). The breakdown values of the Annual O&M Costs are shown in the Table 12 below.

Table 12. Annual O&M Costs Breakdown

Item	Full Indexation Tariff (FIT)	Partial Indexation Tariff (PIT)
	million ZAR	
Lease Costs	1.80	0.46
Insurance - EUR	3.04	3.04
Insurance - ZAR	0.40	0.40
Operations and Maintenance - EUR	3.45	3.45
Operations and Maintenance - ZAR including security	5.22	5.22
Management Services	1.21	1.21
Internal Power Usage and Metering Costs	1.21	1.21
Communications, Utilities, Audit, Tax, Legal	0.46	0.46
Maintenance Contingency and Other Costs	1.41	1.41
Agency Fees and Independent Engineer	0.48	0.48
Salaries and Wages	0.80	0.80
Economic and Social Development	1.75	0.45
Total	21.23	18.59

As in the case of justifying the Capex above, the solar activity in CPA-001 is not a common practice in South Africa, as there is no large scale commercial solar power generation at present in the country, so it is difficult to compare with other projects in regards to the annual O&M Cost for the purpose of cross-checking.

In order to validate the annual O&M Cost, as reference, JCI has referred to an EPRI (Electric Power Research Institute in USA) white paper 2010 /82/. According to the EPRI, in the case of using the polycrystalline modules mounted as a PV panel, the annual O&M cost has been estimated 60.0 \$/kW in United States.

Accordingly the annual O&M cost of the proposed project per installed capacity can be justified below (assumption of the exchange rate of “1 \$ = 8.396 ZAR”):

$$21.23 \text{ million ZAR} / 39.74 \text{ MW} = 534.2 \text{ ZAR/kW} = 63.6 \text{ $/kW (FIT)}$$

$$18.59 \text{ million ZAR} / 39.74 \text{ MW} = 467.8 \text{ ZAR/kW} = 55.7 \text{ $/kW (PIT)}$$

The values of the proposed project (63.6 \$/kW / 55.7 \$/kW) are nearly equal to the EPRI’s case.

So JCI has confirmed that the annual O&M cost of this project is appropriate.

e) Annual electricity generation

JCI validated the estimated annual electricity generation in following steps:

- According to the Revised Technical Report/9/ and Northern Cape PV Projects Solar Resource Review/7/, the average global horizontal irradiation from the weather data source Meteonorm (1981 - 2000) is 2,198 kWh/m²/year at Linde area.

And the annual electricity generation is 2,341 kWh/kWp/year, and it was calculated by PVSyst software which is the software for exclusive use for the calculation of the annual electricity generation from the irradiation data and has been used in study for technical feasibility of the proposed project.

It is estimated at the case of the polycrystalline panel which Scatec Solar intends to install for Linde project.

- The net average electricity generation has been calculated as follows:

$$EG_{netcap,y} = EG_{cap,y} * \eta_{system\ up} * \eta_{grid\ down}$$

Where:

$$EG_{cap,y} = \text{Annual electricity generation per installed capacity} \quad 2,341 \text{ kWh/kWp/year}$$

$$\eta_{system\ up} = \text{System uptime (plant is operating, and not under maintenance)} \quad 98.5 \%$$

$$\eta_{grid\ down} = \text{Grid downtime (Eskom's guideline on grid down due maintenance)} \quad 5.0 \%$$

$$EG_{netcap,y} = \text{Annual net electricity generation per installed capacity} \quad 2,191 \text{ kWh/kWp/year}$$

- Capacity factor (Plant Load Factor) has been calculated as follows:

$$Ca_{fac} = EG_{netcap,y} / (365d * 24h) * 100$$

Where:

$$EG_{netcap,y} = \text{Annual net electricity generation per installed capacity} \quad 2,191 \text{ kWh/kWp/year}$$

$$Ca_{fac} = \text{Capacity factor (Plant Load Factor)} \quad 25.01 \%$$

- The long term annual electricity generation has been calculated as follows:

$$EG_{net,y} = Ca * 365d * 24h * Ca_{fac}$$

Where:

$$Ca = \text{Installed capacity} \quad 39.74 \text{ MWp}$$

$$Ca_{fac} = \text{Capacity factor} \quad 25.01 \%$$

$$EG_{net,y} = \text{Long term annual electricity generation} \quad 87,063 \text{ MWh/year}$$

- As per the Revised Technical Report/9/, transmission losses are estimated to be maximum 1.5%, and for the Financial Model/23/ a conservative value of 0.5% has been applied. So the annual electricity supplied to the grid in the first year after the modules installed is as follows:

$$EG_{sup,1y} = EG_{net,y} * (1 - L_{trans})$$

Where:

$$EG_{net,y} = \text{Long term annual electricity generation} \quad 87,063 \text{ MWh/year}$$

$$L_{trans} = \text{Transmission losses rate} \quad 2.0\% (1.5\%+0.5\%)$$

$$EG_{sup,1y} = \text{Annual electricity supplied to the grid in first year after the modules installed} \quad 85,324 \text{ MWh/year}$$

- Hanwha SolarOne (PV module provider) guarantees that the modules will be at least 90% efficient compared to performance on day one of installation after 10 years, and 80% efficient after 25 years. This is described in “Hanwha SolarOne CO., LTD. Limited Warranty for PV Module(s)” /60/. It is likely that a much lower annual degradation is achieved about 0.4% per year on average.
- The Internal Consumption described in Grid Electricity Internal Consumption - Linde /26/ is shown in the Table 13.

Table 13. Internal Consumption Linde

Item	Unit Consumption	Daily Consumption	
Tracker Power Pack	230 units * 0.37 kW	85.1 kW * 8 hrs	680.8 kWh/day
Inverter	46 units * 1.5 kW	69 kW * 12 hrs	828.0 kWh/day
Air-condition	2 units * 2.3 kW	4.6 kW * 8 hrs	36.8 kWh/day
Control Room	1unit * 5 kW	5 kW * 24 hrs	120.0 kWh/day
Total	-	-	1,665.6 kWh/day

Annual Electricity Consumption is as follows:

$$1,665.6 \text{ kWh/day} \times 365 \text{ day} = 607,944 \text{ kWh} = \mathbf{608 \text{ MWh}}$$

Finally, based on the above estimation, the average of electricity feed into the grid can be estimated to be 83,228 MWh/year and the average of baseline emission is 80,907 tCO₂, as shown in the Table 14.

The data in Table 14 adopts the data of Emission Reduction CPA-001 /4/.

Table 14. Annual Electricity Generation

Crediting year		Total Generation (MWh)	Electricity from Grid (MWh)	Net electricity into Grid (MWh)	Baseline Emissions (tCO ₂)
1	2013	7,589	51	7,387	7,181
2	2014	87,063	608	84,698	82,337
3	2015	87,063	608	84,426	82,072
4	2016	87,063	608	84,078	81,733
5	2017	87,063	608	83,730	81,395
6	2018	87,063	608	83,381	81,056
7	2019	87,063	608	83,033	80,718
8	2020	87,063	608	82,685	80,379
9	2021	87,063	608	82,337	80,041
10	2022	87,063	608	81,988	79,702
11	2023	79,474	557	74,542	72,463
Total		870,628	6,079	832,285	809,077
Average		87,063	608	83,228	80,907

$$EF_{\text{grid,CM}} = 0.9721 \text{ tCO}_2/\text{MWh}$$

Plant Load Factor (PLF) is defined as Capacity Factor (Ca_{fac}) in this proposed project, and as described above, the value of Ca_{fac} is 25.01% and Operating time is about 2,191 hours.

This Plant Load Factor was determined by the third party, Arup (Pty) Ltd in South Africa, contracted by the PP in accordance with the “Guideline for the reporting and validation of plant load factors (version 01)” EB 48 Annex 11/54/.

JCI confirmed that the annual electricity generation of the proposed project is appropriate and is treated correctly.

f) Evaluation of IRR calculation as the means of the benchmark analysis

IRR calculation process is available in the IRR Calculation Spread sheet.

Real equity IRR (after tax) is selected as a financial indicator and it is calculated for the purpose of the demonstration of the additionality through the investment analysis in accordance with the additionality tool (Tool for the demonstration and assessment of additionality version 06.1.0 EB69 Annex 20/55/).

The calculation result is 10.54% as described in the CPA-DD, which is on the basis of the value of the fully indexed tariff (= 1,771ZAR/MWh, FIT)) and it is lower than the benchmark (= 17.9%).

However it is required to propose the partially indexed tariff (PIT) in the RFP/11//12//13/ and the Department of Energy reserves the right to decide which tariff would be applied in the future PPA between IPP and Eskom.

This means that it is needed for the project owner to estimate IRR based on the PIT (= 2,379ZAR/MWh) for the purpose of the additionality demonstration.

The calculation result of IRR in this case is 12.28%, which is also described in the CPA-DD and also detailed calculation process is available in the IRR Calculation Spread sheet.

IRR based on the PIT (= 12.28%) is also confirmed as lower than the benchmark (= 17.9%).

JCI confirmed that the IRR calculation factors such as tariff, electricity generation and so forth are all rightly adjusted year by year based on the requirements in RFP/11//12//13/, project conditions given in the Revised Technical Report/9/ and the Revised Financial model/23/ and the calculation process in the Spread sheet is correct.

Through validation of all the above IRR calculation process, JCI has concluded that the IRR of the project activity is correctly calculated based on appropriate and reasonable input values and as the IRR is below the benchmark, the project activity is not considered financially attractive.

JCI has considered this clearly demonstrates that the project owner has experiences of applying the benchmark analysis in evaluating financial liability of projects and thus clarified the request by VVS/50/.

6.4.2. Sensitivity analysis

A sensitivity analysis was conducted assessing the main external parameters that drive the financial model.

As main parameters, Capex (Capital expenditures), Opex (Operation & Maintenance Cost and Tariff Options (FIT & PIT) are adequately selected.

Each parameter listed below has been increased by 10% and decreased by 10%, with the effect on the Real Equity IRR noted in the table 14 below:

JCI confirmed that none of the variances run above increase the real equity IRR above the benchmark standard of 17.9% except following cases:

- In the case of Capex lowering 10% on the tariff of 2,379ZAR/MWh (PIT), IRR increases to 18.31% (> Benchmark 17.9%).
- In the case of the partial tariff increasing 10%, IRR becomes 19.44%, which is also beyond the benchmark.

In the CPA-DD, the prospect of the scenario above is described as being unlikely to happen. JCI reviewed the discussion as saying in the CPA-DD that *tariff increase would bearing the IRR higher. However, tariffs are set tariffs and agreed with DoE and there is no possibility to increase (or decrease) it from the accepted bid price.*

In consideration of the situation of the bidding scheme provided by DoE, the scenario of IRR going over the benchmark is not possible as the price is set with DoE and will be either 2.379 or (more likely) 1.771.

JCI considers that above viewpoint is quite reasonable and acceptable. In addition, even if there is a small probability that this scenario could happen through unexpected changes of the surrounding condition, there is no rational ground to give a negative opinion based on this reason alone.

Accordingly JCI concludes that the below result of sensitivity analysis is acceptable.

Table 15. Sensitive analysis

Parameters		-10%		0%		+10%	
			IRR (%)		IRR (%)		IRR (%)
Capex (MZAR)	Tariff =1.771	729.07	15.13	810.07	10.54	891.08	7.69
	Tariff =2.379	729.07	18.31	810.07	12.28	891.08	8.53
OPEX (MZAR)	Tariff =1.771	19.11	11.30	21.23	10.54	23.36	9.81
	Tariff =2.379	16.73	13.22	18.59	12.28	20.45	11.33
Tariff (ZAR/MWh)	Tariff =1.771	1,594	6.94	1,771	10.54	1,948	15.77
	Tariff =2.379	2.141	5.79	2.379	12.28	2.617	19.44

6.5 Barrier analysis

The CPA-DD CPA-001/3/ already preferred investment analysis specified in the additionality tool /55/. The investment analysis has been demonstrated in above 8.4 Investment analyses.

6.6 Common practice analysis

According to “Tool for the demonstration and assessment of additionality (Version 06.1.0) /55/”, common practice analysis has been validated.

The Project will utilize renewable energies to generate electricity, it is in accordance with the measures listed in paragraph 6 (b), therefore, procedure of common practice analysis for the project should be following the requirements from paragraph 47 of the tool.

Step 1: Calculate applicable output range

As the Project is a photovoltaic solar power plant with installed capacity of 39.74 MW, and +/- 50% of which with installed capacity within 20 MW ~ 80 MW should be selected.

Step 2: Identify the number N_{all}

In the applicable geographical area, identify all plants that deliver the same output or capacity, within the applicable output range calculated in Step 1. Note their number N_{all} . As described in the CPA-DD/3/, in South Africa, there is no large scale commercial solar power generation at present. And this status is also described in “Electricity Regulation on the Integrated Resource Plan 2010 - 2030, by Department of Energy” /79/.

Therefore, $N_{all}=0$

Step 3: Identify the number N_{diff}

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} .

Since $N_{all}=0$, the project is the only project within the range, $N_{diff}=0$

Step 4: Calculate F

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.

According to the analysis above,

$N_{all} - N_{diff} = 0 < 3$, therefore the proposed project is not a common practice.

To summarize, the project passed all criteria of the “Tool for the demonstration and assessment of additionality (Version 06.1.0)” /55/.

Therefore, JCI concluded the Project is adequately additional.

7. Eligibility criteria for inclusion of a CPA in the PoA

The defined eligibility criteria in the PoA-DD/1/ can be verified in accordance with Paragraph 16 of “Standard for demonstration of additionality, development of eligibility criteria of multiple methodologies for programme of activities” (Version 02.0) EB 70 Annex 5/64/.

The verified result is shown in Table 16.

Table 16. Check for Eligibility criteria for inclusion of a CPA in generic CPA-DD in PoA

Eligibility criteria for inclusion by the Standard	Eligibility criteria noted by CME in generic CPA-DD of PoA-DD	Check result
<Standard Para.16.(a)> The geographical boundary of the CPA including any time-induced boundary consistent with the geographical boundary set in the PoA;	<Criteria No.1 of generic CPA-DD> All installation shall take place in within the geographical boundaries of South Africa and shall be connected to the national grid electricity system.	OK Confirmed the boundary is limited in South Africa, and it’s compliant with the standard.
<Standard Para.16.(b)> Conditions that avoid double counting of emission reductions like unique identifications of products and end-user locations (e.g. programme logo);	<p><Criteria No.2 of generic CPA-DD and Section C of PoA-DD > Conditions that avoid double counting of emission reductions like unique identifications of products and end-user locations.</p> <p>CPA has unique GPS coordinates and the CPA implementer complies with the procedure established by the CME as specified in Section C of PoA-DD to avoid double accounting.</p> <p><Management system of the procedure established by CME> <i>All CPAs under the Green Power for South Africa Programme will be technology specific (i.e. either solar or wind power) and will be fixed or non-transferable, commercial plants that can be easily identified with GPS coordinates, which will prevent incidences of double counting. In addition, Standard Bank will have a recordkeeping system which will maintain data relating to each CPA such as project developer details, site addresses, which will be compared against the record of projects under the CDM undergoing validation or those that are registered to further avoid double counting. The management of this system will be relatively simple considering the nature of the programme activities which will limit</i></p>	OK Confirmed the avoidance system established by CME, and it’s compliant with the standard.

	<i>each CPA to a small number of installations.</i>	
<Standard Para.16.(c)> The specifications of technology / measure including the level and type of service, performance specifications including compliance with testing / certifications;	<Criteria No.3 of generic CPA-DD> New wind and solar (PV and CSP) power plants that provide electricity into the national grid are eligible (i.e. no retrofits or capacity additions are included).	OK Confirmed the simple wind and solar system and they are compliant with the standard.
<Standard Para.16.(d)> Conditions to check the start date of the CPA through documentary evidence;	<Criteria No.4 of generic CPA-DD> The starting date of the CPA shall be earliest date at which the project implementation begins, which shall be determined based on the first signed major contract related to the CPA. The CPA starting date needs to be after 18 November 2011.	OK Confirmed the definition of start date of the CPA, and it's compliant with the standard.
<Standard Para.16.(e)> Conditions that ensure compliance with applicability and other requirements of single or multiple methodologies applied by CPAs;	<Criteria No.5 of generic CPA-DD> The CPA to be included in this PoA shall meet the applicability requirements of the CDM methodology “ACM0002: Consolidated baseline methodology for grid-connected electricity generation from renewable sources” Version 12.3.0.	OK Confirmed the simple wind or solar system applied the methodology ACM0002, and it's compliant with the standard.
<Standard Para.16.(f)> The conditions that ensure that CPAs meet the requirements pertaining to the demonstration of additionality as specified in section 3.1 above;	<Criteria No.6 of generic CPA-DD> The CPA to be included in this PoA shall assess additionality against one or more of the barriers listed in the “Tool for the demonstration and assessment of additionality” (Version 06.1.0) as well as the “Combined tool to identify the baseline scenario and demonstrate additionality”, Version 04.0.0 as per section B.5, and leakage rules as per section B.6.1 of the generic CPA document.	OK Confirmed the methodology ACM0002 is applied to all CPAs and the “Tool for the demonstration and assessment of additionality” is used for demonstration, and it's compliant with the standard.
<Standard Para.16.(g)> The PoA-specific requirements stipulated by the CME including any conditions related to undertaking local stakeholder consultations and environmental impact analysis;	<Criteria No.7 of generic CPA-DD> The local stakeholder consultation (LSC) shall take place in CPA level and shall follow the EIA requirements. In case an EIA is not required for the specific CPA, a separate LSC process shall take place. This process shall identify the key stakeholder and affected parties, which shall be informed in the most suitable way (e.g. public announcement via newspaper and/or personal invites, presentation and/or project summary and a minimum of 2 weeks commenting period from the announcement/ invite). <Criteria No.8 of generic CPA> Wind or solar power plants must obtain	OK Confirmed the local stakeholder consultation (LSC) shall take place in CPA level and shall follow the EIA requirements, and it's compliant with the standard.

	the relevant environmental approvals in accordance with the National Environmental Management Act (“NEMA”) Environmental Impact Assessment (“EIA”) regulations.	
<Standard Para.16.(h)> Conditions to provide an affirmation that funding from Annex I parties, if any, does not result in a diversion of official development assistance;	<Criteria No.9 of generic CPA> No CPAs under this programme will receive funding from Annex I parties.	OK Confirmed that it is compliant with the standard.
<Standard Para.16.(i)> Where applicable, target group (e.g. domestic / commercial / industrial, rural / urban, grid-connected / off-grid) and distribution mechanisms (e.g. direct installation);	<Criteria No.10 of generic CPA> Not applicable for the proposed PoA. CPA is a commercial renewable energy facility connected to the national grid system.	OK All CPAs are just commercial renewable energy facility connected to the national grid system.
<Standard Para.16.(j)> Where applicable, the conditions related to sampling requirements for a PoA in accordance with the “Standard for sampling and surveys for CDM project activities and programme of activities”;	<Criteria No.11 of generic CPA> Not applicable for the proposed PoA. No sampling is applied under this PoA, and all CPAs/ projects are monitored individually according to the requirements of the methodology ACM0002.	OK There are no sampling requirements in the proposed PoA, and it is compliant with the standard.
<Standard Para.16.(k)> Where applicable, the conditions that ensure that every CPA (in aggregate if it comprises of independent sub units) meets the small-scale or microscale threshold and remains within those thresholds throughout the crediting period of the CPA;	<Criteria No.12 of generic CPA> Not applicable for the proposed PoA. CPA applies the large scale methodology ACM0002 and will therefore not be eligible for small scale or microscale threshold criteria.	OK All CPAs are large-scale projects, and it is compliant with the standard.
<Standard Para.16.(l)> Where applicable, the requirements for the debundling check, in case the CPAs belongs to small-scale or microscale project categories.	<Criteria No.13 of generic CPA> Not applicable for the proposed PoA. CPA applies the large scale methodology ACM0002 and will therefore not be eligible for inclusion as a bundle of projects under the small scale or microscale project categories.	OK All CPAs are large-scale projects, and it is compliant with the standard.

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, in accordance with paragraph 19 of EB 70 Annex 5 /64/.

The checked result is shown in Table 17.

Table 17. Management System of CME

Management system of CME to ensure the eligibility criteria for inclusion	PoA-DD/Relevant documents	Check result
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<p><Standard Para.19.(a)> A clear definition of roles and responsibilities of personnel involved in the process of inclusion of CPAs, including a review of their competencies;</p>	<p>As the CME for this PoA, Standard Bank Plc will be responsible for managing the CDM cycle and coordinating the issuance of CERs. In regards to the process of inclusion of CPAs, it is stated to the “CPA Inclusion Management System” /83/ by Standard Bank in detail.</p> <ul style="list-style-type: none"> ➤ Detailed process maps and process descriptions for CPA inclusion processes (e.g. procedures for technical review of inclusion of CPAs) ➤ Description and detail of all CPA inclusion process supporting documents and tools ➤ Clear definition of roles and responsibilities of personnel involved in the process of CPA inclusion 	<p>OK Confirmed the “CPA Inclusion Management System” by Standard Bank and it is compliant with the standard.</p>
<p><Standard Para.19.(b)> Records of arrangements for training and capacity development for personnel;</p>	<p>The procedures of arrangements for training and capacity development of personnel also are stipulated on the “CPA Inclusion Management System” /83/. As the recorded evidence, Scatec Solar (CPA developer) provided the training program for other project. This program will be used as a basis for this proposed project by Scatec Solar.</p>	<p>OK Confirmed the “CPA Inclusion Management System” by Standard Bank and it is compliant with the standard.</p>
<p><Standard Para.19.(c)> Procedures for technical review of inclusion of CPAs;</p>	<p>These procedures are stipulated on the process of “CPA-DD Development Sub-process” in the “CPA Inclusion Management System”. (e.g. Onsite visit data collect, Environmental analysis, Local stakeholder consultation, Draft CPA-DD, Final CPA-DD)</p>	<p>OK Confirmed the “CPA Inclusion Management System” by Standard Bank and it is compliant with the standard.</p>
<p><Standard Para.19.(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);</p>	<p>Standard Bank will have a recordkeeping system which will maintain data relating to each CPA such as project developer details, site addresses, and GPS coordinates to avoid double counting.</p>	<p>OK Confirmed the PoA-DD and it is compliant with the standard.</p>
<p><Standard Para.19.(e)> Records and documentation control process for each CPA under the PoA;</p>	<p>The record keeping and document processes are based on standards for quality management systems (e.g. ISO 9001) documentation requirements, which consist of:</p> <ul style="list-style-type: none"> ➤ Establishing and maintaining a Quality Manual ➤ Procedures for control of 	<p>OK Confirmed the “CPA Inclusion Management System” by Standard Bank and it is compliant with</p>

	documents ➤ Procedures for control of records All documents and records will be uniquely identified and tagged uniquely to a CPA.	the standard.
<Standard Para.19.(f)> Measures for continuous improvements of the PoA management system;	As per standards for quality management systems (e.g. ISO 9001), the operator of CPA Inclusion Management System will plan and implement monitoring and improvement processes needed to achieve the following: ➤ Demonstrate conformity and quality of products to agreed specification; ➤ Ensure conformity to the management system; ➤ Continually improve the management system; Results from continuous improvement measurement and monitoring activities will be analyzed by the operator and resulting action undertaken to improve the effectiveness and efficiency of the system.	OK Confirmed the PoA-DD and it is complied with the standard.
<Standard Para.19.(g)> Any other relevant elements;	--	--

JCI has confirmed whether the eligibility criteria are sufficiently objective and comprehensive to permit the assessment of the inclusion of CPAs in the PoA.

8. Application of the selected baseline and monitoring methodology

8.1 Application of multiple methodologies

This project activity consists of the large scale plants by renewable energy sources (wind power and solar power). So the emission reductions are calculated according to the consolidated CDM methodology “ACM0002: Consolidated baseline methodology for grid-connected electricity generation from renewable sources” (Version 12.3.0) /51/.

JCI confirmed that no interactive effects will occur when calculating the emission reductions for wind and solar plants, so as described in paragraph 32 of “Standard for demonstration of additionality, development of eligibility criteria and application of multiple methodologies for programme of activities” (Version 02.0) /64/, this methodology ACM0002 can be applied to without pre-approval.

8.2 Applicability of selected methodology to the project activity

JCI has judged that application of “ACM0002: Consolidated baseline methodology for grid-connected electricity generation from renewable sources” (Version 12.3.0) /51/ to the project activity is appropriate by the following steps and viewpoints;

1) Document Review

JCI has reviewed the Technical Report/9/, EIA report/10/ of the proposed project, and project related documentation and confirmed the proposed project is a newly installed solar PV power plant where no renewable energy power plant operating prior to the implementation of the project activity.

2) On-site visit dated 6 - 8 February 2012

JCI has confirmed that the newly solar PV power plant which will be connected to the national grid has been scheduled as a large scale plant in Northern Cape Province by meeting with the project participants during the on-site visit.

JCI has also confirmed that the plant is designed with national and local laws and regulations.

As shown in A.2 of the PoA-DD/1/, the applicability is sufficiently demonstrated that the project activity meets with the applicable conditions specified by the methodology ACM0002 (Version 12.3.0) /51/.

- 1) It is a newly build wind and/or solar power plant and connects to the national grid Eskom.
- 2) No renewable power plant was operated prior to the implementation of the project activity.
- 3) The project does not involve an on-site switch from fossil fuels to a renewable source.

JCI has validated and concluded that applicability of methodology “ACM0002: Consolidated baseline methodology for grid-connected electricity generation from renewable sources” (Version 12.3.0) /51/ to the project activity is appropriately demonstrated and justified in the PoA, CPA-DD /1//3/.

8.3 Boundary

JCI confirms that the project boundary is appropriate for this project activity from the following steps and viewpoints:

1) Document review

JCI has reviewed the Technical Report/9/ and has confirmed that the project activity is to construct a new solar PV power plant, and generated power is to be delivered to the Eskom national grid through the substation.

2) On-site visit on 6 - 8 February 2012

JCI has confirmed the electricity delivery conditions through the interviews with the project participants.

The boundary of the PoA is defined as the geographical area within which all the implemented the CPAs included in the PoA. All wind and solar activities in the CPAs included in this PoA will be installed within the borders of Republic of South Africa. Therefore, the boundary of the PoA is defined as Republic of South Africa.

The programme will be designed so that individual CPAs can be included in the PoA within Republic of South Africa. Each CPA will be identified uniquely with the help of addresses and GPS coordinates. A typical CPA will consist of either wind and/or solar power unit(s) in specific areas.

As the programme will replace grid electricity and hence the project boundary will include all the power plants connected physically to the national electricity system. The CO₂ emissions from electricity generation in fossil fuel fired power plants that are displaced due to the PoA are included under this programme.

JCI checked that the system boundary and associated emissions for the project activity and the conclusion is summarized in the Table 18 below.

Table 18. Check for System Boundary and Emissions

Source		GHGs	Requirement for Methodology	POA, CPA-DD	Description	Check
Baseline scenario	Source 1 CO ₂ emissions from electricity generation in fossil fuel fired power plants that are displaced due to the project activity.	CO ₂	Yes	Yes	Main Emissions from electricity generation in power plant	OK
		CH ₄	No	No	Minor emission source	OK
		N ₂ O	No	No	Minor emission source	OK
Project scenario	Source 1 For geothermal power plants, fugitive emissions of CH ₄ and CO ₂ from noncondensable gases contained in geothermal steam	CO ₂	Yes	No	Not applicable, as no geothermal power included under this PoA.	OK
		CH ₄	Yes	No	Not applicable, as no geothermal power included under this PoA.	OK
		N ₂ O	No	No	Not applicable, as no geothermal power included under this PoA.	OK
	Source 2 CO ₂ emissions from combustion of fossil fuels for electricity generation in solar thermal power plants and geothermal power plants	CO ₂	Yes	[Yes or No]	[Add justification.]	OK
		CH ₄	No	No	As per ACM002. Minor emission source.	OK
		N ₂ O	No	No	As per ACM002. Minor emission source.	OK
	Source 3 For hydro power plants, emissions of CH ₄ from the reservoir	CO ₂	No	No	Not applicable, as no hydro power included under this PoA.	OK
		CH ₄	Yes	No	Not applicable, as no hydro power included under this PoA.	OK
		N ₂ O	No	No	Not applicable, as no hydro power included under this PoA.	OK

JCI validated all potential sources of GHG emissions within the boundary of proposed project and concluded that all sources, which are expected to contribute more than 1% of the overall expected average annual emissions reductions are included in the estimation of the PoA-DD /1/.

And also, JCI concluded that the project boundary is appropriately defined in the PoA-DD/1/ and fully complies with the methodology ACM0002 (Version 12.3.0) /51/.

8.4 Description of baseline scenario

JCI confirmed that the baseline scenario for this project is appropriate from the following steps and viewpoints:

1) Document review

JCI has reviewed the Revised Technical Report /9/ and has confirmed that the project activity is to construct a new solar PV power plant, and generated power is to be delivered to national grid Eskom through the substation.

2) On-site visit on 6 - 8 February 2012

JCI has confirmed that the electricity delivery conditions through the interviews with the project participants.

Identification of baseline scenario should be complied with “Identification of the baseline scenario” of the methodology ACM0002 (Version 12.3.0) /51/. JCI has assessed the baseline scenario for this project based on the document review and then the on-site visit, and confirmed with related documents such as the Revised Technical Report /9/.

The PoA, CPA-DD /1//3/ developed the following three (3) possible alternative scenarios;

Scenario A: The proposed project activity undertaken without being registered as a CDM project activity

Scenario B: Other plausible and credible alternative scenario to the project activity scenario, including the common practice in the relevant sector, which delivers output or services

Scenario C: Continuation of the current situation

As a result, the most economical and viable alternative is Scenario C, the continuation of the current situation, which comprises the generation of electricity from fossil fuels, predominantly coal, by the former industry monopoly – national grid company Eskom. This is the cheapest, most easily accessible source of energy in South Africa and in the absence of the proposed project activity, fossil fuels would continue to be used in the generation of energy. Furthermore without the proposed CDM PoA /1/, it is unlikely that there will be an autonomously generated improvement in the development of renewable energy projects on the same scale as the proposed PoA /1/.

The emission factor of the grid of Eskom was calculated by combined margin (CM), consisting of the combination of operating margin (OM) and build margin (BM) according to the procedures prescribed in “Tool to calculate the emission factor for an electricity system” (Version 02.2.1) /52/.

Complying with VVS (Version 03.0) paragraph 94 /50/, JCI hereby confirmed that:

- a) All the assumptions and data used by the project participants are listed in the PoA, CPA-DD /1//3/, including their references and sources;
- b) All documentation used is relevant for establishing the baseline scenario and correctly quoted and interpreted in the PoA, CPA-DD /1//3/;

- c) Assumptions and data used in the identification of the baseline scenario are justified appropriately, supported by evidence and can be deemed reasonable;
- d) Relevant national and/or sectoral policies and circumstances are considered and listed in the PoA, CPA-DD /1//3/;
- e) The approved baseline methodology has been correctly applied to identify the most reasonable baseline scenario and the identified baseline scenario reasonably represents what would occur in the absence of the proposed CDM project activity.

JCI has validated and concluded that the baseline scenario and emissions are appropriately defined complying with ACM0002 (Version 12.3.0) /51/.

8.5 Estimation of emission reductions of a generic/specific CPA

JCI validated that the Part II. Generic component project activity (CPA) of PoA-DD /1/ explains how the methods or methodological steps, in the selected methodology ACM0002 /51/, for calculating baseline emissions, project emissions, leakage emissions and emission reductions are applied to the generic CPA.

And JCI confirmed that the methodology was appropriately applied, also regarding the concrete figures, referring to the specific of the CPA (CPA-001) /3/.

8.5.1 Explanation of methodological choice

JCI validated for the algorithms and/or formulae though taking into consideration the following steps in accordance with the paragraphs 97, 98 and 99 of VVS /50/.

1) Step-1 Validation work:

JCI has verified the data and parameters used in the equations, including references to any other data sources used.

2) Step-2 Results of Validation work (Providing the opinion of validation):

JCI has provided the opinion by taking the following steps to assess whether the algorithms and/or formulae used to determine emission reductions for CO₂ abatement of the project activity is appropriate or not.

- (a) All assumptions and data used by the project participants that are listed in the POA, CPA-DD /1//3/, including their references and sources are appropriate.
- (b) All documentation used by project participants as the basis for assumptions and source of data is correctly quoted and interpreted in the PoA, CPA-DD /1//3/;
- (c) All values used in the PoA, CPA-DD /1//3/ are considered reasonable in the context of the proposed CDM project activity;
- (d) The baseline methodology has been applied correctly to calculate project emissions, baseline emissions, leakage and emission reductions;
- (e) All estimates of the baseline emissions can be replicated using the data and parameter values provided in the PoA, CPA-DD /1//3/;

JCI confirmed the emission reduction calculation through the excel spread sheet for ER calculation, Emission Reduction CPA-001/4/, and concluded that the ER calculation was correctly conducted.

8.5.2 Data and parameters that are to be reported ex-ante

JCI confirmed that the PoA-DD/1/ fully complies with the methodology ACM0002 (Version 12.3.0) /51/ and “Tool to calculate the emission factor an electricity system”/52/ based on the baseline defined as per the applied methodology. The calculations were conducted to work out the project emissions based on the methodology/51/ and then work out the emission reductions with the 6-step method specified by the relevant Tool/52/.

- Step 1. Identify the relevant electricity systems;
- Step 2. Choose whether to include off-grid power plants in the project electricity system (optional);
- Step 3. Select a method to determine the operating margin (*OM*);
- Step 4. Calculate the operating margin emission factor according to the selected method;
- Step 5. Calculate the build margin (*BM*) emission factor;
- Step 6. Calculate the combined margin (*CM*) emissions factor;

JCI has validated and concluded that the data and parameters used in the calculations are correctly interpreted and applied.

1) Step 1. *Identify the relevant electricity systems;*

In South Africa, Eskom dominates the electricity supply market, over 96% of electricity. So the grid system is a nationwide grid system, and the fuel consumption as well as net electricity generation data is available for all Eskom systems.

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

The project electricity system (Eskom system) only contains grid power plants, thus Option I was chosen for the proposed project.

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

The method (Option (a)) Simple *OM* method was chosen for the proposed project. The low-cost/must-run resources constitute less than 50% of total grid generation in South Africa. As described in CPA-DD/3/, only coal power plants has been producing electricity in the last 5 years.

JCI confirmed the data of Historic fuel consumption per plant by Eskom in PoA Grid Factor Calculation /2/.

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

The simple OM emission factor is calculated as the generation-weighted average CO₂ emissions per unit net electricity generation (tCO₂/MWh) of all generating power plants serving the system, not including low-cost/must-run power plants units.

The simple OM is calculated by of the following two Options:

Option A: Based on data on the net electricity generation and a CO₂ emission factor of each power unit, or

Option B: Based on the total net electricity generation of all power plants serving the system and the fuel types and total fuel consumption of the project electricity system.

Because the necessary data for Option A is available, Option A “*Calculation based on average efficiency and electricity generation of each plant*” is used and then the simple OM emission factor is calculated.

CO₂ emissions per unit net electricity generation (tCO₂/MWh) of all generating power plants serving the system during the three most recent years with reference to the data of power plants in South Africa national grid in 2008, 2009, and 2010 issued by Eskom.

As a result, the OM emission factor $EF_{grid,OM,y}$ is calculated to be 0.9771 tCO₂/MWh, as shown in the table of PoA Grid Factor Calculation /2/, fully complying with the methodology /51/ and the tool /52/.

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

According to the relevant tool /52/, Option 1 is chosen for the vintage of data.

As per the procedure of the tool /52/, $SET_{sample-CDM->10yrs}$ is chosen as the sample group of power unit.

In South Africa the data of the power generation, the fuel types (coal, kerosene and gas) and its consumption are available.

As a result, $EF_{grid,BM,y}$ has been correctly worked out to be 0.9579 tCO₂/MWh complying with the relevant methodology/51/ and the tool/52/, which are shown in the table of PoA Grid Factor Calculation /2/.

6) Step 6. *Calculate the combined margin (CM) emissions factor;*

JCI has confirmed that CM emission factor is calculated to be 0.9721 tCO₂/MWh, in the table of PoA Grid Factor Calculation /2/ which correctly follows the equation (13) of the emission tool/52/. The default weight of 75% for OM and 25% for BM is appropriately applied for the calculation of CM emission factor.

JCI also has confirmed that the above calculations can be replicated based on equations of the emission tool/52/ and data listed in table of PoA Grid Factor Calculation /2/ has been completely in accordance with the above calculation result.

As an emission factor of the first real CPA (SSL CPA-001), the same CM emission factor (0.9721 tCO₂/MWh) has been selected.

8.5.3 Ex-ante calculation of emission reductions

a) Project emission

According to the applied methodology ACM0002 (Version 12.3.0) /51/, most of the project emissions are considered zero because the project activity is a renewable energy (Solar plants and Wind plants). However some CPAs may involve project emissions due to fossil fuel consumption, geothermal power plants and water reservoirs. In these cases, the emissions shall

be calculated as per the “Tool to calculate project or leakage CO₂ emissions from fossil fuel combustion” /53/.

In the case of CPA (SSL CPA-001), as described in the CPA-DD/3/, the project activity is a PV solar plant and nor project emission occur for this project and hence $PE_y = 0$. In addition, JCI confirmed no significant fossil fuel based equipment is planned within the project site during the on-site assessment.

JCI has confirmed that PE_y of CPA (SSL CPA-001) is zero as a result. ($PE_y = 0$)

b) Leakage emissions

JCI has confirmed that the PoA-DD/1/ estimates no leakage associated with the project activity appropriately based on the methodology ACM0002 (Version 12.3.0) /51/, which requires to consider leakage emissions only when equipment transfer is involved. ($LE_y = 0$)

c) Emission reductions

Accordingly ER_y (Emission Reduction in year y) can be obtained as follows for CPA-001 as described in CPA-DD /3/:

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

$$BE_y = 80,907 \text{ tCO}_2$$

Baseline emissions in year y

$$EG_{PJ,y} = 83,228 \text{ MWh}$$

Quantity of net electricity generation that is produced and fed into the grid in year y
(Detail data: refer to Table 14)

$$EF_{grid,CM}$$

Combined margin CO₂ emission factor

$$= EF_{grid,OM} * 75\% + EF_{grid,BM} * 25\%$$

$$= 0.9771 \text{ tCO}_2/\text{MWh} \times 0.75 + 0.9579 \text{ tCO}_2/\text{MWh} \times 0.25$$

$$= 0.9721 \text{ tCO}_2/\text{MWh}$$

Therefore, Emission Reduction for CPA-001 is;

$$ER_y = BE_y - PE_y - LE_y$$

$$ER_y = 80,907 \text{ tCO}_2$$

Emission Reduction in year y

$$BE_y = 80,907 \text{ tCO}_2$$

Baseline emissions in year y

$$PE_y = 0$$

Project emission in year y

$$LE_y = 0$$

Leakage emission in year y

JCI confirmed the details of the calculation of emission reductions by CPA-001 described above reviewing the Emission Reduction CPA-001 /4/ which is attached as part of CPA and concluded the above procedure and the results are appropriate.

8.6 Monitoring plan

JCI has assessed the monitoring plan through 1) the document review including the relevant methodology/51/ and tool/52/, the PoA-DD/1/, the CPA-DD/3/, and 2) the on-site visit interviews with project participants and the national grid company Eskom.

8.6.1 Parameters to be monitored ex-post

In the PoA-DD/1/, the emission factor of the project is determined ex-ante. Therefore, the quantity of electricity supplied by the project to the grid in year y and the quantity of electricity imported from the grid by the project in year y which is used to calculate emission reductions that will be monitored.

The CPA-DD/3/, in section D.7.1. Data and parameters to be monitored, specifies to monitor the following parameters ex-post:

- $EG_{\text{facility}, y}$: Quantity of net electricity generation supplied by the project plant/unit to the grid in year y.
Direct, physical measurements as recorded by metering equipment (electricity meter).
Continuous measurement and at least monthly recording.
Cross check measurement results with records for sold electricity.
SSL CPA-001: 83,228 MWh/y (annual average)
- $EG_{\text{imported}, y}$: Quantity of electricity imported into the power plant/used by the power plant and supplied by the grid in year y.
Direct, physical measurements as recorded by metering equipment (electricity meter).
Continuous measurement and at least monthly recording.
Cross check measurement results with records for purchased electricity.
SSL CPA-001: 608 MWh/y (annual average)

JCI concludes that the monitoring plan based on the parameters above can be deemed appropriate.

8.6.2 Monitoring of $EG_{\text{facility}, y} / EG_{\text{imported}, y}$

The implementation plan of monitoring of the parameter $EG_{\text{facility}, y} / EG_{\text{imported}, y}$ has already been covered in 8.6.1 above.

Details regarding the measuring equipment and monitoring organization are as follows:

a) Arrangements of measuring equipment for $EG_{\text{facility}, y} / EG_{\text{imported}, y}$

The calibration frequency will be respected as per the manufacturer's requirements. The CPA implementing entity will store all the data in an electronic database, and the data shall be kept for 2 year after the crediting period. Primary data will be stored by the implementing entities.

b) Monitoring organization

The CME will be responsible for the preparation of the Monitoring Reports and communication with the DOE during verification activities. The Monitoring Report will compile all required monitoring information in order to allow the DOE to verify the emission reductions for each monitoring period of each individual CPA. The Monitoring Report will unambiguously set out the data on emission reductions generation by each CPA during the monitoring period consistent with the requirements of this PoA-DD and the corresponding CPA-DD. Record keeping procedures undertaken by the CME will ensure

that the data attributed to a monitoring period can be clearly attributed to an individual CPA and will furthermore prevent double counting of emission reduction data.

c) Monitoring manual

The CME will ensure that all persons that participate in the monitoring process will be suitably qualified and trained in the operation and maintenance of the CPA project activity. These persons will also receive training on the application of the monitoring plan.

The manual is not available yet since the project is still under the early stage of preparing for construction, so it will be available by the first verification.

The team members of the monitoring team will be trained before operation of the monitoring.

9. Environmental impacts

The Environmental Impact Assessment (EIA) for the project activity was conducted by Sustainable Development Project cc to ensure that the project complies with relevant national, regional and local regulations. The EIA report was issued in August 2011/10/, and then approved by Department of Environmental Affairs on 13 October 2011/32/.

The EIA report refers to anticipated environmental impacts by the project activity both during the construction period and after the operation start, and suggested mitigation measures against anticipated air pollution, water pollution, noise, solid waste and ecological environment. No significant ecological impact on the local area was anticipated.

Through the interviews with local governments during the on-site visit, JCI has confirmed that appropriate mitigation measures had been taken as described in the CPA-DD/3/ and no serious issues were found.

JCI validated and concluded that the project participant took necessary mitigation measures and anticipated environmental impacts by the project activity are controlled at a minimum level.

10. Local stakeholder consultation

An extensive public participation process has been followed with regard to this project. The process included the following:

1. Identification of interested and affected parties
2. Placement of advertisements in local newspaper (*The Echo*) on the 9th of September 2010
3. Direct provision of written material and electronic material to identified interested and affected parties
4. Direct invitation to meeting for interested parties
5. Site notices
6. Public meeting held on 22 October 2010



7. Compilation of minutes of meeting
8. Provision of “response form”

Comments and concerns relating to the proposed development were considered minimal, and were reported in the Environmental Impact Report /10/ by Sustainable Development Projects cc (EIA author).

Based on the above findings, JCI judges that the project activity, supported by local stakeholders, gives no significant adverse impacts on local environment, and instead is expected to contribute to the development of local economy and the improvement of living conditions of local residents.

Appendix A Protocol for CDM (PoA) Project

Abbreviation

CAR	Corrective Action Request	CL	Clarification Request	FAR	Forward Action Request,
VVS	Validation and Verification Standard			NA	Not Applicable
Tbv	To be verified	PA	Project Activities	PP	Project Participants
PoA	Programme of Activities	CPA	Component Project Activity	PoA GL, CPA GL	PoA-DD, CPA-DD Completion Guidelines
Std Add.	Standard for Demonstration of Additionality, Eligibility Criteria and application of Multiple methodologies for Programme of Activities.				
Std. Sampling	Standard for Sampling and Surveys for CDM Project Activities and Programme of Activities				

Table 1. Requirements Checklist (PoA)

(OK/No/NA/Tbv)

PoA-DD Section	Check Points (according to EB 67 Annex 28 “ Guidelines for Completing The Programme Design Document Form For CDM Programs of Activities”(Ver.02.0)	Reference GL,DD	Check Comment	CAR, CL, No.
	General guidelines(PoA)			
	Title of the project activity:			
1.	Confirm that the PoA-DD Form applies version 02.0 of F-CDM-PoA-DD. (Guideline Para.8)	PoA GL	OK	
2.	Confirm that the PoA-DD is completed in English. (all attached documents must be <u>in English</u>) (Guideline Para.11)	PoA GL	OK	
3.	Confirm that the PDD is completed using the same format without modifying its font, headings or logo, and without any other alteration to the form. (Guideline Para. 12)	PoA GL	OK	
4.	Confirm that the tables and their columns in the PoA-DD are not modified or deleted. (Guideline Para. 13)	PoA GL	OK	
5.	Confirm that the blanks are left intentionally for the “not applicable section” of the PoA-DD. (Guideline Para. 14)	PoA GL	OK	
6.	Confirm that the values in the PoA-DD are presented in an internationally recognized format.{For example: digits grouping in thousands and a decimal point with a dot (.), not with a comma (,)} (e.g 1,000 representing one thousand and 1.0 representing one. Confirm that the units used for weights/currency are in S.I. units/norms (thousand/million)	PoA GL	OK	
PART I.	Programme of activities (PoA)			
Section A.	General description of PoA			
A.1	Title of the PoA:			
	Confirm the followings related to the title of the PoA.	PoA GL	OK	
(a)	(a) the title of the PoA.		OK	
(b)	(b) the version number of the PoA-DD.		OK	

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Table 1. Requirements Checklist (PoA)

(OK/No/NA/Tbv)

PoA-DD Section	Check Points (according to EB 67 Annex 28 “ Guidelines for Completing The Programme Design Document Form For CDM Programs of Activities”(Ver.02.0)	Reference GL,DD	Check Comment	CAR, CL, No.
(c)	(c) the date the PoA-DD in DD/MM/YYYY.		OK	
A.2.	Purpose and general description of the PoA:			
(a)	Confirm that the description is provided on the policy/measure or stated goal of the PoA.	PoA GL	OK	
(b)	Confirm that the description is provided on the framework for the implementation of the PoA.	PoA GL	OK	
(c)	Confirm that the description is provided on the voluntary action by the CME for PoA.	PoA GL	OK	
A.3	CMEs and participants of PoA			
(a)	Confirm that the identification of the CME is provided for the PoA.	PoA GL	OK	
(b)	Confirm that the description is provided on Project participants of the PoA.	PoA GL	OK	
A.4	Party(ies)			
(a)	Confirm that the Party(ies), PPs and CMEs are listed in the table.	PoA GL	OK	
(b)	Confirm that the “(host)” is indicated in the table.	PoA GL	OK	
(c)	Confirm that the name of PPs are consistent with the contact information in Appendix 1	PoA GL	OK	
A.5.	Physical/ Geographical boundary of the PoA			
(a)	Confirm that the description is provided on the defined boundary of PoA as a geographical area. (e.g. municipality, region within a country, country or several countries)	PoA GL	OK	
A.6.	Technologies/measures			
A.6	Confirm that the description is provided on the technologies for the CPAs.	PoA GL	OK	
A.7.	Public funding of PoA			
A.7	Confirm that the description is provided on no public funding from Parties for PoA.	PoA GL	OK	
	If public fund has received for PoA, (a)Provide information on Parties providing public funding; (b)Attach in Appendix 2: the affirmation obtained from such Parties	PoA GL	NA	
Section B.	Demonstration of additionality and development of eligibility criteria			
B.1	Demonstration of additionality for PoA			
B.1.1	Confirm that additionality is demonstrated by establishing that in the absence of CDM, none of the implemented CPAs would occur.	Std Add. Para.7	OK	

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B.1.2	If PoA consists of one or more microscale projects as CPAs, confirm that PoA includes eligibility criteria derived from all the relevant requirements of the “ <i>Guidelines for demonstrating additionality of microscale project activities</i> ”.	Std Add. Para.8.	NA	
B.1.3	If PoA consists of one or more small-scale projects as CPAs, confirm that PoA includes eligibility criteria derived from all the relevant requirements of Guidelines on the demonstration of additionality of small-scale project activity.	Std Add. Para.9	NA	
B.1.4	If PoA consists of one or more large scale projects as CPAs, confirm that PoA includes eligibility criteria derived from all the relevant requirements contained in the additionality section of the large scale methodologies.	Std Add. Para.10	OK	
B.1.5	Confirm whether the CME demonstrates that compliance with the additionality-related eligibility criteria set in the PoA-DD ensures that all the relevant additionality-related guidelines, tools or any requirements embedded in the methodologies are met.	Std Add. Para.11	OK	
B.1.6	Confirm that for PoA involving combinations of technologies/measures and/or methodologies, the eligibility criteria relative to each of them are proposed to demonstrate additionality. Types of combinations as indicated in paragraph 29(a) to 29(d) of Std Add. shall be taken into account.	Std Add. Para.12	NA	
B.2	Demonstration of additionality			
B.2.1	Confirm that the additionality for the PA is demonstrated adequately in the PDD in accordance with the selected methodology.	Para. 101	OK	
B.2.2	Confirm whether the PP uses the “Tool for the demonstration and assessment of additionality”. If yes, confirm that it is in line with the methodology.	PDD GL	OK	
B.2.3	Confirm that the reliability and credibility of all data, rationales, assumptions, justifications and documentation provided by the PP to support the demonstration of additionality are assessed using local knowledge and sectoral and financial expertise.	Para. 102	OK	
B.2.4	If required by the applicable methodology, confirm that the tools and guidelines to demonstrate are considered for the additionality of proposed PA, and also confirm that .the specific complementary or alternative requirements included in the methodology for demonstrating the additionality.	Para. 103	OK	
B.3	Start Date of PoA/CPA			
B.3.1	Confirm that the start date of any CPA is not prior to the commencement of the validation of the PoA, which is the date the CDM-PoA-DD is first published for global stakeholder consultation.	Para. 193.	OK	
B.3.2	It is not required to assess prior consideration of CDM for PoA, as it is expected that no component of the programme will commence prior to the start date of validation.	Para. 194	OK	
B.4	Identification of alternatives (Para. 113-116)			
B.4.1	Confirm that the baseline scenario is prescribed in the methodology selected by the CDM PA.	Para. 113	OK	
	If no (no prescribed baseline scenarion), confirm that the PDD identified credible alternatives to the PA in order to determine the most realistic baseline scenario.		NA	

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B.4.2	Confirm that the list of alternatives given in the PoA-DD have been assessed and determined by considering the following conditions.	Para. 114	OK	
i	i. The list of alternatives includes the option that the PA is undertaken without being registered as CDM PA.		OK	
ii	ii. The list contains all plausible alternatives that are considered to be viable means of supplying the outputs or services that are to be supplied by the proposed CDM PA on the basis of local and sectoral knowledge.		OK	
iii	iii. The alternatives comply with all applicable and enforced legislation.		OK	
B.5	Investment analysis (Para. 117-123)			
B.5.1	Confirm whether the investment analysis is used to demonstrate the additionality of the CDM PA.	Para. 117	OK	
B.5.2	Confirm that the latest version of the “Guidelines on the assessment of investment analysis” been applied for assessment.	Para. 118	OK	
B.5.3	<Alternatives > Confirm that the PA is not the most economically or financially attractive alternative, or that it is not economically or financially feasible without CDM.	Para. 119	OK	
(a)	(a) Confirm that the PA would produce no financial or economic benefits other than CDM-related income. Confirm that the costs for the PA were documented. Confirm that there is at least one alternative which is less costly than the PA.		OK	
(b)	(b) Confirm that the PA is less economically or financially attractive than at least one other credible and realistic alternative.		OK	
(c)	(c) Confirm that the financial returns of the proposed PA would be insufficient to justify the required investment.		OK	
B.5.4	<Accuracy > Confirm that the accuracy of financial calculations for investment analysis was verified with the following means of validation.	Para. 120	OK	
(a)	(a.1) Confirm that the suitability of the financial indicator selected by the PP is assessed. (a.2) Confirm that thorough assessment of all parameters and assumptions used in calculating such financial indicators was conducted. (a.3) Confirm that the accuracy and suitability of these parameters were determined using available evidence and expertise in relevant accounting practices.		OK	
(b)	(b) Confirm that the parameters are cross-checked against third-party or publicly available sources, such as invoices or price indices.		OK	
(c)	(c) Confirm that the FSR, public announcements and annual financial reports related to the PA and the PP are as appropriate.		OK	

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(d)	(d) Confirm that the correctness of computations carried out and documented by thePP are adequate.		OK	
(e)	(e.1) Confirm that the suitability of selected variations in sensitivity analysis is adequate.		OK	
	(e.2) Confirm that the suitability of conditions and ranges for selected variations in sensitivity analysis are adequate.			
	(e.3) Confirm that the likelihood of the conditions for variations in sensitivity analysis are adequate.			
B.5.5	<Bench mark> Confirm that the suitability of benchmark applied in the investment analys is confirmed with the following means.	Para. 121	OK	
(a)	(a) Confirm that the type of benchmark applied is suitable for the type of financial indicator presented.		OK	
(b)	(b) Confirm that risk premiums applied in determining the benchmark reflect the risks associated with the project type or activity.		OK	
(c)	(c) Confirm that it is reasonable to assume that no investment would be made at a rate of return lower than the benchmark.		OK	
B.5.6	<FSR > Confirm that the PP rely on values from FSR that are approved by national authorities for PA.	Para. 122	OK	
B.5.7	If yes, confirm the suitability of values from FSR with the following means of validation.		OK	
(a)	(a.1) Confirm that the FSR is the basis for the decision to proceed with the investment in the project.		OK	
	(a.2) Confirm that the period of time between the finalization of the FSR and the investment decision is sufficiently short.		OK	
	(a.3) Confirm that it is unlikely in the context of the underlying PA that the input values would have materially changed.		OK	
(b)	(b) Confirm that the values used in the PDD and associated annexes are fully consistent with the FSR. If no, (the inconsistencies occurred), confirm that the appropriateness of the values in PDD is assessed.		OK	
(c)	(c.1) Confirm that the input values from the FSR are valid and applicable at the time of investment decision.		OK	
	(c.2) Confirm that this is confirmed on the basis of specific local and sectoral expertise, by cross-checking or other appropriate means.		OK	
B.6	Barrier analysis (Para. 124-127)			
B.6.1	Confirm that barrier analysis is used to demonstrate the additionality of the proposed CDM PA. If yes (barrier analysis is used),	Para. 124	OK	
B6.2	Confirm whether the PA faces barriers that:		OK	
(a)	(a) prevent the implementation of this type of proposed PA.			

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(b)	(b) do not prevent the implementation of at least one of the alternatives..		OK	
B.6.3	Confirm whether there are issues that have direct impact on the financial returns of the PA other than:	Para. 125	OK	
(a)	(a) risk related barriers, for example risk of technical failure, that could have negative effects on financial performance.		OK	
(b)	(b) barriers related to the unavailability of sources of finance for the PA. If yes, confirm that these issues cannot be considered as barriers and shall be assessed by investment analysis.		OK	
B.6.4	Confirm that following two-step process are applied to assessing the barrier analysis .	Para. 126	OK	
(a)	(a) Confirm that the barriers are real through the following means.		OK	
	<ul style="list-style-type: none"> Confirm that the barriers listed in the PDD exist by using the available evidence and/or conducting interviews with relevant individuals (including members of industry associations, government officials or local experts if necessary). Confirm that the existence of barriers is substantiated by independent sources of data such as relevant national legislation, surveys of local conditions and national or international statistics. Confirm that the existence of a barrier is substantiated only by the opinions of the project participants. 		OK	
	If yes, this barrier can not be considered as adequately substantiated.		OK	
	- If it is considered, on the basis of its sectoral or local expertise, that a barrier is not real or is not supported by sufficient evidence, confirm that it shall raise a CAR to have reference to this barrier removed from the project documentation.		OK	
(b)	(b) Confirm that the barriers prevent the implementation of the PA but not the implementation of at least one of the possible alternatives:through the following means.		OK	
	<ul style="list-style-type: none"> Confirm, by applying the local and sectoral expertise, that a barrier or set of barriers would prevent the implementation of the PA. Confirm that a barrier or set of barriers would not equally prevent implementation of at least one of the possible alternatives, in particular the identified baseline scenario. 		OK	
			OK	
B.7	Common practice analysis (Para. 128-130)			
B.7.1	Confirm that a common practice analysis is used to demonstrate the additionality of the proposed CDM PA.	Para. 128	OK	
	If yes (a common practice analysis is used),		OK	
B.7.2	Confirm that the PP have conducted a common practice analysis.	Para. 129	OK	
(a)	(a) Confirm, by using official sources and local and sectoral expertise, that: <ul style="list-style-type: none"> the geographical scope (e.g. the defined region) of the common practice analysis is appropriate for the assessment of common practice related to the PA’s technology or industry type. 		OK	

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(b) (c)	<ul style="list-style-type: none"> for certain technologies, the relevant region for assessment will be local and for others it may be transnational/global. the defined region other than the entire host country was chosen. <p>If, yes confirm that the explanation of why this region is more appropriate.</p> <p>(b) Confirm that similar and operational projects (e.g. using similar technology or practice), other than project activities, have been undertaken in the defined region.</p> <p>(c) Confirm that similar and operational projects, other than project activities, are already “widely observed and commonly carried out” in the defined region.</p> <p>If yes for above (b) or (C), confirm that there are essential distinctions between the proposed PA and the other similar activities.</p>		OK	
			OK	
			OK	
			OK	
			OK	
B.7.3	Confirm that the common practice analysis is assessed by applying the latest version of “Guideline for Common Practice”.	Tool for Additionality	OK	
B.7.4	<p>Confirm that the stepwise approach for Common Practice in the Guideline is applied as follows.</p> <ul style="list-style-type: none"> Step 1: Calculate applicable output range as +/-50% of the design output or capacity of the PA. 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 PA and have started commercial operation before the start date of the project. Note their number N_{all}. Registered CDM project activities 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 PA. 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 PA in all plants that deliver the same output or capacity as the proposed PA. The proposed PA is a “common practice” within a sector in the applicable geographical area, if the factor F is greater than 0.2 and $N_{all}-N_{diff}$ is greater than 3. 	Tool for Additionality	OK	
			OK	
			OK	
			OK	
			OK	
B.8	Eligibility criteria for inclusion of a CPA in the PoA			
B.8.1	Confirm that the description is provided on the eligibility criteria.	PoA GL	OK	
B.8.2	Confirm that the CME developed eligibility criteria for inclusion of a CPA under the PoA and shall include these criteria in the PoA design documents (e.g. CDM-PoA-DD, CDM-SSC-PoA-DD).	Std Add. Para.13	OK	
B.8.3 (a)	Confirm that the eligibility criteria shall cover as a minimum the following (a) The geographical boundary of the CPA including any time-induced boundary ³ consistent with the geographical boundary set in the PoA;	Std Add. Para.13	OK	

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(b)	(b) Conditions that avoid double counting of emission reductions like unique identifications of product and end-user locations (e.g. programme logo);		OK	
(c)	(c) The specifications of technology/measure including the level and type of service, performance specifications including compliance with testing/certifications		OK	
(d)	(d) Conditions to check the start date of the CPA through documentary evidence;		OK	
(e)	(e) Conditions that ensure compliance with applicability and other requirements of single or multiple methodologies applied by CPAs;		OK	
(f)	(f) The conditions that ensure that CPAs meet the requirements pertaining to the demonstration of additionality as specified in Section A above;		OK	
(g)	(g) The PoA-specific requirements stipulated by the CME including any conditions related to undertaking local stakeholder consultations and environmental impact analysis;		OK	
(h)	(h) Conditions to provide an affirmation that funding from Annex I parties, if any, does not result in a diversion of official development assistance		OK	
(i)	(i) Where applicable, target group (e.g. domestic/commercial/industrial, rural/urban, grid-connected/off-grid) and distribution mechanisms (e.g. direct installation);		OK	
(j)	(j) Where applicable, the conditions related to sampling requirements for a PoA in accordance with the approved guidelines/standard from the Board pertaining to sampling and surveys;		NA	
(k)	(k) Where applicable, the conditions that ensure that every CPA in aggregate meets the small-scale or microscale threshold criteria ⁶ and remains within those thresholds throughout the crediting period of the CPA;		NA	
(l)	(l) Where applicable, the requirements for the debundling check, in case CPAs belong to small-scale (SSC) or microscale project categories.		NA	
B.8.4	Confirm that the eligibility criteria are verifiable.	Std Add.15.	OK	
B.8.5	Determine whether the eligibility criteria are sufficiently objective and comprehensive to permit the assessment of the inclusion of CPAs in the PoA.	Std Add.16.	OK	
B.8.6	Confirm that the CPAs shall be included in the PoA on the basis of the DOE’s confirmed eligibility of CPAs where applicable undertaking sample-based checks in accordance with the approved guidelines/standard from the Board.	Std Add.19	OK	
B.8.7	For PoAs that include combinations of technologies/measures and/or methodologies, confirm that distinct eligibility criteria are developed per combination as specified in paragraph 29(a) to 29(d), in Section C below.	Std Add.20.	NA	
B.9	Application of methodologies			
B.9.1	Confirm that the description is provided on the technology/measures and indicate the methodology chosen.	PoA GL	OK	

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PoA-DD Section	Check Points (according to EB 67 Annex 28 “ Guidelines for Completing The Programme Design Document Form For CDM Programs of Activities”(Ver.02.0)	Reference GL,DD	Check Comment	CAR, CL, No.
Section C.	Management system			
C.1	Confirm that the description is provided on the management system.	PoA GL	OK	
C.2	Confirm whether the management system described in the PoA design document (CDMPoA-DD) in accordance with the Standard for demonstration of additionality, development of eligibility criteria and application of multiple methodologies for programme of activities.	Std Add. Para. 186	OK	
C.3	Confirm whether the CME has 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.	Std Add Para. 17	OK	
C.4	Confirm that the CME develop and implement a management system that includes the following made available to the DOE at the time of validation of the PoA:	Std Add Para. 17	OK	
(a)	(a) A clear definition of roles and responsibilities of personnel involved in the process of inclusion of CPAs, including a review of their competencies		OK	
(b)	(b) Records of arrangements for training and capacity development for personnel		OK	
(c)	(c) Procedures for technical review of inclusion of CPAs		OK	
(d)	(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);		OK	
(e)	(e) Records and documentation control process for each CPA under the PoA		OK	
(f)	(f) Measures for continuous improvements of the PoA management system		OK	
(g)	(g) Any other relevant elements.		NA	
C.5	Confirm whether the elements of the management system referred to in paragraph 17 are appropriate as part of the validation of the PoA or as part of the validation of the CPA inclusion.	Std Add Para. 18	OK	
Section D.	Duration of PoA			
D.1.	Start date of PoA			
D.1	Confirm the start date is described.	PoA GL	OK	
D.2.	Length of the PoA			
D.2	Confirm that the length of the PoA is described in years.	PoA GL	OK	
Section E.	Environmental impacts			
E.1.	Level at which environmental analysis is undertaken			
E.1.1	Confirm whether the environmental analysis is performed at the PoA and/or the CPA level.	PoA GL	OK	
	If yes, Confirm that the environmental analysis is performed for the CPA.	PoA GL	OK	

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E.1.2	Confirm that the PP has conducted an analysis of the environmental impacts of the PA, including trans boundary impacts,	Para. 134	OK	
E.1.3	Determine that those impacts are considered significant by the project participants or the host Party.	Para. 134	OK	
E.2.	Analysis of the environmental impacts			
E.2.1	Confirm whether the analysis of the environmental impacts is undertaken or not.	PoA GL	OK	
E.2.2	If yes, Confirm the description on the analysis for the PoA.	PoA GL	OK	
E.3.	Environmental impact assessment			
E.3.1	Confirm if the EIA is required or not.	PoA GL	OK	
E.3.2	If EIA required, Confirm that the conclusions of EIA is provided.	PoA GL	OK	
E.3.3	Confirm that the EIA is required by the host Party, in accordance with the host Party’s procedures.	Para. 135	OK	
E.3.4	Confirm that the requirement for the EIA is confirmed by means of a document review and/or using local official sources and expertise.	Para. 136	OK	
Section F.	Local stakeholder comments			
F.1.	Solicitation of comments from local stakeholders			
F.1.1	Confirm whether the local stakeholder consultation process is performed at the PoA and/or the CPA level. If at PoA level, Confirm that the description is provided on process for local stakeholders in PoA-DD.	PoA GL PoA GL	OK OK	
F.1.2	Confirm that the PP has completed a local stakeholder consultation process.	Para. 138	OK	
F.1.3	Confirm that the due steps were taken to engage stakeholders and solicit comments for the PA.	Para. 138	OK	
F.1.4	Confirm, by means of document review and interviews with local stakeholders as appropriate, that : (a) comments have been invited from local stakeholders that are relevant for the PA.	Para. 139	OK	
F.2.	Summary of comments received			
F.2.1	Confirm that the summary is provided on stakeholders comments.	PoA GL	OK	
F.2.2	Confirm, by means of document review and interviews with local stakeholders as appropriate, that : (a) comments have been invited from local stakeholders that are relevant for the PA.	Para. 139	OK	
F.3.	Report on consideration of comments received			
F.3.1	Confirm that the consideration is provided for all comments received.	PoA GL	OK	
Section G.	Approval and authorization			

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G.1	Confirm whether the LoA is available at the time of submitting the PoA-DD to the DOE.	PoA GL	Tbv	CAR-1, 2
G.2	If yes, Confirm that the LOA is provided with following information. (a) approval of the:Party(ies)	PoA GL	Tbv	CAR-1, 2
	(b) authorization for CME from each Party.		Tbv	CAR-1, 2
Check for CPA-DD-Generic				
PART II.	Generic component project activity (CPA)			
1	Confirm that this section is used to demonstrate the application of the PoA framework to implement generic CPAs and to demonstrate that each type of CPA meets the requirements. Where multiple technologies/measures and/or multiple methodologies are being applied, confirm that the demonstration of the application of the PoA framework to implement generic CPAs must be done for each of the combinations of technologies/measures and/or methodologies. Therefore, repeat all of Part II of these guidelines for each of the combination of technologies/measures and/or methodologies.	PoA GL	OK	
Section A.	General description of a generic CPA			
A.1.	Purpose and general description of generic CPAs			
A.1.1	Confirm that the description is provided on purpose of generic CPA.	PoA GL	OK	
Section B.	Application of a baseline and monitoring methodology			
B.1.	Reference of the approved baseline and monitoring methodology(ies) selected			
B.1.1	Confirm that the following reference of the methodology is exact.	PoA GL	OK	
(i)	(i) reference number of the methodology.	PoA GL	OK	
(ii)	(ii) title of the methodology.	PoA GL	OK	
(iii)	(iii) version number of the methodology	PoA GL	OK	
B.1.1	Confirm that the following reference of the Tool is exact.	PoA GL	OK	
(i)	(i) title of the Tool	PoA GL	OK	
(ii)	(ii) version number of the Tool	PoA GL	OK	
B.2.	Application of methodology(ies)			
B.2.1	Confirm that the description is provided on application of methodology(ies) for generic CPA.	PoA GL	OK	
B.3.	Application of multiple methodologies for programmes of activities			
B.3.1	If the multiple methodologies are applied, confirm that the combinations of technologies/measures and/or methodologies for a PoA are eligible with demonstration on that there are no cross effects between the technologies/measures applied. ¹	Std Add. Para.28.	NA	

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Table 1. Requirements Checklist (PoA)

(OK/No/NA/Tbv)

PoA-DD Section	Check Points (according to EB 67 Annex 28 “ Guidelines for Completing The Programme Design Document Form For CDM Programs of Activities”(Ver.02.0)	Reference GL,DD	Check Comment	CAR, CL, No.
	(Combinations of approved methodologies contained in the “ <i>General guidelines to SSC CDM methodologies</i> ” may be applied without further assessment of cross effects, while other combinations can be applied with the analysis of cross effects.) Where such cross effects do exist, confirm that the CME proposes the methods to account for such cross effects using the “Procedures for requests to the executive board for deviation from an approved methodology” so as to ensure that the calculation of emission reductions is accurate.			
B.3.2	In other case of above combination,		NA	
B.4	Sources and GHGs			
B.4	Confirm that the description is provided in the table on the sources and GHGs in generic CPA boundary.	PoA GL	OK	
B.5	Description of baseline scenario			
B.5	Confirm that the description is provided on the baseline scenario for generic CPA.	PoA GL	OK	
B.6	Demonstration of eligibility for a generic CPA			
B.6.1	Confirm that the description is provided for the demonstration on how generic CPA meets the eligibility criteria of the PoA.	PoA GL	OK	
B.6.2	Confirm that the demonstration of the usability to assess the inclusion of CPAs in the generic CDM-CPA-DD.		OK	
B.7	Estimation of emission reductions of a generic CPA			
B.7.1.	Explanation of methodological choices			
B.7.1.1	Confirm that the description is provided for the explanation on how the methodological steps, in the selected methodology, are applied to generic CPA.	PoA GL	OK	
B.7.1.2	Confirm that the explanation was indicated on how the methods or methodological steps in the selected methodology are applied for calculating baseline emissions, project emissions, leakage and emission reductions.	PDD GL	OK	
B.7.1.3	Confirm that the steps taken and the equations and parameters applied in the PDD to calculate project emissions, baseline emissions, leakage and emission reductions comply with the requirements of the selected methodology including applicable tool.	Para. 96	OK	
B.7.1.4	Confirm that it is clearly stated in the PDD that the proper equations are used in calculating emission reductions.	PDD GL	OK	
B.7.1.5	Confirm that the methodology allows for selection between options for equations or parameters. If yes, confirm that adequate justification has been provided for selection. (based on the choice of the baseline scenario, context of the PA and other evidence provided) .	Para. 97	OK	
B.7.1.6	Confirm that the correct equations and parameters have been used, in accordance with the	Para. 97	OK	

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Table 1. Requirements Checklist (PoA)

(OK/No/NA/Tbv)

PoA-DD Section	Check Points (according to EB 67 Annex 28 “ Guidelines for Completing The Programme Design Document Form For CDM Programs of Activities”(Ver.02.0)	Reference GL,DD	Check Comment	CAR, CL, No.
	methodology selected including applicable tool.			
B.7.1.7	Confirm that the justification given in the PDD for the choice of data and parameters used in the equations is appropriate.	Para. 98	OK	
B.7.1.8	Confirm that data and parameters will not be monitored and will remain fixed throughout the crediting period.	Para. 98	OK	
B.7.1.9	If yes, confirm that; <ul style="list-style-type: none"> all data sources and assumptions are appropriate. calculations are correct as applicable to the PA. will result in an accurate or otherwise conservative estimate of the emission reductions. 		OK	
			OK	
			OK	
B.7.1.10	Confirm that data and parameters will be monitored or estimated on implementation and hence become available only after validation of the PA. If yes, confirm that the estimates provided in the PDD for these data and parameters are reasonable.	Para. 98	OK	
			OK	
B.7.2.	Data and parameters that are to be reported ex-ante			
B.7.2.1	Confirm that the tables are provided with the parameters for not monitoring.	PoA GL	OK	
B.7.3.	Ex-ante calculations of emission reductions			
B.7.3.1	Confirm that the blank tables are provided.	PoA GL	OK	
B.7.3.2	Confirm that the transparent ex-ante calculation of baseline emissions, project emissions (or, where applicable, direct calculation of emission reductions) and leakage expected during the crediting period is provided.	PDD GL	OK	
B.7.3.3	Confirm that the sample calculation for each equation used, substituting the values used in the equations is provided.	PDD GL	OK	
B.7.3.4	Confirm that the relevant electronic spread sheets for ex-ante calculation are provided.	PDD GL	NA	
B.7.3.5	Confirm that the additional background information and/or data are described in Appendix 4 adequately.	PDD GL	NA	
B.7.4.	Summary of the ex-ante estimation of emission reductions:			
B.7.4.1	Confirm that the summary of the results of the ex-ante estimation of emission reductions for all years of the crediting period is provided in the specified Table adequately.	PDD GL	NA	
B.7.4.2	Confirm that the crediting year and periods in the Table are consistent with those indicated in C.2.2. and C.2.3..	PDD GL	NA	
B.8	Application of the monitoring methodology and description of the monitoring plan			
B.8.1.	Data and parameters to be monitored by each generic CPA			

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Table 1. Requirements Checklist (PoA)

(OK/No/NA/Tbv)

PoA-DD Section	Check Points (according to EB 67 Annex 28 “ Guidelines for Completing The Programme Design Document Form For CDM Programs of Activities”(Ver.02.0)	Reference GL,DD	Check Comment	CAR, CL, No.
B.8.1.1	Confirm that the tables are provided with the parameters for monitoring.	PoA GL	OK	
B.8.1.2	Confirm that the specific information on how the data and parameters that need to be monitored would actually be collected during monitoring is indicated in the tables in Section B.7.1. of PDD adequately.	PDD GL	OK	
B.8.1.3	Confirm that any relevant further background documentation is provided in Appendix 5.	PDD GL	NA	
B.8.2.	Description of the monitoring plan for a generic CPA			
B.8.2.1	Confirm that the description is provided on the monitoring plan for a generic CPA.	PoA GL	OK	
B.8.2.2	Confirm that the detailed description of the monitoring plan of the PA is developed in accordance with the monitoring requirements of the selected methodology is provided in sections B.7.2..	PDD GL Para. 131	OK	
B.8.2.3	Confirm that the following two-step process is applied to assess compliance with the requirement of methodology.	Para. 132	OK	
(a)	(a) Confirm the compliance of the monitoring plan with the approved methodology and the applicable tool,		OK	
(i)	(i) Confirm that the list of parameters required by the selected approved methodology including applicable tool by means of document review are identified.		OK	
(ii)	(ii) Confirm that the description of the monitoring plan contains all necessary parameters.		OK	
(iii)	(iii) Confirm that the means of monitoring described in the plan complies with the requirements of the methodology including applicable tool.		OK	
(b)	(b) Confirm the implementation of the plan, ♦ by means of review of the documented procedures. ♦ by the interviews with relevant personnel. ♦ by any physical inspection of the project site.		OK	
(i)	(i) Confirm that the monitoring arrangements described in the monitoring plan are feasible within the project design.		OK	
(ii)	(ii) Confirm that the means of implementation of the monitoring plan, including the data management and quality assurance and quality control procedures, are sufficient to ensure that the emission reductions achieved by/resulting from the PA can be reported ex post and verified.		OK	
B.8.3	Sampling plan			
B.8.3.1	Confirm that the description of the sampling plan is provided in Section B.7.2. of PDD. (If data and parameters monitored in section B.7.1 are to be determined by a sampling approach)	PDD GL	NA	
B.8.3.2	Confirm that the parameter values are estimated by sampling in accordance with the requirements in the applied methodology separately and independently for each of the CPAs included in a PoA except when a single sampling plan covering a group of CPAs is undertaken applying 95/10 confidence /	Std Sampling Para. 19.	NA	

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Table 1. Requirements Checklist (PoA)

(OK/No/NA/Tbv)

PoA-DD Section	Check Points (according to EB 67 Annex 28 “ Guidelines for Completing The Programme Design Document Form For CDM Programs of Activities”(Ver.02.0)	Reference GL,DD	Check Comment	CAR, CL, No.
	precision for the sample size calculation.			
B.8.3.3	Determine whether the proposed sampling plans provide parameter value estimating in an unbiased and reliable manner including determining;	Std Sampling Para. 20.	NA	
(a)	(a) Whether the proposed sample size and sampling method is adequate to achieve the minimum confidence/precision requirements. DOEs shall be able to reproduce the sample size calculation in order to validate the proposed sample size.		NA	
(b)	(b) Whether the proposed sampling plan will ensure that samples are randomly selected and are representative of the population.		NA	
B.8.3.4	Verify whether the PP has implemented the sampling effort and surveys according to the validated sampling plans. The verification includes determining	Std Sampling 21.	NA	
(a)	(a) Whether the required confidence/precision has been met;		NA	
(b)	(b) Whether the selected sample was representative of the population.		NA	
B.8.3.5	As one means of validation/verification, confirm that sampling approach will be applied when the PP have not applied a sampling approach provided the indicated level of assurance in paragraphs below is met. This is for example the case of a multi-site CDM project activities or CDM PoAs applying small-scale or large scale methodologies.	Std Sampling 22.	NA	
B.8.3.6	Confirm that the acceptance sampling will be used as described in below steps as part of validation/verification activities to meet the requirements of paragraph 20 and 21 above:	Std Sampling 23.	NA	
(a)	(a) Take a random sample of the PPs sample records;		NA	
(b)	(b) Check. using own professional judgment . the acceptability (or otherwise) of the data for each record in the PPs sample records, and then;		NA	
(c)	(c) Based on the number of records where there is agreement, determine if the PPs sample records meet the requirements.		NA	
B.8.3.7	Confirm that the size of the sample for field/onsite check is specified in advance, using own professional judgment:	Std Sampling 24.	NA	
(i)	(i) Acceptable quality level or the Level of Assurance, i.e. the proportion of discrepancies between the PPs record and DOE record that are acceptable, e.g. 1%;		NA	
(ii)	(ii) The proportion of discrepancies between the PPs record and DOE record that are unacceptable, e.g. 10%.		NA	
B.8.3.8	Confirm that the maximum errors associated with the determination indicated in paragraph 24 shall remain at levels indicated below:	Std Sampling 25.	NA	
(i)	(i) A 5% chance that the DOE will wrongly reject the PPs records (i.e. reject a set of records of acceptable quality);16		NA	
(ii)	(ii) A 5% chance that the DOE will wrongly accept the PPs records (i.e. accept a set of records		NA	

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Table 1. Requirements Checklist (PoA)

(OK/No/NA/Tbv)

PoA-DD Section	Check Points (according to EB 67 Annex 28 “ Guidelines for Completing The Programme Design Document Form For CDM Programs of Activities”(Ver.02.0)	Reference GL,DD	Check Comment	CAR, CL, No.
	which is unacceptable)			
B.8.3.9	Determine the following parameters (n, c) using provisions under 24 to 25 the n: the size of the sample; c: the acceptance number If the number of discrepant records in the sample is observed greater than c, then the PPs set of records is not accepted. If the number of discrepant records is equal to or less than c then the PPs set of records is accepted.	Std Sampling 26.	NA	
			NA	
			NA	
B.8.4.	Other elements of monitoring plan			
B.8.4.1	Confirm that the operational and management structure including project operator in order to monitor emission reductions are described in Section B.7.3. of PDD.	PDD GL	NA	
B.8.4.2	Confirm that the will implement and any leakage generated by the PA is described.	PDD GL	NA	
B.8.4.3	Confirm that the responsibilities and institutional arrangements for data collection and archiving are indicated in Section B.7.3. of PDD.	PDD GL	NA	
Appendix 1	Contact information on entity/individual responsible for the PoA			
AP.1	Confirm that the following mandatory fields are filled in the table.	PoA GL	OK	
	♦ Organization	PoA GL	OK	
	♦ Street/P.O. Box	PoA GL	OK	
	♦ City, Postcode	PoA GL	OK	
	♦ Country, Telephone	PoA GL	OK	
	♦ Fax,	PoA GL	OK	
	♦ e-mail	PoA GL	OK	
	♦ Name of contact person	PoA GL	OK	
	Confirm the consistency between the organization listed in above table and that in section A.4.	PoA GL	OK	
Appendix 2	Affirmation regarding public funding			
AP.2	Confirm the description on no public funding from Parties for PoA.	PoA GL	OK	
(a)	If public fund has received for PoA, (a)Provide information on Parties providing public funding;	PoA GL	NA	
(b)	(b)Attach in Appendix 2: the affirmation obtained from such Parties		NA	
Appendix 3	Application of methodology(ies)			
AP.3	Confirm that further background information on the applicability of the selected methodology(ies) is provided.	PoA GL	NA	
Appendix 4	Further background information on ex ante calculation of emission reductions			

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Table 1. Requirements Checklist (PoA)

(OK/No/NA/Tbv)

PoA-DD Section	Check Points (according to EB 67 Annex 28 “ Guidelines for Completing The Programme Design Document Form For CDM Programs of Activities”(Ver.02.0)	Reference GL,DD	Check Comment	CAR, CL, No.
AP.4	Confirm that further background information on the ex-ante calculation of emission reductions is provided, and that this may include data, measurement results, data sources, etc.	PoA GL	NA	
Appendix 5	Further background information on the monitoring plan			
AP.5	Confirm that further background information used in the development of the monitoring plan is provided, and that this may include tables with time series data, additional documentation of measurement equipment, procedures etc. <ul style="list-style-type: none"> ♦ revision of existing methodologies to the Board ♦ publication in a newspaper ♦ interviews with the DNA ♦ earlier correspondence on the project with the DNA or the secretariat. 	PoA GL PoA GL PoA GL	NA NA NA	

Table 2. Requirements Checklist (PoA) for CPA-DD-Specific

		(OK/No/NA/Tbv)		
PoA-DD Section	Check Points (according to EB 66 Annex 16 “ Guidelines for Completing The Component project Activity Design Document Form”(Ver.01.0)	Reference GL, DD	Check Comment	CAR, CL, No.
	General guidelines			
1.	Confirm that the CPA-DD Form applies <u>version 01.0 of F-CDM-CPA-DD.</u> (Guideline Para.8)	CPA GL	OK	
2.	Confirm that the CPA-DD is completed <u>in English.</u> (all attached documents must be <u>in English</u>) (Guideline Para.13)	CPA GL	OK	
3.	Confirm that the CPA-DD is completed using the same format <u>without modifying its font, headings or logo,</u> and without any other alteration to the form. (Guideline Para. 14)	CPA GL	OK	
4.	Confirm that the tables and their columns in the CPA-DD are <u>not modified or deleted.</u> (Guideline Para. 15)	CPA GL	OK	
5.	Confirm that the <u>blanks are left intentionally</u> for the “not applicable section” of the CPA-DD (Guideline Para. 16)	CPA GL	OK	
	Specific guidelines			
Section A.	General description of CPA			
A.1.	Title of the proposed or registered PoA			
A.1	Confirm that the reference and title of the PoA to which this CPA is included.	CPA GL	OK	
A.2.	Title of the CPA			
A.2	Confirm the followings related to the title of the PoA.	CPA GL	OK	
(a)	(a) the title of the CPA and the unique identification of the CPA.	CPA GL	OK	
(b)	(b) the current version number of the CPA-DD.	CPA GL	OK	
(c)	(c) the date the CPA-DD in DD/MM/YYYY.	CPA GL	OK	
A.3	Description of the CPA			
A.3	Confirm that the description is provided on the technology and/or measures for the CPA.	CPA GL	OK	
A.4	Entity/individual responsible for CPA			
A.4	Confirm that the description is provided on the CPA implementers. (Name of PPs of PoA)	CPA GL	OK	
A.5.	Technical description of the CPA			
A.5	Confirm that the description is provided on the technologies for the CPA.	CPA GL	NO	CL-11,12,13,18,19
A.6.	Party(ies)			
A.6.1	Confirm that the Party(ies) CPA implementers (PPs) and involvement are listed in the table.	CPA GL	NO	CL-20
A.6.2	Confirm that the “(host)” is indicated in the table.	CPA GL	Tbv	
A.6.3	Confirm that the name of PPs are consistent with the contact information in Appendix 1	CPA GL	Tbv	
A.7.	Geographic reference or other means of identification			

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Table 2. Requirements Checklist (PoA) for CPA-DD-Specific

(OK/No/NA/Tbv)

PoA-DD Section	Check Points (according to EB 66 Annex 16 “ Guidelines for Completing The Component project Activity Design Document Form”(Ver.01.0)	Reference GL, DD	Check Comment	CAR, CL, No.
A.7	Confirm that the geographic reference is indicated for the CPA (within one page) . (e.g. map, registration number of GPS devices)	CPA GL	OK	
A.8.	Duration of the CPA			
A.8.1.	Start date of the CPA			
A.8.1	Confirm the start date is described in DD/MM/YYYY how the start date was determined..	CPA GL	NO	CL-1, 2
A.8.2.	Expected operational lifetime of the CPA			
A.8.2	Confirm that the expected operational lifetime of the CPA is described in years and months.	CPA GL	OK	
A.9.	Choice of the crediting period and related information			
A.9	Confirm that the type of crediting period is chosen in fixed or renewable.	CPA GL	OK	
A.9.1.	Start date of the crediting period			
A.9.1	Confirm that the expected start date of the crediting period of the CPA is described in DD/MM/YYYY.	CPA GL	OK	
A.9.2.	Length of the crediting period			
A.9.2.1	Confirm that the length of the crediting period is described.	CPA GL	OK	
A.9.2.2	Confirm that the CPA is limited to the end date of the CPA.	CPA GL	OK	
A.10.	Estimated amount of GHG emission reductions			
A.10.1	Confirm that the table is completed by ; <ul style="list-style-type: none"> the annual GHG emission reductions for each year of the crediting period the annual average and the total GHG emission reductions over the chosen crediting period. 	CPA GL	OK	
A.10.2	Confirm that the start date and end date of crediting period are consistent with those dates in Section A.9.1.	CPA GL	OK	
A.10.3	Confirm that the start date and end date of crediting period are consistent with those dates in table of Section D.6.4.	CPA GL	OK	
A.11.	Public funding of the CPA			
A.11.1	Confirm the description on no public funding from Parties for CPA.	CPA GL	OK	
A.11.2	If public fund has received for CPA, (a)Provide information on Parties providing public funding; (b)Attach in Appendix 2: the affirmation obtained from such Parties	CPA GL	NA	
A.12.	Confirmation for CPA			
A.12.1	Confirm the confirmation on that the CPA is not an individual registered CDM project nor a part of another registered CPA.	CPA GL	OK	
Section B.	Environmental analysis			
B.1.	Analysis of the environmental impacts			

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Table 2. Requirements Checklist (PoA) for CPA-DD-Specific

		(OK/No/NA/Tbv)		
PoA-DD Section	Check Points (according to EB 66 Annex 16 “ Guidelines for Completing The Component project Activity Design Document Form”(Ver.01.0)	Reference GL, DD	Check Comment	CAR, CL, No.
B.1.1	Confirm whether the analysis of the environmental impacts is undertaken or not.	CPA GL	OK	
B.1.2	If yes, Confirm the description on the analysis for the CPA.	CPA GL	OK	
B.2.	Environmental impact assessment			
B.2.1	Confirm if the EIA is required or not. If EIA required, Confirm the conclusions of EIA is provided.	CPA GL	OK	
		CPA GL	OK	
B.2.2	Confirm that the EIA is required by the host Party, in accordance with the host Party’s procedures.	Para. 135	NO	CL-16, 17
B.2.3	Confirm that the requirement for the EIA is confirmed by means of a document review and/or using local official sources and expertise.	Para. 136	OK	
Section C.	Local stakeholder comments			
C.1.	Solicitation of comments from local stakeholders			
C.1.1	Confirm that the invitation process is provided on local stakeholders comments for the CPA.	CPA GL	OK	
C.1.2	Confirm that the PP has completed a local stakeholder consultation process.	Para. 138	OK	
C.1.3	Confirm that the due steps were taken to engage stakeholders and solicit comments for the PA.	Para. 138	OK	
C.1.4	Confirm, by means of document review and interviews with local stakeholders as appropriate, that : (a) comments have been invited from local stakeholders that are relevant for the PA.	Para. 139	OK	
C.2	Summary of comments received			
C.2.1	Confirm that the summary is provided on stakeholders comments.	CPA GL	OK	
C.2.2	Confirm, by means of document review and interviews with local stakeholders as appropriate, that : (a) comments have been invited from local stakeholders that are relevant for the PA.	Para. 139	OK	
C.3.	Report on consideration of comments received			
C.3.1	Confirm that the consideration is provided for all comments received.	CPA GL	OK	
Section D.	Eligibility of CPA and estimation of emissions reductions			
D.1.	Title and reference of the approved baseline and monitoring methodology(ies) selected			
D.1.1	Confirm that the following reference of the methodology is exact. (i) reference number of the methodology. (ii) title of the methodology. (iii) version number of the methodology	CPA GL	OK	
		CPA GL	OK	
		CPA GL	OK	
		CPA GL	OK	
	Confirm that the following reference of the Tool is exact. (i) title of the Tool (ii) version number of the Tool	CPA GL	OK	
		CPA GL	OK	
		CPA GL	OK	
D.2.	Application of methodology(ies)			

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Table 2. Requirements Checklist (PoA) for CPA-DD-Specific

(OK/No/NA/Tbv)

PoA-DD Section	Check Points (according to EB 66 Annex 16 “ Guidelines for Completing The Component project Activity Design Document Form”(Ver.01.0)	Reference GL, DD	Check Comment	CAR, CL, No.
D.2	Confirm that the description is provided on demonstration of compliance for applicability conditions of methodology.	CPA GL	OK	
D.3.	Sources and GHGs			
D.3	Confirm that the description is provided in the table on the sources and GHGs in generic CPA boundary.	CPA GL	OK	
D.4.	Description of the baseline scenario			
D.4	Confirm that the description is provided on how the baseline scenario is identified for the CPA.	CPA GL	OK	
D.5.	Demonstration of eligibility for a CPA			
D.5.1	Confirm that the description is provided on how specific CPA meets the eligibility criteria of the CPA.	CPA GL	NO	CL-4, 5, 6, 7, 8, 10
D.5.2	Confirm that the description is provided on how specific CPA demonstrate the result of sensitivity analysis as part of investment analysis in the CPA.	CPA GL	NO	CL-22
D.6.	Estimation of emission reductions			
D.6.1.	Explanation of methodological choices			
D.6.1	Confirm that the description is provided on how the methodological steps, in the selected methodology, are applied to specific CPA.	CPA GL	OK	
D.6.2.	Data and parameters that are to be reported ex-ante			
D.6.2	Confirm that the description is provided on the data and parameters not for monitoring in the Tables.	CPA GL	OK	
D.6.3.	Ex-ante calculation of emission reductions			
D.6.3	Confirm that the ex-ante calculation is provided on emission reductions.	CPA GL	NO	CL-9
D.6.4.	Summary of the ex-ante estimates of emission reductions			
D.7.	Application of the monitoring methodology and description of the monitoring plan			
D.7.1.	Data and parameters to be monitored			
D.7.1	Confirm that the description is provided on the data and parameters for monitoring in the Tables.	CPA GL	OK	
D.7.2.	Description of the monitoring plan			
D.7.2	Confirm that the description is provided on the monitoring plan for a specific CPA.	CPA GL	NO	CL-14, 15
Section E.	Approval and authorization			
E.1	Confirm whether the LoA is available at the time of submitting the CPA-DD to the DOE. If yes, Confirm that the LOA is provided with following information. (a) approval of the Party(ies) (b) authorization for CME from each Party.	CPA GL CPA GL	Tbv Tbv	
Appendix 1	Contact information on entity/individual responsible for the CPA			

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Table 2. Requirements Checklist (PoA) for CPA-DD-Specific

		(OK/No/NA/Tbv)		
PoA-DD Section	Check Points (according to EB 66 Annex 16 “ Guidelines for Completing The Component project Activity Design Document Form”(Ver.01.0)	Reference GL, DD	Check Comment	CAR, CL, No.
AP.1	Confirm that the following mandatory fields are filled in the table. ♦ Organization	CPA GL	NO Tbv	CL-21
	♦ Street/P.O. Box ♦ City, Postcode ♦ Country, Telephone ♦ Fax, ♦ e-mail ♦ Name of contact person		Tbv Tbv Tbv Tbv Tbv Tbv	
.	Confirm the consistency between the organization listed in above table and that in section A.6.	CPA GL	Tbv	
Appendix 2	Affirmation regarding public funding			
AP.2	Confirm the description on no public funding from Parties for CPA. If public fund has received for CPA, (a)Provide information on Parties providing public funding; (b)Attach in Appendix 2: the affirmation obtained from such Parties	CPA GL CPA GL	OK NA	
Appendix 3	Applicability of the selected methodology(ies)			
AP.3	Confirm that further background information on the applicability of the selected methodology(ies) is provided.	CPA GL	NA	
Appendix 4	Further background information on ex ante calculation of emission reductions			
AP.4	Confirm that further background information on the ex-ante calculation of emission reductions is provided, and that this may include data, measurement results, data sources, etc.	CPA GL	NA	
Appendix 5	Further background information on the monitoring plan			
AP.5	Confirm that further background information used in the development of the monitoring plan is provided, and that this may include tables with time series data, additional documentation of measurement equipment, procedures etc. ♦ revision of existing methodologies to the Board ♦ publication in a newspaper ♦ interviews with the DNA ♦ earlier correspondence on the project with the DNA or the secretariat.	CPA GL	NA	

TABLE 3. Resolution of Corrective Action Requests, Clarification Requests and Forward Action Requests (PoA-DD)

No. CAR, CL	Clarifications and corrective action requests by validation team	Sec. No. in TABLE 1.	Summary of project owner response	Validation team Conclusion
CAR Corrective Action Requests				
PART I. Programme of activities (PoA)				
CAR-1	<p><LoA></p> <p>Letters of approval (LoA) by the DNAs of the Republic of South Africa is to be provided.</p>	G1, G2	<p>The LoA process has been initiated. However, the South African DNA requires signed draft validation report before issuing the LoA. The signed draft validation report will be provided to the DNA as soon as received from the DOE. After this the DNA can take a maximum of 45 working days to submit the LoA.</p>	<p>On 16 April 2012, Signed Draft Validation Report for LoA of South Africa DNA has been submitted by JCI(DOE).</p> <p>JCI has received the LoA of South Africa on 19 June 2012.</p> <p>CAR-1 has been closed.</p>
CAR-2	<p><LoA></p> <p>Letters of approval (LoA) by the DNAs of the United Kingdom is to be provided.</p>	G1,G2	<p>Can only be applied after LoA received from South African DNA.</p>	<p>How long does it take until issuance of LoA of UK, after LoA from South African DNA usually? (If you have any information, please teach us.)</p> <p>JCI has received the LoA of UK on 31 July 2012.</p> <p>CAR-2 has been closed.</p>
CAR-3	<p><MoC></p> <p>Modalities of Communication (MoC) by the PPs are to be provided according to the Guidelines on Request for Registration.</p>	--	<p>The MoC has been provided.</p>	<p>JCI has received the MoC in February 2012.</p> <p>Telephone No. and Fax No. are different between MoC and PoA-DD.</p> <p>JCI received revised MoC on 27 July 2012</p> <p>CAR-3 has been closed.</p>
PART II. Generic component project activity (CPA)				
Not applicable				
CL Clarification Requests				
PART I. Programme of activities (PoA)				

CAR: Corrective Action Request, **CL:** Clarification Request, **FAR:** Forward Action Request,

NA: Not Applicable, **Tbv:** To be verified, **PDD GL:** PDD Guidelines, **PA:** Project Activities, **PP:** Project Participants

TABLE 3. Resolution of Corrective Action Requests, Clarification Requests and Forward Action Requests (PoA-DD)

No. CAR, CL	Clarifications and corrective action requests by validation team	Sec. No. in TABLE 1.	Summary of project owner response	Validation team Conclusion
Not applicable				
PART II. Generic component project activity (CPA)				
CL-1	<p><Methodology></p> <p>ACM0002 “Consolidated baseline methodology for grid-connected electricity generation from renewable sources” (Version 12.2.0) has been issued (25 November 2011). So, use the latest version.</p>	B.1.1	The PoA-DD and CPA-DDs have been updated with the versions 12.2.0 12.3.0 and revised DDs have been submitted to the DOE.	<p>Version 12.2.0 has updated to version 12.3.0 on 2 March 2012.</p> <p>And JCI has received the PoA-DD version 02 (22/03/2012) and CPA-DD version 02 (15/03/2012) in which ACM0002 version has been revised to 12.3.0.</p> <p>CL-1 has been closed.</p>
FAR Forward Action Requests				
Not applicable				

TABLE 4. Resolution of Corrective Action Requests, Clarification Requests and Forward Action Requests (CPA-DD)

No. CAR, CL	Clarifications and corrective action requests by validation team	Sec. No. in TABLE-2	Summary of project owner response	Validation team Conclusion
CAR Corrective Action Requests				
Not applicable				
CL Clarification Requests				
CL-1	<p><Start Date> CPA-001</p> <p>How the starting date has been determined, the evidences, minutes and/or notes related to the consideration, are to be provided.</p>	A.8.1	<p>Start date in future. The CPA-DD will be revised as soon as start date has been identified (see below). The revised CPA-DD together with evidence on start date will be submitted to the DOE.</p> <p>It is likely that June 2012 will be Linde's (CPA-001) starting date at this is when the HV-critical components are scheduled for ordering (see document: Construction timeline Linde & Kalkbult).</p>	<p>The revised CPA-DD version 02 was submitted on 15 March 2012. And it describes that the start date of Linde CPA-001 is the date when the HV-critical components are ordered in June 2012.</p> <p>As a real action defined in Glossary of CDM Terms, please clarify the critical components specifically.</p> <p>JCI has received the revised CPA-DD version 04 on 14 August 2012. The start date was changed to 29 May 2012, on which the Standard Bank of South Africa provided the Preferred Bidder Bank Guarantee to the South African Department of Energy. The evidence letter also submitted to JCI by PP.</p> <p>CL-1 has been closed.</p>

TABLE 4. Resolution of Corrective Action Requests, Clarification Requests and Forward Action Requests (CPA-DD)

No. CAR, CL	Clarifications and corrective action requests by validation team	Sec. No. in TABLE-2	Summary of project owner response	Validation team Conclusion
CL-2	<p><Start Date> CPA-001</p> <p>It is requested to clarify the period of time between the finalization of the FSR and the investment decision.</p>	A.8.1	<p>As presented to the validation team during onsite audit, the establishment of the South African IPP (Independent Power Producer) process and the application/tender process itself are very lengthy processes and regulated by the Department of Energy's milestones available at: http://www.ipp-renewables.co.za/?page_id=524.</p> <p>The project developer conducted technical feasibility of the project in 2011, and follows timelines provided by NERSA for financial close of the project.</p> <p>The IPP Procurement Programme requirements, as per the Department of Energy, were provided to the DOE during onsite audit (see document: RFP PART A GENERAL REQUIREMENTS, RULES AND PROVISIONS, page 48-49).</p>	<p>JCI has confirmed the IPP (Independent Power Producer) Procurement Programme system in South Africa, with website and tender documents by South African Department of Energy.</p> <p>CL-2 has been closed.</p>
CL-3	<p><Contracts with Consultant for CDM> CPA-001</p> <p>It is requested to provide the contract with consultant for CDM.</p>	--	<p>Was provided to the DOE during onsite audit (see document: SB IC confirm_RE4SA_EA_2011 09 21_signed_SB).</p>	<p>JCI has received the agreement executed by Standard Bank Plc and International Carbon Ltd on 27 May 2010</p> <p>CL-3 has been closed.</p>
CL-4	<p><Emission Reduction Purchase Agreements> CPA-001</p> <p>It is requested to clarify the revenue from CERs.</p> <p>Other documentation related to the sale of the potential CERs (financial institutions, carbon funds) (if any)</p>	D.5.1	<p>It was noted that the CER price is not included in the CPA document because this is a floating price and not relevant for the additionality assessment, as benchmark analysis has been applied.</p> <p>Copies of the relevant pages of the ERPAs have been provided to the DOE to prove Standard Banks involvement in the projects (see documents: Linde_ERPA summary_signed_2012 01 27).</p> <p>Relevant pages of the SB Scatec Mandate Agreement have been provided which indicate that the development of CERs was a condition of the financing agreements (see document: SB Scatec Mandate agreement_Scatec signed_2011 03 15).</p>	<p>JCI has received the Linde ERPA summary signed on 27/01/2012, the cover page and signed page.</p> <p>JCI confirmed that Standard Bank Plc is a Buyer as a CME of this PoA, and Scatec Solar South Africa (Pty) Ltd is a CPA Developer of SSL CPA-001.</p> <p>CL-4 has been closed.</p>

TABLE 4. Resolution of Corrective Action Requests, Clarification Requests and Forward Action Requests (CPA-DD)

No. CAR, CL	Clarifications and corrective action requests by validation team	Sec. No. in TABLE-2	Summary of project owner response	Validation team Conclusion
CL-5	<p><Investment Analysis> CPA-001</p> <p>It is requested to provide the evidences on which input values in the investment analysis are based.</p> <p>1) Plant Load Factor: How calculated the PLF and/or operation time of this project.</p>	D.5.1	<p>The average yield 1938 kWh/kWp (i.e. solar radiation received in the area has been assessed using global irradiation data (please see http://www.pvsyst.com/ [software that is used for yield reports] and http://re.jrc.ec.europa.eu/pvgis/ [where you can browse maps and find yield estimates]).</p> <p>The net average yield 1 813 kWh/kWp and has been calculated from average yield adjusted by system uptime 98.5 % (time plant is operating, and not under maintenance) and grid downtime 5 % (Eskom's guideline on grid down due maintenance). This results in a capacity factor of 20.70 % (=1 813 / (365*24h)). The long term annual energy output (MWh) is calculated as follows: 75 MW * 24 h * 365 * 20.70 % and results in 136 011 MWh/ year.</p> <p>System uptime and grid downtime figures stipulated by the Dept of Energy as per the requirements of the IPP Procurement Programme (see document: APPENDIX K2 - IPP PPA (PV) Final 030811, page 7 of the PDF page numbers or page 2 of the actual document page numbers).</p>	<p>JCI has examined the Technical Due Diligence Phase 1 Report, and Solar Resource Review. And JCI confirmed that the average irradiation data (kWh/m²/year) from weather data source and annual yield (kWh/kWp/year) are appropriate.</p> <p>Also JCI has cross-checked the irradiation data at the project site by using the photovoltaic geographical map of website.</p> <p>In the process of the calculation of the Capacity Factor (Plant Load Factor), system uptime and grid downtime figures have been checked in the IPP Procurement Programme document stipulated by the Department of Energy.</p> <p>CL-5 has been closed.</p>

TABLE 4. Resolution of Corrective Action Requests, Clarification Requests and Forward Action Requests (CPA-DD)

No. CAR, CL	Clarifications and corrective action requests by validation team	Sec. No. in TABLE-2	Summary of project owner response	Validation team Conclusion
CL-6	<p><Investment Analysis> CPA-001</p> <p>2) Grid-in Tariff (REFIT: Renewable Energy Feed-In Tariff)</p>	D.5.1	<p>Maximum tariff for solar is R2.85, as per Department of Energy's IPP Procurement Programme requirements (see section 5.1.4.5 of document: RFP PART A GENERAL REQUIREMENTS, RULES AND PROVISIONS, page 32).</p> <p>The actual bid prices, where provided to the DOE during onsite audit (please see documents: Part C - Evaluation Criteria - 2 Price - Linde [CPA-001]).</p> <p>Regarding the two tariffs, the decision to provide a lower tariff alternative was definitely not undertaken as a result of applying to the CDM. It is a requirement of the Department of Energy (DoE) for all bidders in the programme. The differences in the tariffs in that one alternative are FULLY indexed to changes in the Consumer Price Index (CPI), i.e. inflation, and the other alternative tariff is only PARTIALLY indexed. This reason behind the proposal for two tariff alternatives is to meet DoE's assumptions on inflation.</p> <p>The Linde financial model is based on various assumptions pertaining to inflation, and therefore at this point in time the selection of either tariff scenario will result in the same NPV and IRR. These may change however if assumptions are proved to be different in the future. The DoE therefore has the right to choose one option over the other at financial closure, depending on whether they decide at the time to carry the risk of inflation or to opt for the tariff with less inflation risk. This flexibility mechanism will largely benefit the DoE. Please see clause 2.5 Financial Criteria and Evaluation (starting on page 19) of the DoE's RFP PART B QUALIFICATION CRITERIA document for more information.</p>	<p>JCI confirmed the solar photovoltaic maximum tariff (R2.85/kWh) described in the IPP Procurement Programme.</p> <p>There are two figures described in Evaluation Criteria.</p> <p>1) Alternative A - full CPI Indexation R2.39/kWh 2) Alternative B - partial CPI indexation R2.85/kWh (CPI: Consumer Price Index) But full type is selected in Financial Model, please clarify the reason.</p> <p>JCI confirmed IPP Procurement Programme.</p> <p>CL-6 has been closed.</p>

TABLE 4. Resolution of Corrective Action Requests, Clarification Requests and Forward Action Requests (CPA-DD)

No. CAR, CL	Clarifications and corrective action requests by validation team	Sec. No. in TABLE-2	Summary of project owner response	Validation team Conclusion
CL-7	<p><Investment Analysis> CPA-001</p> <p>3) Annual O&M cost,</p> <p>It is requested to clarify how to estimate each items of annual O&M cost. (breakdown the O&M cost)</p>	D.5.1	<p>3rd party (Arup) has approved the O&M breakdown (see document: ARUP Tech Report_Phase 1_2011 10 19, page 78 of the PDF or 89 of the document).</p> <p>New CAPEX breakdown to be provided as soon as available.</p>	<p>JCI has received the Arup Technical Due Diligent Phase 1 Report during on-site visit, and confirmed the breakdown of O&M cost.</p> <p>Waiting for new version of Capex breakdown.</p> <p>JCI has received the latest Scatec Linde PV Financial Model on 3rd June and confirmed the breakdown table of Capex and O&M cost.</p> <p>CL-7 has been closed.</p>
CL-8	<p><Investment Analysis> CPA-001</p> <p>4) Tax rate (VAT, Income tax, additional tax)</p>	D.5.1	<p>SA corporate tax rate = 28%; Secondary Tax on Companies (STC)/dividends = 10%; VAT = 14% (see http://www.lowtax.net/lowtax/html/offon/southafrica/sasummary.html).</p>	<p>JCI has confirmed the taxes at website “South Africa: Summary of Domestic Taxation Regime” by LOWTAX.</p> <p>But about VAT=14%, please point the description in this website.</p> <p>JCI has received the information of website for VAT and confirmed the value of VAT.</p> <p>CL-8 has been closed.</p>

TABLE 4. Resolution of Corrective Action Requests, Clarification Requests and Forward Action Requests (CPA-DD)

No. CAR, CL	Clarifications and corrective action requests by validation team	Sec. No. in TABLE-2	Summary of project owner response	Validation team Conclusion
CL-9	<p><Internal consumption> CPA-001</p> <p>It is requested to how following evidences to be related to the electricity generation.</p> <p>1) Photovoltaic conversion;</p> <p>2) Internal power consumption;</p> <p>3) Rate of transmission loss;</p>	D.6.3	<p>In reference to 1.) Please see Arup technical due diligence report submitted to the auditing team during onsite audit for yield and electricity generation analysis as well as CL-5 above.</p> <p>In reference to 2.) As explained to the validation team the internal power consumption is covered with grid electricity purchased by Eskom. The internal consumption is estimated at 609 122 kWh/year (please see documents: Grid Electricity Consumption – Linde). Supporting documents, revised CPA-DD and emission reduction calculations have been submitted to the DOE.</p> <p>In reference to 3.) As per Arup due diligence report transmission losses are estimated to be maximum 1.5% (see document: ARUP Tech Report_Phase 1_2011 10 19, page 22 of the PDF page numbers or 11 of the document page numbers). For the financial model a conservative value of 0.5 % has been applied (annual average loss over 20 years).</p>	<p>1) JCI confirmed the degradation (90% efficient after 10 years, 80% efficient after 25 years, and about 0.4% per year on average) in Arup Technical Due Diligence Phase 1 Report.</p> <p>2) JCI confirmed the internal power consumption by Assumption for Grid Electricity Consumption- Linde.</p> <p>3) JCI confirmed the Arup Technical Due Diligence Phase 1 Report and the Linde financial model.</p> <p>CL-9 has been closed.</p>
CL-10	<p><Investment Analysis> CPA-001</p> <p>It is requested to provide the evidences for the evaluation of investment analysis, e.g. invoices, receipts, price indices, etc. (if any)</p>	D.5.1	<p>The Arup Due diligence document, which assesses the reliability of financial figures provided by Scatec (i.e. 3rd party assessment) was provided to the DOE during onsite audit (see document: ARUP Tech Report_Phase 1_2011 10 19, page 78 of the PDF or 89 of the document).</p> <p>A breakdown of the Balance of System item was provided to the DOE (see document: Scatec Balance of System Breakdown).</p> <p>New Scatec Capex and O&M breakdown required.</p>	<p>As the actual purchase order will be after June 2012, so JCI judged that these evidences e.g. invoice, receipt etc. will not be provided at this time.</p> <p>JCI confirmed the breakdown of Capex and O&M in this time with Financial Model submitted during on-site visit.</p> <p>JCI has received the latest Scatec Linde PV Financial Model on 3rd June and confirmed the breakdown table of Capex and O&M cost.</p> <p>CL-10 has been closed.</p>

TABLE 4. Resolution of Corrective Action Requests, Clarification Requests and Forward Action Requests (CPA-DD)

No. CAR, CL	Clarifications and corrective action requests by validation team	Sec. No. in TABLE-2	Summary of project owner response	Validation team Conclusion
CL-11	<p><FSR> CPA-001</p> <p>It is requested to provide the FSR for identification of consistency with PDD.</p>	A.5	<p>The final Arup Due Diligence report was provided to the Doe during onsite audit (see document: ARUP Tech Report Phase 1, 2011 10 19).</p>	<p>JCI has received the final Technical Due Diligence Phase 1 Report instead of FSR by Arup (Pty) Ltd (3rd party) during on-site visit.</p> <p>CL-11 has been closed.</p>
CL-12	<p><FSR Approval> CPA-001</p> <p>It is requested to provide the approval letter for the FSR by the approval authority.</p>	A.5	<p>As discussed during the onsite audit, the FSR is not approved additionally by the government. The approval in South Africa bases on being a preferred bidder. .</p> <p>Linde CPA-001:</p> <p>Approval awaited: the project will be resubmitted to the Department of Energy in the 2nd round of the IPP Procurement Programme. Decision for application to be published on 14 May 2012.</p> <p>The request for proposal (RFP) by the DoE and the PPA supplied by the DoE stipulated the requirements (Inc. technical requirements) for proposal and operation of the plant. These documents were submitted to the DOE during the onsite audit.</p>	<p>JCI has received the relevant documents, RFP, PPA by the Department of Energy, and JCI has confirmed the bidding system in South Africa.</p> <p>The Technical Due Diligence Phase 1 Report for CPA-001 has been approved by the Department of Energy when the bidding was succeeded.</p> <p>CL-12 has been closed.</p>

TABLE 4. Resolution of Corrective Action Requests, Clarification Requests and Forward Action Requests (CPA-DD)

No. CAR, CL	Clarifications and corrective action requests by validation team	Sec. No. in TABLE-2	Summary of project owner response	Validation team Conclusion
CL-13	<p><Summary of key equipment> CPA-001</p> <p>1) More detail specification of the PV module should be clarified in PDD, such as model number, lifetime, tracking system for sunshine.</p> <p>Especially, lifetime of PV module should be.</p> <p>2) Specifications of Inverter and monitoring meter.</p>	A.5	<p>Following documentation with presentation was provided to the DOE during onsite audit:</p> <p>Single line diagrams of Linde (CPA-001) plants and substation connections provided (see documents: 1.] Linde_2.6.2.1._IPP_PPA_Schedule_1_Annex_2a_SLD_park and 2.] Linde_2.6.2.1._IPP_PPA_Schedule_1_Annex_2b_SLD_substation).</p> <p>Description of the PV System elements provided (see document: ARUP Tech Report_Phase 1_2011 10 19, page 16-22 of the PDF or page 5-11 of the document).</p> <p>Lifespan of system: 20-30 years (see document: ARUP Tech Report_Phase 1_2011 10 19, page 63 of the PDF or page 52 of the document). The PPA with Eskom is restricted to 20 years and hence 20 years has been applied for financial model (see document: APPENDIX K2 - IPP PPA (PV) Final 030811, definition of “Expiry date” on page 12 of the PDF page numbers or page 22 of the actual document page numbers).</p> <p>The technical description of the CPA-DD has been improved. The revised CPA-DD has been submitted to the DOE.</p>	<p>JCI has confirmed the submitted documents below.</p> <ol style="list-style-type: none"> 1) CPA-DD (SSL CPA-001) ver.02 2) Single line diagrams of Linde project site. (include the specification of equipment) 3) Arup Technical Due diligence Phase 1 Report 4) APPENDIX K2 - IPP PPA (PV) <p>As for tracking system for sunshine, all PV panels are fixed type and tracking system is not used in this project. JCI has confirmed it above document 3).</p> <p>CL-13 has been closed.</p>
CL-14	<p><Monitoring Plan> CPA-001</p> <p>It is requested to provide the single line diagram with monitoring points.</p>	D.7.2	<p>Single line diagrams have been provided to the DOE (see notes under CL-15).</p> <p>The details of the monitoring framework as specified by the Department of Energy’s mandatory PPA (see comment in CL-16 below) have been included in the revised CPA-DD.</p>	<p>JCI has confirmed the monitoring point with the Single line diagrams of Linde project site.</p> <p>CL-14 has been closed.</p>

TABLE 4. Resolution of Corrective Action Requests, Clarification Requests and Forward Action Requests (CPA-DD)

No. CAR, CL	Clarifications and corrective action requests by validation team	Sec. No. in TABLE-2	Summary of project owner response	Validation team Conclusion
CL-15	<p><Monitoring Plan> CPA-001</p> <p>1) Accuracy degree of the metering system may be clarified in PDD</p> <p>2) The location of the monitoring meter. (Project site, or Substation)</p>	D.7.2	<p>A detail design for monitoring does not exist yet and such plan will be finalised only after finalising equipment orders. However the Department of Energy's IPP Procurement Programme stipulates monitoring requirements. The PPA was provided to the DOE during onsite audit (see document: APPENDIX K2 - IPP PPA (PV) Final 030811, Sections 11 and 12, starting page 37 of the PDF page numbers or page 32 of the actual document page numbers).</p>	<p>JCI confirmed the monitoring requirement from the Department of Energy with the APPENDIX K2 - IPP PPA (PV) and revised CPA-DD (SSL CPA-001) ver.02.</p> <p>The detail information of monitoring system will clarify after finalising equipment orders.</p> <p>CL-15 has been closed.</p>
CL-16	<p><EIA> CPA-001</p> <p>It is requested to provide the EIA Report for identification of consistency with CPA-DD.</p>	B.2.2	<p>Final Impact Report was provided to the DOE during onsite audit (report with full annexures provided in hard copy), see also document: FINAL IMPACT REPORT northern cape FINAL SUBMISSION DOCUMENT SEPT11.</p>	<p>JCI has received the Final Environmental Report by Sustainable Development Projects cc (3rd party) during on-site visit.</p> <p>CL-16 has been closed.</p>
CL-17	<p><EIA Approval> CPA-001</p> <p>It is requested to provide the approval letter for the EIA Report by the approval authority.</p>	B.2.2	<p>The Record of Decision (RoD)/Environmental Authorisation was provided to the DOE during onsite audit (see document: Environmental Authorisation_RoD_Kalkbult_Linde_Taaibos_2011 10 13).</p>	<p>JCI has received the approval document and confirmed the authorisation for EIA by Department of Environmental Affairs, Republic of South Africa.</p> <p>CL-17 has been closed.</p>

TABLE 4. Resolution of Corrective Action Requests, Clarification Requests and Forward Action Requests (CPA-DD)

No. CAR, CL	Clarifications and corrective action requests by validation team	Sec. No. in TABLE-2	Summary of project owner response	Validation team Conclusion
CL-18	<p><The capacity of the plants></p> <p>It is requested to explain that the capacity of the plant changed from 75 MWp to 39.74 MWp</p>	A.5	<p>At the First Bid Submission in November 2011, this project was not selected as the preferred bidder.</p> <p>As scheduled by the South African Government of IPP Procurement Program, in May 2012, the Second Bid Submission will be held. Taking this opportunity, the project owner has decided to offer again with some modification on the previous design of scale of the plant and its financial model. In order to succeed in the Second Bid Submission, the considerable change to the original design of the project is needed in consideration of the experience in the Round 1, especially the competitiveness of offering tariff.</p> <p>The project owner has improved the economical efficiency by reducing the capacity of the plant drastically.</p>	<p>JCI reviewed the revised CPA-DD and relevant documents, and confirmed that the changed project was credible and feasible.</p> <p>CL-18 has been closed.</p>
CL-19	<p><Technical Description> CPA-001</p> <p>It is requested to describe the technical information about PV module, etc.</p>	A.5	<p>It has been described at A.5 Technical description of the CPA in CPA-DD version 3.</p>	<p>JCI confirmed that technical information was described in CPA-DD version 3.</p> <p>CL-19 has been closed.</p>
CL-20	<p><Project Participants> CPA-001</p> <p>It is requested to add the CME (Standard Bank) as a PP.</p>	A.6.1	<p>CME has been added in Table of A.6.Party (ies) in CPA-DD version 3.</p>	<p>JCI confirmed the Table of A.6. Party (ies) in CPA-DD version 3.</p> <p>CL-20 has been closed.</p>
CL-21	<p><Appendix 1> CPA-001</p> <p>It is requested to add the entities consistent with the Table of A.6.Party(ies).</p>	AP.1	<p>Contact information tables of Standard Bank Plc and the Standard Bank of South Africa Limited were added at Appendix 1 in CPA-DD version 3.</p>	<p>JCI confirmed the Appendix 1 in CPA-DD version 3.</p> <p>CL-21 has been closed.</p>
CL-22	<p><Sensitivity Analysis>CPA-001</p> <p>It is required to conduct based on FIT and PIT.</p>	D.5.2	<p>Sensitivity analysis for FIT and PIT are added in Table 17 -19.</p>	<p>JCI confirmed the revised CPA-DD as appropriately added required information.</p> <p>CL-22 has been closed.</p>
FAR Forward Action Requests				

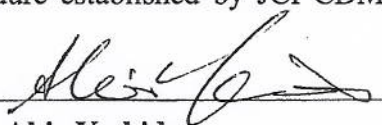

CAR: Corrective Action Request, CL: Clarification Request, FAR: Forward Action Request.

NA: Not Applicable, Tbv:To be verified, PDD GL: PDD Guidelines, PA: Project Activities, PP: Project Participants

TABLE 4. Resolution of Corrective Action Requests, Clarification Requests and Forward Action Requests (CPA-DD)

No. CAR, CL	Clarifications and corrective action requests by validation team	Sec. No. in TABLE-2	Summary of project owner response	Validation team Conclusion
Not applicable				

APPENDIX B**Certificate of Appointment of Validation Team**

Project Title	Green Power for South Africa
Applied Methodology	ACM0002 Sectoral Scope 1
Date: 1 February 2012	
Designated Operational Entity: Japan Consulting Institute (JCI)	
<p>Reflecting the competence criteria of JCI in accordance with the latest "CDM Accreditation Standard for Operational Entities", this is to certify the appointment of validation team of JCI specified below for the CDM project activity above, as per CDM Project Activity Registration Form, and Validation Procedure established by JCI CDM Center.</p> <p style="text-align: right;"> <u>Signature</u>  Akio Yoshida, Executive Director, JCI CDM Center </p>	
Date:	
Client: Standard Bank Plc	
<p>Reflecting the curricula vitae provided, this is to agree the validation team of JCI specified below for the CDM project activity above, as per Validation Procedure established by JCI CDM Center.</p> <p>It is also agreed that Mr. Mutsuo KATO of JCI participates in the validation activities of the said project for the quality issues under its quality management scheme.</p> <p style="text-align: right;"> <u>Signature</u>  (Name) G. SINCLAIR (Title) DIRECTOR </p>	

Validation Team

Validation Team	Name	Qualified Technical Areas related to the Project
Leader	Shigeo AOKI	1.2 Energy generation from renewable energy source
Member	Mitsuo TAKANO	(Observation)

Technical Reviewer	Hideyuki SATO	1.2 Energy generation from renewable energy source
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