

# VALIDATION REPORT

for the CDM Programme of Activities

## PoA Solar PV in Pakistan in Pakistan

Report No. 01 997 9105071194-1/2  
Version No. 03, 14/12/2012

Designated Operational Entity (DOE)

**TÜV Rheinland (China) Ltd**

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**I. PoA description:**

PoA title:	PoA Solar PV in Pakistan	Report No.: 01 997 9105071194-1/2
Host Country:	Pakistan	Current revision No.: 03
Methodology:	ACM0002, version 13.0.0	<input checked="" type="checkbox"/> Large Scale <input type="checkbox"/> Small Scale
Technical Area	TA 1.2	Date of current revision: 14/12/2012
		Date of first issue: 07/09/2012
GHG reducing measure/technology:	The emission reduction would happen by displacing the fossil fuel dominated grid electricity equivalent to the net electricity supplied by the SPV power plant i.e. the CPAs of the PoA.	

Party	Coordinating & Managing Entity (CME) and Project participant (PP) (as applicable)	Party considered a project participant	Contract party
Islamic Republic of Pakistan (Host)	CME & PP: DACC Power Generation Company (Private) Limited	No	<input checked="" type="checkbox"/>

**II. Validation Team:**

Validation Team			Role									
Full name	Affiliation TÜV Rheinland	Appointed for Sectoral Scopes (Technical Areas)	Team leader	Acting Team Leader	Local Expert	Team Member (Auditor)	Technical Expert	Acting Tech. Expert	Trainee Auditor	Technical Reviewer	Expert to TR	Trainee TR
Mr. Ma Paa Puratchikkanal	India	1.2, 3.1, 6.1, 13.1/13.2, 15.1	X				X					
Mr. R Narendra Kumar	India	1.2, 3.1,				X	X					
Ms. Aveen Sinar	India				X							
Ms. Indumathi C	India	1.2								X		

**Validation Phases:**
☒ Desk Review    ☒ Follow up interviews    ☒ Resolution of outstanding issues
**Validation Status:**
☐ Corrective Actions / Clarifications Requested    ☒ Full Approval and Submission for Registration    ☐ Rejected
**III. Validation Report:**

Final approval	Released	Distribution
<input checked="" type="checkbox"/>	By: Mr. Praveen Urs	<input type="checkbox"/> No distribution without permission from the Client or responsible organizational unit
Date: 2012-12-21		<input checked="" type="checkbox"/> Unrestricted distribution

## EXECUTIVE SUMMARY- VALIDATION OPINION

The validation team assigned by the DOE (TÜV Rheinland (China) Ltd.), here after called TRC, is been assigned by “DACC Power Generation Company (Private) Limited” to perform the PoA validation of their project “PoA Solar PV in Pakistan”. The scope of the validation is defined as an independent and objective review of the PoA-DD, CPA-DD, project baseline and additionality, eligibility criteria established for CPA inclusion, monitoring plan and other relevant documents. The validation has been performed following the VVS requirements and other requirements as contained in PS and other PoA Specific Standard. The report is based on the assessment of the project design document undertaken through stakeholder consultations, application of standard auditing techniques including but not limited to document reviews, site visit, Stakeholder interviews, review of the applicable methodology (ies) and its underlying formulae and calculations

The following CDM requirements have been considered:

- Article 12 of the Kyoto Protocol,
- Modalities and procedures for CDM (Marrakech Accords)
- Subsequent decisions by the COP/MOP and CDM Executive Board
- Host country criteria
- Criteria given to provide for consistent project operations, monitoring and reporting.

The validation was executed in the following steps so far:

- Receipt of PoA-DD and CPA-DD (real case) version 01 for global stakeholder commenting.
- Global stakeholder comment process (01/08/2012 to 30/08/2012)
- Interview with CME
- Issue of checklist with corrective action requests (CARs) and clarification requests (CLs) and the draft validation report and protocol
- Desk review of PoA-DD and CPA-DD
- Review of responses of CARs/CLs
- Issue of the final validation report and protocol

The host party is Pakistan fulfils the participation criteria and has approved and authorized the project and the project participant. The DNA of Pakistan<sup>/P3/</sup> confirms that the project assists in achieving sustainable development.

The project correctly applies the combination of two methodologies. The PoA applies baseline and monitoring methodology of ACM0002 Version 13.0.0, “Consolidated baseline methodology for grid-connected electricity generation from renewable sources”

The project results in reductions of CO<sub>2</sub> emissions that are real, measurable and give long-term benefits to the mitigation of climate change. It is demonstrated that the project is not a likely baseline scenario. Emission reductions attributable to the project are hence additional to any that would occur in the absence of the project activity.

Standard auditing techniques have been used for the validation of the PoA. An analysis, as provided by the applied methodology, demonstrates that the PoA is not a likely baseline scenario. Emission reductions attributable to the PoA (eligible CPAs of the PoA) are additional to any that would occur in the absence of the proposed eligible CPAs. Given that the PoA is implemented as designed, the CPAs are likely to achieve the emission reductions.

The validation protocol describes a total of 15 findings which include:

14 Corrective Action Requests (CARs);

1 Clarification Requests (CLs);

No Forward Action Requests (FARs); and all findings have been closed satisfactorily.


The single purpose of this report is its use during the registration process as part of the CDM project cycle. In the opinion of TÜV Rheinland, the PoA meets all relevant UNFCCC requirements for the CDM if the underlying assumptions do not change. TÜV Rheinland thus recommends the PoA to be registered with the UNFCCC.

Ma Paa Puratchikkanal (Team Leader)



TÜV Rheinland (India) Pvt. Ltd  
Bangalore, 14/12/2012

Mr. Praveen Nagaraje Urs (DOE Manager)



TÜV Rheinland (China) Ltd.  
Beijing, 21/12/2012

## Abbreviations

AEDB	Alternative Energy Development Board
BE	Baseline Emission
CAR	Corrective Action Request
CDM	Clean Development Mechanism
CDM EB	CDM Executive Board
CPA	Component Project Activity
CPA-DD	Component Project Activity Design Document
CER	Certified Emission Reduction
CL	Clarification Request
CME	Co-ordinating or Managing Entity
CO <sub>2</sub>	Carbon Dioxide
CO <sub>2</sub> e	Carbon Dioxide Equivalent
DNA	Designated National Authority
DOE	Designated Operational Entity
DPGC	DACC Power Generation Company (Private) Limited
DR	Document Review
EB	Executive Board
EIA	Impact Assessment / Environmental Assessment
ER	Emission Reduction
FAR	Forward Action Request
GHG	Greenhouse Gas
GWh	Giga Watt Hours
I	Interview
IPCC	Intergovernmental Panel on Climate Change
kW	Kilo Watt
kWh	Kilo Watt Hours
L <sub>y</sub>	Leakage
LoA	Letter of Approval
MoV	Means of Verification
MOC	Modalities of Communications
MW	Mega Watt
MWh	Mega Watt Hours
NGO	Non Government Organisation
NO <sub>x</sub>	Nitrogen Oxides
ODA	Official Development Assistance
PE	Project Emission
PEA	Provincial Electricity Authority
PoA	Programme of Activities
PoA-DD	Programme of activities design document
PP	Project Participant
PS	Project Standard
SD	Sustainable Development
t	Tonne
UNFCCC	United Nations Framework Convention on Climate Change
VVS	Validation and Verification Standard

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## 1 INTRODUCTION

DACC Power Generation Company (Private) Limited (hereafter referred as “the PP” or as “the CME”) has commissioned the DOE TÜV Rheinland China Ltd. to perform validation of the proposed CDM Programme of Activities (PoA) “PoA Solar PV in Pakistan” in Pakistan (hereafter called “the PoA”). This report summarises the findings of the validation of the PoA identified in the PoA Design Document (PoA-DD) with generic information relevant to all Component Project Activities (CPAs) to be included in the PoA; and one real case CPA-DD. The validation was performed on the basis of UNFCCC criteria for the PoAs under the CDM, as well as criteria given to provide for consistent programme operations, monitoring and reporting. The term “UNFCCC criteria” refers to Article 12 of the Kyoto Protocol, the CDM modalities and procedures, the simplified modalities and procedures for small-scale CDM project activities, standard for demonstration of additionality, development of eligibility criteria and application of multiple methodologies for programme of activities and the subsequent decisions by the COP/MOP and CDM Executive Board. In addition to these criteria, host country criteria are also taken into account.

### 1.1 Objective

The purpose of a validation is to have an independent third party assess the PoA-DD and the associated real case CPA-DD (also known as specific CPA-DD). In particular, the eligibility criteria for inclusion and demonstration of additionality of CPAs, the programme’s baseline determination, monitoring plan, and the programme’s compliance with relevant UNFCCC and host Party criteria are validated in order to confirm that the programme design, as documented, is sound and reasonable and meets the identified criteria. Validation is a requirement for all CDM PoAs and is seen as necessary to provide assurance to stakeholders of the quality of the programme and its intended generation of certified emission reductions (CERs).

### 1.2 Scope

The validation scope is defined as an independent and objective review of the PoA-DD, and the real case CPA-DD. The PoA-DD and the real case CPA-DD were reviewed against the criteria stated in Article 12 of the Kyoto Protocol, the CDM modalities and procedures, the simplified modalities and procedures for small-scale CDM project/ programme activities, standard for demonstration of additionality, development of eligibility criteria and application of multiple methodologies for programme of activities and the relevant decisions by the CDM Executive Board, including the approved baseline and monitoring methodology ACM0002.(Version 13.0.0).

The validation team has, based on the requirements contained in the Validation and Verification Standard, Project Standard and the Standard for demonstration of additionality, development of eligibility criteria and application of multiple methodologies for programme of activities employed a rules-based approach, focusing on the identification of significant risks for programme implementation and the generation of CERs.

The validation is not meant to provide any consulting towards the PoA Managing Entity, CPA Implementer(s) and/or project participant(s) (PP). However, stated requests for clarifications, corrective actions, and/or forward actions may provide input for improvement of the programme design.

## 2 METHODOLOGY

The validation consists of the following four phases:

- I publication of the programme design documents (PoA-DD and specific CPA-DD) in UNFCCC for global stakeholder consultation;
- II a desk review of the PoA-DD, and the associated real case CPA-DD;
- III on-site visit and follow-up interviews with programme stakeholders; and
- IV the resolution of outstanding issues and the issuance of the final validation report and opinion.

The following sections outline each step in more detail.

### 2.1 Desk Review of the Programme Design Documentation

Documents provided by the project participant(s):

Reference		Documents
/P1/	/P1.1/	PoA DD (web hosted version) for the PoA- [PoA Solar PV in Pakistan]Version 01, Date: 06/07/2012
	/P1.2/	PoA DD (modified) for the PoA- [PoA Solar PV in Pakistan] Version 02, Date: 30/09/2012
	/P1.3/	PoA DD (modified) for the PoA- [PoA Solar PV in Pakistan] Version 03, Date: 05/12/2012
/P02/	/P2.1/	Grid Emission factor calculation sheet, Version: 01, Date: 06/07/2012
	/P2.2/	Grid Emission factor calculation sheet, Version: 02, Date: 30/09/2012
	/P2.3/	Grid Emission factor calculation sheet, Version: 03, Date: 05/12/2012
/P3/		Letter of Approval and authorization from the host country DNA, authorizing DACC Power Generation Company (Private) Limited, dated 16/10/2012
/P4/		Modalities of Communication, signed on 19/11/2012
/P5/		Draft Feasibility study report of “2200 MW Solar PV Power Generation Project In Punjab, Pakistan”
/P6/		CPA unique ID number record template
/P7/		LSC meeting documents <ul style="list-style-type: none"> <li>• Invitation letter</li> <li>• Broucher</li> <li>• Posters</li> <li>• Newspaper advertisement</li> <li>• Power point presentation</li> <li>• Stakeholders feedback forms</li> <li>• Attendance sheet</li> </ul>
/P8/		Letter of intent for the project activity from Alternative Energy Development Board (AEDB), dated 8/02/2011
/P9/		CME operating manual for the project [Pakistan Solar PV PoA], version 01.2, dated 06/06/2012
/P10/		Letter from Alternative Energy Development Board (AEDB) stating the necessity of CDM for this PoA, dated 04/09/2012
/P11/		EPC contract preliminary agreement between M/s. DACC Power Generation Company (Private) Limited and M/s. Ensunt LLC, dated 03/09/2012
/P12/		Solar Panel complex layout Inverter station layout
/P13/		WAPDA Annual report 2007-08 Pakistan Energy Year Book 2009 Pakistan Energy Year Book 2010 Pakistan Energy Year Book 2011
/P14/		First of its Kind letter from Alternative Energy Development Board (AEDB), dated 22/10/2012
/P15/		The Certificate of Organisation Limited Liability Company given by Idaho secretary of State, confirming Mr. Douglas Melvin as registered agent of the company DACC Global LLC authorising the specimen signature of Mr. Douglas.



Reference	Documents
	Written confirmation from the secretary of DACC Power Generation Company (Private) Limited, that Mr. Douglas is the CEO of Power Generation Company (Private) Limited as well as the president and CEO of DACC Global LLC.
/P16/	CPA inclusion agreement template

Background investigation and other referred documents/websites:

/B1/	1. CDM Validation and Verification Standard (Version 3.0). 2. CDM Project Standard (version 2.1)
/B2/	Approved Baseline & Monitoring Methodology- ACM0002: Consolidated baseline methodology for grid-connected electricity generation from renewable sources – Version 13.0.0
/B3/	Tool to calculate the emission factor for an electricity system, version 02.2.1
/B4/	Tool for the demonstration and assessment of additionality” V.7.0.0.
/B5/	1. Glossary of CDM terms, version 07 2. Relevant CDM and PoA specific requirements (CDM M & P and decisions by the CMP and documents released by CDM EB) published on the UNFCCC CDM website
/B6/	PoA Specific guidelines / standards published by UNFCCC: 1. Guidelines for Completing the Programme Design Document Form for CDM Programmes of Activities, version 02 2. F-CDM-PoA-DD – Programme design document form for CDM programmes of activities, version 02 3. Standard for demonstration of additionality, development of eligibility criteria and application of multiple methodologies for programme of activities, version 02, annex 05, EB 70
/B7/	Websites referred: a) <a href="http://cdm.unfccc.int/">http://cdm.unfccc.int/</a> b) Pakistan Energy Yearbook, 2010 <a href="http://www.scribd.com/doc/53512742/Pakistan-Energy-Yearbook-2010">http://www.scribd.com/doc/53512742/Pakistan-Energy-Yearbook-2010</a>
/B8/	UNDP Report- Green Jobs: Towards decent work in a sustainable, low-carbon world
/B9/	KESC website: <a href="http://www.kesc.com.pk/en/article/ourcompany/whatwedo-1.html">http://www.kesc.com.pk/en/article/ourcompany/whatwedo-1.html</a>

The changes between the PoA DD version 01 published for the 30 days stakeholder commenting period<sup>/P1.1/</sup> and the final version submitted for registration<sup>/P1.3/</sup> are addressed in the table 2 of the validation protocol as a part of this report and the sections of the revised DDs are marked in column 5 titled “Revised section(s)/Annex (s) of the PoA DD/g CPA DD”.

The main changes between the PoA DD, version 01<sup>/P1.1/</sup> published for the 30 days stakeholder commenting period and the final version 03<sup>/P1.3/</sup> submitted for registration are presented in the below table as follows:

Topic	PoA DD –GSC <sup>/P1.1/</sup>	Final PoA DD <sup>/P1.3/</sup>	Assessment
<b>PoA title</b>	PoA Solar PV in Pakistan	PoA Solar PV in Pakistan	No change
<b>Parties</b>	Islamic Republic of Pakistan (host) United Kingdom (other)	Islamic Republic of Pakistan (host)	‘United Kingdom’ participation is removed from this PoA

<b>CME/ Project participants</b>	CME: DACC Power Generation Company (Private) Limited PP: Think Carbon GmbH	CME & PP: DACC Power Generation Company (Private) Limited	'Think Carbon GmbH' is removed from this PoA.
<b>Scope</b>	01. Energy Industries	01. Energy Industries	No change
<b>Technology</b>	Solar PV	Solar PV	No change
<b>Methodology and activity scale</b>	ACM 0002, version 13.0.0; Large Scale	ACM 0002, version 13.0.0; Large Scale	No change
<b>Baseline:</b>	Baseline Emission factor = 0.5394 tCO <sub>2</sub> /MWh	Baseline Emission factor = 0.41117 tCO <sub>2</sub> /MWh	The emission factor was initially calculated based on the data belongs to 2008, 2009 & 2010. Since the 2011 data was available at the time of webhosting, the emission factor was revised in the final PoA-DD. Please refer CAR-09.
<b>Additionality</b>	Based on "Tool for the demonstration and assessment of additionality" V.6.0.0.	Based on "Tool for the demonstration and assessment of additionality" V.7.0.0.	The latest version of the additionality tool is updated.
<b>Amount of emission reductions (tCO<sub>2</sub>)</b>	Quantification of ERs at PoA level is not required as per the PoA DD template.	Quantification of ERs at PoA level is not required as per the PoA DD template.	NA
<b>PoA starting date</b>	15/10/2011 (signature date of the PoA development contract between DPGC and Think Carbon)	01/08/2012 (date of publication of PoA-DD for GSC)	As per the latest version of the CDM project standard, the start date of PoA is the date of publication of PoA-DD for GSC. In accordance to that the start date of the project is changed to date of publication of PoA-DD for GSC
<b>PoA Boundary</b>	Pakistan	Pakistan	No Change

## 2.2 Follow-up Interviews with Programme Stakeholders

No real action of any CPA to be included in the PoA has started yet. Also the CPAs are not going to be implemented in an existing facility or will be utilizing existing equipments and hence the site visit is not conducted. However the validation team has carried out telephonic interviews and reviewed the technical documents in order to assess the information included in the PoA-DD and to gain additional information regarding the compliance of the project with the relevant criteria applicable for CDM. This is inline with §67 of VVS version 3.

During validation the validation team has communicated CME and relevant personnel through phone & email to confirm selected information and to resolve issues identified in the document review. The main topics of the interviews are summarized below

	Name	Organization	Topic
/i/	Douglas C. Melvin	DACC	-PP's background -Investment decision -Baseline identification -CDM consideration -Public funding
/ii/	Andreas Jansen	Think Carbon	-Project design -Baseline identification
/iii/	Rodrigo Perez Matabuena	Think Carbon	-ER calculation
/iv/	Sergio Degener	Think Carbon	-Additionality issues -Monitoring plan -Additionality issues

Validation Team considered the views obtained in these interviews while arriving at Validation Opinion.

### 2.3 Resolution of Outstanding Issues

The objective of this phase of the validation is to resolve any outstanding issues which need be clarified prior to TÜV Rheinland's conclusion on the PoA design. In order to ensure transparency a validation protocol is customised for the programme. The protocol shows in transparent manner criteria (requirements), means of verification and the results from validating the identified criteria. The validation protocol serves the following purposes:

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

The validation protocol consists of three tables. The different columns in these tables are described in the figure below. The completed validation protocol for the PoA is enclosed in Appendix A to this report.

Findings established during the validation can either be seen as a non-fulfillment of CDM criteria or where a risk to the fulfillment of programme objectives is identified. Corrective action requests (CAR) are issued, where:

- mistakes have been made with a direct influence on programme results;
- CDM and/or methodology specific requirements have not been met; or
- there is a risk that the programme would not be accepted as a CDM PoA or that emission reductions will not be certified.

A request for clarification (CL) may be used where additional information is needed to fully clarify an issue.

A forward action request (FAR) may be raised to highlight issues related to the PoA implementation that require review during the first verification.

Validation Protocol Table 1: Requirement checklist for PoA DD				
Checklist Question	Reference	Means of verification (MoV)	Comment	Draft and/or Final Conclusion

<i>The various requirements in Table 1 are linked to checklist questions the programme should meet. The checklist is organised in different sections, following the logic of the small-scale PoA-DD templates, version 02. Each section is then further sub-divided.</i>	<i>Gives reference to documents where the answer to the checklist question or item is found.</i>	<i>Explains how conformance with the checklist question is investigated. Examples of means of verification are document review (DR) or interview (I). N/A means not applicable.</i>	<i>The section is used to elaborate and discuss the checklist question and/or the conformance to the question. It is further used to explain the conclusions reached.</i>	<i>This is either acceptable based on evidence provided (OK), or a <b>corrective action request (CAR)</b> due to non-compliance with the checklist question (See below). A request for <b>clarification (CL)</b> is used when the validation team has identified a need for further clarification.</i>
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**Validation Protocol Table 2: Resolution of Corrective Action and Clarification Requests on the PoA DD.**

<b>CL/ CAR No.</b>	<b>Observations</b>	<b>Reference</b>	<b>Summary of project owner response</b>	<b>Validation team conclusion</b>
<i>CL/ CAR XX</i>	<i>If the conclusions from the draft Validation are either a CAR or a CL, these should be listed in this section.</i>	<i>Reference to the checklist question number in Table 1 where the CAR or CL is explained.</i>	<i>The responses given by the project participants during the communications with the validation team should be summarised in this section.</i>	<i>This section should summarise the validation team's responses and final conclusions. The conclusions should also be included in Table 1, under "Final Conclusion".</i>

**Validation Protocol Table 3: List of forward action requests (FARs)**

<b>FAR Number</b>	<b>Observations</b>	<b>Reference</b>	<b>Summary of project owner response</b>	<b>Validation team conclusion</b>
<i>FAR- XX</i>	<i>If the conclusions from the draft Validation are FARs, these should be listed in this section.</i>	<i>Reference to the checklist question number in Table 1 where the FAR is explained.</i>	<i>The responses given by the project participants during the communications with the validation team should be summarised in this section.</i>	<i>This section should summarise the validation team's responses and final conclusions. The conclusions should also be included in Table 1, under "Final Conclusion".</i>

Figure 1. Validation protocol tables

## 2.4 Internal Quality Control

Before the assessment begins, members of the team covering the technical area(s), sectoral scope(s) and relevant host country experience for evaluating the CDM PoA/CPA are appointed. The validation report including the validation findings underwent a technical review. The technical review was performed by a technical reviewer qualified in accordance with TÜV Rheinland's qualification scheme for CDM validation and verification.

## 2.5 Validation Team

<b>Validation Team</b>			<b>Type of Involvement</b>						
<b>Full name</b>	<b>Affiliation TÜV Rheinland</b>	<b>Appointed for Sectoral Scopes (Technical Areas)</b>	<b>Supervising the work</b>	<b>Desk review</b>	<b>Site Visit / Interview</b>	<b>Report and protocol Writing</b>	<b>Technical Expert Input</b>	<b>Reporting Support</b>	<b>Technical Reviewer</b>
Mr. Ma Paa Puratchikkanal	India	1.2, 3.1, 6.1, 13.1/13.2, 15.1	X		X	X	X		

Mr. R Narendra Kumar	India	1.2, 3.1,		X	X	X	X		
Ms. Aveen Sinar	India			X	X				
Ms. Indumathi C	India	1.2							X

### 3 VALIDATION FINDINGS

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

The final validation findings relate to the programme design as documented and described in the PoA-DD.

#### 3.1 Approval and participation

The below table summarizes the project participants and parties involved. The validation team received letter of approval<sup>/P3/</sup> for Host party from the Host project participant i.e. CME of the PoA. The contents of the LoA and the signature of the authorised issuer were also compared with those of other approval cases issued by the host country DNA. Therefore, the team has confirmed the authenticity of the letter issued. This LoA is therefore regarded as valid and meeting the CDM requirements.

The Validation Team can confirm that the issued LoA from host party refers to the precise proposed project title as in the PoA DD. The Validation Team can confirm that the CME & project participants are listed in tabular form in section A.4 of the PoA DD and this information is consistent with the contact details provided in Appendix-1 of the PoA DD. The letter of approval is also found to be unconditional with respect to para § 39 (a) to (d) of VVS, version 03<sup>/B1/</sup>. As per the final PoA-DD<sup>/P1.3/</sup> the only CME/PP involved in the PoA is M/s. DACC Power Generation Company (Private) Limited and the only party involved is 'Islamic Republic of Pakistan'. The LoA is received from DNA of Pakistan. The LoA is checked and found in compliance of CDM requirements including requirements of PoA vide § 169 to 172 of CDM project standard.

The below table summarizes the CME/project participants and parties involved:

CME/Project Participant	DACC Power Generation Company (Private) Limited
Parties involved	Islamic Republic of Pakistan
APPROVAL	
LoA received	Yes
Date of LoA	16/10/2012
Reference to document	MoCC/CDM/HCA-1(61)/CDM 2012
LoA received from	DNA of Pakistan: Ministry of Climate Change
Validation of authenticity	The LoA is issued by Ministry of Climate Change. It is valid. It is verified from the mail communication by Ministry of Climate Change to the CME in which the LoA is forwarded to the CME
Validity of LoA	Valid
PARTICIPATION	
Party is party to Kyoto Protocol	Yes
Voluntary participation	Yes
Diversion of official development aid towards host country	No, ODA is involved
Project contribution to SD	Yes

#### Validation of ODA

Sr. No 11 of the eligibility criteria for the inclusion of SSC-CPA under this PoA states that ‘*The CPA should demonstrate (for example through a signed confirmation letter) that no funding from Annex I country is received, and if so, this finance would not result in a diversion of Official Development Assistance (ODA) funds*’. Hence it can be confirmed that no ODA fund will be involved in any CPA under this PoA.

### Confirmation of MoC<sup>/P4/</sup>

Requirement of MOC	Criteria fulfilled	Determination by the validation team
Is the focal point identified	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	DACC Power Generation Company (Private) Limited is the CME and only PP in this project. Hence the same considered as focal point focal point for the proposed PoA. MoC <sup>/P4/</sup> and LoA <sup>/P3/</sup> have been verified for the same.
Is the MOC signed by all project participant (including focal point identified entity/personal)	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	DACC Power Generation Company (Private) Limited is the only CME/project participant identified as focal point for the proposed PoA. Mr. Douglas Melvin is the person responsible for signing and further communication with EB/UNFCCC.
Is the written confirmation obtained by the PP's stating the authorization, specimen signatures and personal details, employment status are valid and accurate?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	The Certificate of Organisation Limited Liability Company given by Idaho secretary of State, confirms Mr. Douglas Melvin is the registered agent of the company DACC Global LLC and also authorise the specimen signature of Mr. Douglas <sup>/P15/</sup> . Also a written confirmation from the secretary of DACC Power Generation Company (Private) Limited, that Mr. Douglas is the CEO of Power Generation Company (Private) Limited as well as the president and CEO of DACC Global LLC <sup>/P15/</sup> . The signature of Mr. Douglas mentioned in the MoC is verified and found that it is matching with the specimen signature of him authorised by Idaho secretary of state.
Is MOC received by the validation team from the PP with whom DOE has the contractual relationship?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Yes, the MoC received by the DOE from DACC Power Generation Company (Private) Limited with whom TRC has contracted for validation services.

The DOE can confirm that the signatory and contact details on the MoC are authorized and credible. The assessment of § 53, VVS Version 03 is done by referring to § 54(a) of VVS version 03. The MoC has been directly received from the CME by email dated 19/11/2012, hence requirement of § 55, VVS version 03 is met.

The validation team confirms that the applicable latest template ([http://cdm.unfccc.int/Reference/PDDs\\_Forms/Registration/reg\\_form19.doc](http://cdm.unfccc.int/Reference/PDDs_Forms/Registration/reg_form19.doc)) is been employed by the project participant for the MoC. The MoC is been received from the DOE's contractual project participant. All the personal who have duly signed the MoC are been confirmed from the written communication by the project proponent regarding their personal identity, specimen signatures and employment status.

### 3.2 Programme of Activities Design Documents

The PoA-DD<sup>/P2.3/</sup> is in compliance with relevant form<sup>/B6-9/</sup> and PoA filling guidance<sup>/B6-1/</sup> as provided by UNFCCC. The most recent version of the forms is used. Validation team confirms that the guidelines for the completion of the PoA documents (as contained in the PoA-DD guideline<sup>/B6-1/</sup>) in their most recent version have been followed. Relevant information was provided by the Managing entity and/ or project participants in the applicable PoA sections.



### 3.3 Programme Description

The “PoA Solar PV in Pakistan” (here after referred as the “PoA”) is promoted by the Coordinating and Managing Entity (CME) “DACC Power Generation Company (Private) Limited”. This programme aims to promote Solar PV power projects in Pakistan. The CPAs under the PoA will be implemented in Pakistan. According to the description provided in PoA DD validation team confirms that this PoA is a voluntary co-ordinated action by the CME. The emission reductions at the CPA level would occur due to implementation of component project activities (CPAs) i.e. Solar PV project supplying electricity either to the grid. Review of PoA DD<sup>/P1.1/</sup> reveals that all the CPAs to be included in the PoA are green field project.

The measure involves GHG emission reduction due to displacement of grid electricity by the CPAs of the PoA. The grid electricity is predominantly generated by utilizing fossil fuel fired power plants. As per the PoA DD, there is no fossil fuel consumption by the CPAs of the PoA and their project site and hence there is no project emission. The CPAs of the PoA shall use large scale methodology ACM0002, version 13.0.0. From the review of PoA DD, it is confirmed that CPAs of the PoA shall utilize brand new equipment; hence leakage is not applicable as per the applied methodology.

As per the PoA DD, the starting date of the PoA in the PoA DD is 01/08/2012 which is the date of publication of PoA-DD for GSC. This is inline with the glossary of CDM terms, version 07.. The length of the PoA is taken as 28 years. The starting date of the validation of the PoA is 01/08/2012 i.e. the date the PoA was published for GSC. No CPA shall be applicable for the inclusion in the PoA if the start date is before the start of validation. This is in conformity with the §193 of VVS, version 3.0.

Validation team based on above confirms the compliance of §189 of VVS ver 3.0.<sup>/B1/</sup>.

### 3.4 Eligibility Criteria for CPA Inclusion

Review of PoA-DD<sup>/P1.3/</sup> and interview with representatives of CME reveals that the CME of the PoA employs clear and unambiguous criteria for the inclusion of the CPAs. The eligibility criteria have been stated and validation team confirms the eligibility criteria are in line with requirement of para 16, annex 5 of EB 70<sup>/B6/</sup>. Additionality and applicability of the applied methodology are the eligibility criteria as per the PoA DD, which is deemed appropriate and acceptable to the validation team. The eligibility criteria can be checked at the CPA level by the CME and shall be confirmed by the DOE before inclusion of the CPAs in the PoA.

The managing entity employs clear and exhaustive criteria for the inclusion of the CPA which are as follows:

1. *The geographical boundary of the CPA should be not more than the geographical boundary of the PoA, which is in this case the entire territory of the Islamic Republic of Pakistan.*
2. *The CPA developer will include in the header of all its official documentation, next to the CPA's name, the following legend: “part of the PoA Solar PV in Pakistan”.*
3. *The CPA consists in the installation of a new Solar PV power plant that will generate electricity that will be delivered to the National Electric Grid.*
4. *The CPA is a new power generation project as is not part of any other CDM activity or PoA. In order to avoid any double counting, the CPA project owner should provide to the CME a letter stating that the proposed CPA has not been or will not be part of any other PoA activity, has not been or will not be registered as an independent CDM activity and it has not been or will not be registered as an emission reduction activity in any other carbon trading schemes such as (but not limiting to): CDM, Gold Standard, Voluntary Carbon Scheme, etc. The CME will crosscheck the information presented by the CPA PO, performing an independent search of the proposed CPA in the most common carbon schemes.*
5. *The CPA utilizes the technology described in section A.6, which basically consist in the installation of Photovoltaic Solar Panels for the electricity generation.*
6. *The CPA project owner is able to demonstrate accurately the starting date of the CPA activity through documentary evidence.*

7. *The CPA complies with the applicability conditions stated in the ACM0002 V.13.0 (or its latest version).*
8. *The CPA should adopt the monitoring procedures for accounting the energy delivered to the grid and the emission reductions.*
9. *The CPA is able to demonstrate and assess its own additionality, by showing supporting evidence. The Additionality will be demonstrated by establishing that in the absence of the CDM the CPA will not occur; for example loan agreement or equity agreement, demonstrating that the carbon credits have been crucial to obtain bank loan and/or equity investors. The additionality will be demonstrated following the step wise approach stated in the “Tool for the demonstration and assessment of additionality” V 7.0:*
  - *Step 0: Demonstration whether the proposed CPA is the “first of its kind”.*
  - *Step 1: Identification of alternatives to the project activity.*
  - *Step 2: Investment analysis.*
  - *Step 3: Barrier analysis.*
  - *Step 4: Common practice analysis.*

*Furthermore, evidence may be shown to demonstrate the importance of the CDM and PoA inclusion to obtain local approvals (if applicable), or demonstration that the project IRR is below a defined benchmark, which will be defined in line with the requirements of the latest “Guidelines on the assessment of investment analysis”. The additionality should be demonstrated according to the latest available version of the “Tool for the demonstration and assessment of additionality”.*

10. *The CPA has performed a Local Stakeholder Consultation and also has presented to the CME an environmental impact assessment or the necessary environmental licenses.*
11. *The CPA should demonstrate (for example through a signed confirmation letter) that no funding from Annex I country is received, and if so, this finance would not result in a diversion of Official Development Assistance (ODA) funds.*
12. *The Target group for the CPA is the grid connected power plants by direct installation of a new facility.*
13. *The CPA PO has signed the “Inclusion Agreement” with the CME.*
14. *The CPA PO should issue a letter stating that the proposed CPA is a voluntary action.*

All the above eligibility criteria have been stated are verifiable for each CPA. The eligibility criteria can be checked at the CPA level by the managing entity and can be confirmed by the DOE during CPA inclusion.

Validation team has checked the management system mentioned in the PoA-DD and based on this documents, validation team confirms that the CME has competencies to check the features of potential CPAs of PoA and also have competency to check that each CPA meets all requirements and eligibility criteria before submission to the DOE for the inclusion. Based on above validation team confirms the compliance of § 9 of annex 3 of EB 63<sup>/B6.8/</sup>.

### 3.5 Operational and Management Plan

Validation team based on the review of PoA DD<sup>/P1.2/</sup> and operational and management manual<sup>/P5/</sup> of the CME confirms that clear and transparent description of the operational and management arrangement has been established by the CME for the PoA. The same has also been confirmed through interview and verification of CME operating manual<sup>/P9/</sup>. All the details of individual CPAs including the documents shall be controlled at CME end. The operating manual<sup>/P9/</sup> specific to the PoA has been developed by the CME. Furthermore the details of individual CPAs shall be maintained at the CPA unique ID number record<sup>/P6/</sup>. Individual CPA implementer shall sign an agreement<sup>/P16/</sup> with the CME and agrees to comply with all terms and conditions of the PoA including those related to the monitoring and data control. The same has been confirmed from the review of template agreement between the CPA implementers and the CME<sup>/P16/</sup>. This agreement is also one of the eligibility criteria. Hence any CPA which would be included in the PoA, shall follow the operation and management plan of the PoA as stated in the PoA DD and signed agreement<sup>/P16/</sup>.



The system to avoid double counting and technical review of the potential CPAs of the PoA has been clearly indicated in the management system manual<sup>/P9/</sup> of the CME specifically developed for the PoA. By reviewing this management system manual validation team confirms that the CME have the competencies to check the features of potential CPAs and can ensure that each CPA meets all requirements and eligibility criteria before inclusion in the registered PoA. Based on above, validation team confirms the compliance of following, in the management system of CME (in line with the requirement of §19 annex 5 of EB 70<sup>/B6-5/</sup>):

- (a) A clear definition of roles and responsibilities of personnel involved in the process of inclusion of CPAs, including a review of their competencies;
- (b) Records of arrangements for training and capacity development for personnel;
- (c) Procedures for technical review of inclusion of CPAs;
- (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);
- (e) Records and documentation control process for each CPA under the PoA;
- (f) Measures for continuous improvements of the PoA management system;

This management system manual<sup>/P9/</sup> shall in due course of time as a part of continual improvement shall address any other relevant elements if required. This shall be checked again by the DOEs at the time of inclusion of any CPAs in the PoA inline with the requirement of §19 of annex 5 of EB 70<sup>/B06-5/</sup>. This also complies with the requirement of §186 of VVS ver 03<sup>/B1/</sup>.

Based on above it can be confirmed that the CME would able to ensure that no double-counting occurs. Also, since as each CPA is uniquely identified in the format of CPA DD, the CME can check whether a CPA under the PoA is already a registered CDM project or CPA in another PoA from the UNFCCC website.

As per EB 54, Annex 13<sup>/B6.7/</sup>, the CPA of PoA shall do the de-bundling check as per para 9 of the same. The same is a part of eligibility criteria checked and confirmed by the validation team. This also complies with the requirement of §203 of VVS ver 03<sup>/B1/</sup>.

### 3.6 Monitoring Plan

There is no sampling approach for the verification of the CPAs of the PoA. As per PoA DD<sup>/P1.3/</sup>, CME of the PoA shall opt each of the CPA for the verification. Furthermore for the monitoring parameters to be opted by CPAs of the PoA, 100% data will be monitored and no parameters will be monitored on sampling approach. The same has been verified from the PoA DD<sup>/P1.3/</sup>. Review of monitoring plan of the PoA reveals that monitoring plan provides a transparent system to ensure that no double counting occurs and that the status of verification can be determined any time for each CPA. The system to avoid double counting has been indicated in the PoA DD<sup>/P1.3/</sup>.

The description provided in the PoA-DD<sup>/P1.3/</sup> on the operational and management arrangements was confirmed based on document review<sup>/P9/</sup> and through interviews.

### 3.7 Baseline and Monitoring Methodology

#### 3.7.1 Applicability of the selected methodology

Approved baseline and monitoring methodology ACM0002 “Consolidated baseline methodology for grid-connected electricity generation from renewable sources” (version 13.0.0) has been applied for the proposed project activity. At the time of GSP of the PoA-DD (version 01, dated 06/07/2012)<sup>/P1.1/</sup> and methodology Consolidated baseline methodology for grid-connected electricity generation from renewable sources” (version 13.0.0) applied is the latest one till date.

The validation team determined the applicability of methodology ACM0002 (version 13.0.0) as follows:

Applicability criteria of the methodology (ACM0002), Version 13.0	Criteria fulfilled	Determination by the validation team
The project activity is the installation, capacity addition, retrofit or replacement of a power plant/unit of one of the following types: hydro power	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	The PoA involves the installation of solar power project <sup>/P1.3/</sup> . It will be confirmed in each CPA by verifying

Applicability criteria of the methodology (ACM0002), Version 13.0	Criteria fulfilled	Determination by the validation team
plant/unit (either with a run-of-river reservoir or an accumulation reservoir), wind power plant/unit, geothermal power plant/unit, solar power plant/unit, wave power plant/unit or tidal power plant/unit;		the CPA specific documents like Purchase orders of the equipment, clearances etc.  Hence the project activity fulfils this criterion.
In the case of capacity additions, retrofits or replacements (except for wind, solar, wave or tidal power capacity addition projects) the existing plant started commercial operation prior to the start of a minimum historical reference period of five years, used for the calculation of baseline emissions and defined in the baseline emission section, and no capacity expansion or retrofit of the plant has been undertaken between the start of this minimum historical reference period and the implementation of the project activity.	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	The project does not involve capacity addition or retrofits or replacement.  Hence this criterion is not relevant.
In case of hydro power plants, one of the following conditions must apply: <ul style="list-style-type: none"> <li>• The project activity is implemented in an existing single or multiple reservoirs, with no change in the volume of any of the reservoirs; or</li> <li>• The project activity is implemented in an existing single or multiple reservoirs, where the volume of any of reservoirs is increased and the power density of each reservoir, as per the definitions given in the Project Emissions section, is greater than <math>4 \text{ W/m}^2</math> after the implementation of the project activity; or</li> <li>• The project activity results in new single or multiple reservoirs and the power density of each reservoir, as per the definitions given in the Project Emissions section, is greater than <math>4 \text{ W/m}^2</math> after the implementation of the project activity.</li> </ul>	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	This project is not hydro power project.  Hence this criterion is not relevant.
In case of hydro power plants using multiple reservoirs where the power density of any of the reservoirs is lower than $4 \text{ W/m}^2$ all the following conditions must apply: <ul style="list-style-type: none"> <li>• The power density calculated for the entire project activity using equation 5 is greater than <math>4 \text{ W/m}^2</math>;</li> <li>• All reservoirs and hydro power plants are located at the same river and were designed together to function as an integrated project1 that collectively constitutes the generation capacity of the combined power plant;</li> <li>• The water flow between the multiple reservoirs is not used by any other hydropower unit which is not a part of the project activity;</li> <li>• The total installed capacity of the power units, which are driven using water from the</li> </ul>	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	This project is not hydro power project.  Hence this criterion is not relevant.

Applicability criteria of the methodology (ACM0002), Version 13.0	Criteria fulfilled	Determination by the validation team
reservoirs with a power density lower than 4 W/m <sup>2</sup> , is lower than 15 MW; <ul style="list-style-type: none"> <li>The total installed capacity of the power units, which are driven using water from reservoirs with a power density lower than 4 W/m<sup>2</sup>, is less than 10% of the total installed capacity of the project activity from multiple reservoirs.</li> </ul>		
The methodology is not applicable to the following: <ul style="list-style-type: none"> <li>Project activities that involve switching from fossil fuels to renewable energy sources at the site of the project activity, since in this case the baseline may be the continued use of fossil fuels at the site;</li> <li>Biomass fired power plants;</li> <li>A hydro power plant<sup>2</sup> that results in the creation of a new single reservoir or in the increase in an existing single reservoir where the power density of the reservoir is less than 4 W/m<sup>2</sup>.</li> </ul>	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	<ul style="list-style-type: none"> <li>The project activity does not involve fuel switch.</li> <li>The project is not biomass power plant</li> <li>The project is not hydro power project.</li> </ul> <p>Hence this criterion is not relevant.</p>

The assessment of the project's compliance with the applicability criteria of the methodology ACM 0002, version 13.0 as documented in the PoA-DD Part I and Part II, which are evaluated in detail under the PoA validation protocol.

### 3.7.2 PoA boundary

The boundary of the potential/future CPAs of the PoA has been assessed by considering information gathered from the interviews, and from description of the gas and sources involved as contained in the PoA-DD<sup>P1.3/</sup>. The proposed CPA of the PoA is planned to implement in the geographical area of entire territory of the Islamic Republic of Pakistan.

Validation team based on the above confirms that the delineated project as documented in the PoA-DD<sup>P2.3/</sup> is justified for the CPAs of the PoA and are fully in line with the requirements set by the applied methodology<sup>B2/</sup>. Validation team based on above confirms the compliance of §191-192 of VVS version 03<sup>B1/</sup>.

### 3.7.3 Baseline Scenario

According to the applied ACM0002, Version 13.0.0, the validation team can confirm that the identified baseline scenario to the Greenfield grid connected Solar PV project, is that the electricity delivered to the grid by the project activity would have otherwise been generated by the operation of grid-connected power plants and by the addition of new generation sources into the regional/national grid.

In addition, as described in the PoA-DD, the baseline emission of the project is the electricity generated by the project multiplied by the emission coefficient which is reflected in the combined margin (CM), i.e. the weighted average of the operating margin (OM) emission factor and the build margin (BM) emission factor as per the "Tool to calculate the emission factor for an electricity system" version 02.2.1<sup>B3/</sup>, EB63., which is in line with the applied methodology ACM0002, version 13.0.0. Accordingly the Emission Factor can be calculated in a transparent and conservative manner as follows:

a) A combined margin (CM), consisting of the combination of operating margin (OM) and build margin (BM) according to the procedures prescribed in the 'Tool to calculate the Emission Factor for an electricity system'.

OR

b) The weighted average emissions (in kg CO<sub>2e</sub>/kWh) of the current generation mix. The data of the year in which project generation occurs must be used.

The validation team confirms that the proposed project activity meets the above requirement. Therefore, the baseline scenario as prescribed in the ACM0002 version 13.0.0 is applicable to the proposed project activity. The validation took cognizance of § Section L (6) of VVS (version 03.0).

<i>The approved baseline methodology applicable to the project</i> - explicit criteria - implicit criteria (e.g. available scenarios, applicability of formulas for BE/PE/LE calculations)	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	As per Section II of ACM 0002, version 13.0.0, the simplified baseline is prescribed.
<i>PoA-DD includes all assumptions and data used by project participants</i>	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	As per Section II of ACM 0002, version 13.0.0, the simplified baseline is prescribed.
<i>All the references and documents used are relevant for establishing the baseline scenario</i>	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	As per Section II of ACM 0002, version 13.0.0, the simplified baseline is prescribed.
<i>All the references and documents used are correctly quoted and conservatively interpreted in the PoA-DD</i>	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	As per Section II of ACM 0002, version 13.0.0, the simplified baseline is prescribed.
<i>All relevant policies / regulations considered are listed in the PoA-DD</i>	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	As per Section II of ACM 0002, version 13.0.0, the simplified baseline is prescribed.
<i>Identified potential baseline scenarios reasonably represent what would/could occur in the absence of the proposed project activity</i>	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	As per Section II of ACM 0002, version 13.0.0, the simplified baseline is prescribed.
<i>The baseline scenario selection is appropriate and determined according to the methodology</i>	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	As per Section II of ACM 0002, version 13.0.0, the simplified baseline is prescribed.
<i>The approved methodology used is applicable to the identified baseline scenario</i>	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	As per Section II of ACM 0002, version 13.0.0, the simplified baseline is prescribed.

The approved baseline methodology has been correctly applied to identify realistic and credible baseline scenarios, and the identified baseline scenario most reasonably represents what would occur in the absence of the proposed CDM project activity.

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

### 3.8 Additionality

#### 3.8.1 Prior consideration of the CDM

The PoA is not started before the publication of PoA-DD for GSC and hence the start date of PoA is considered as the date of publication of PoA-DD. Hence as per § 194 of VVS<sup>B1/</sup>, prior consideration of CDM, do not apply for this PoA.

#### 3.8.2 Additionality of PoA

As per the section B.5 of the PoA-DD<sup>P2.3/</sup>, CPAs of the PoA will be proved on the CPA level. This is inline with the § 73 of EB 47 meeting report. The additionality will be justified as per the “Tool for the demonstration and assessment of additionality” V.7.0.0 or the latest version of it. The same is included as CPA inclusion criteria no. 9. Hence it can be confirmed that all the CPA to be included in the PoA will be additional.

### 3.8.3 Approach for demonstrating CPA additionality

The additionality will be justified in each CPA as per the “Tool for the demonstration and assessment of additionality” V.7.0.0 or the latest version of it. The additionality of any CPA will be either based on the ‘first of its kind’ or investment analysis or barrier analysis. If the specific CPA-DD justifies the additionality based on ‘first of its kind’ then the justification will follow the “Guidelines on additionality of first-of-its-kind project activities”. If the specific CPA-DD uses investment analysis method then the investment calculation will follow guidance mentioned in the latest version of “Guidelines on the assessment of investment analysis”. If the specific CPA-DD uses barrier analysis for the additionality then the justification will follow the guidance given in the latest version of “Guidelines for Objective Demonstration and Assessment of Barriers”.

The stepwise approach based on which CPA additionality will be proved is given in the PoA-DD. The approach provided for CPA additionality justification seems to be appropriate adequate to prove additionality of the CPAs.

### 3.9 Emission Reduction from a typical CPA of the PoA

The emission reduction calculation is conducted as per applied methodology ACM 0002, version 13 and the methodological tool “Tool to calculate the emission factor for an electricity system” version 2.2.1 and correct equations have been used accordingly.

#### **Baseline Emissions:**

$BE_y$  is calculated by multiplying the net electricity supplied to the regional/national grid ( $EG_{PJ,y}$ ) with combined margin emission factor ( $EF_{grid,CM,y}$ ):

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

Where:

$BE_y$  = Baseline emissions in year y (tCO<sub>2</sub>)

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

$EF_{grid,CM,y}$  = Combined margin CO<sub>2</sub> emission factor for grid connected power generation in year y calculated using the latest version of the “Tool to calculate the emission factor for an electricity system”

Since the CPAs of the PoA involves installation of a new grid-connected renewable power plant/unit at a site where no renewable power plant was operated prior to the implementation of the project activity (Greenfield power plant), therefore:

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

Where:

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

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

#### **Calculation of Grid Emission factor ( $EF_{CO_2,grid,y}$ or $EF_{grid,CM,y}$ )**

In addition, as described in the PoA-DD, the baseline emission of the project is the electricity generated by the project multiplied by the emission coefficient which is reflected in the combined margin (CM), i.e. the weighted average of the operating margin (OM) emission factor and the build margin (BM) emission factor as per the “Tool to calculate the emission factor for an electricity system” version 02.2.1, EB63., which is in line with the applied methodology ACM0002, version 13.0.0. Accordingly the Emission Factor can be calculated in a transparent and conservative manner as follows:



a) A combined margin (CM), consisting of the combination of operating margin (OM) and build margin (BM) according to the procedures prescribed in the 'Tool to calculate the Emission Factor for an electricity system'.

OR

b) The weighted average emissions (in kg CO<sub>2e</sub>/kWh) of the current generation mix. The data of the year in which project generation occurs must be used.

PP has opted option "a)" and adopts the ex-ante calculation of emission factor of the grid. The combined margin emission factor has been calculated as 0.41117 tCO<sub>2e</sub>/MWh for national grid of Pakistan. This has been calculated using the data provided in the Pakistan Energy Books 2009-2011<sup>/P13/</sup> published by Ministry of Petroleum and Natural Resources. The 2011 year book was the latest available data source available at the time of webhosting. Hence latest 3 years data ie., 2009, 2010 & 2011 yearbook data is used for the calculation of combined margin

Nevertheless, following steps (step numbers correspond to tool to calculate emission factor of an electricity system, version 02.2.1) demonstrate the calculation of combine margin emission factor in accordance with "tool to calculate emission factor of an electricity system", version 02.2.1.

#### STEP 1. Identify the relevant electricity systems:

The PP has selected Pakistan national grid as the relevant electricity system.

As referred from KESC website<sup>/B9/</sup>, it is confirmed that KESC power plants are connected to an independent grid which supply electricity only to Karachi and not connected to the national grid. Since the CPA plants will be connected to national grid of Pakistan (which does not include KESC plants), considering the national grid as relevant electricity system is correct.

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

The PP has selected Option-I (ie., Only grid power plants are included in the calculation.)

Since the tool<sup>/B3/</sup> allows to choose both the option for any project without any condition, choosing not to include the off grid power plants and include only grid connected power plant is acceptable.

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

PP has selected simple OM method for calculation of operation margin emission factor and 'ex-ante' option for usage of the OM

As per the tool<sup>/B3/</sup> the OM can only be selected if the percentage of total grid generation by low cost/must run plants (on the basis of average of the five most recent years or based on long-term averages for hydroelectricity production.) for the electricity system is less than 50% of the total generation. As per the Pakistan Energy book<sup>/P13/</sup> the average percentage of low cost must run power plants in the last five years (ie., 2006-07 to 2010-11) in the Pakistani national grid is in the range between 35.55% and 41.01% of total generation which are less than 50%. Hence selecting simple OM method is appropriate for this project activity.

Also the tool allows choosing any option among 'ex-ante' and ex-post' for the usage of the OM without any condition, choosing 'ex-ante' option is acceptable.

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

PP has calculated generation weighted average of the simple operating Margin is calculated as 0.46796 tCO<sub>2</sub>/MWh

The simple OM is calculated based on the option A (Calculation based on average efficiency and electricity generation of each plant). ie.,

$$EF_{grid, OMsimple, y} = \frac{\sum_m \dot{a}EG_{m, y} * EF_{EL, m, y}}{\sum_m \dot{a}EG_{m, y}}$$

Where,

$EF_{grid, OMsimple, y}$	Simple Operating margin in year "y" (tCO <sub>2</sub> /MWh)
$\dot{a}EG_{m, y}$	Net quantity of electricity generated and delivered to the grid by power unit "m" in year "y" (MWh)
$EF_{EL, m, y}$	CO <sub>2</sub> emission factor of power unit "m" in year "y" (tCO <sub>2</sub> /MWh)
m	All power units serving the grid in year "y", except low-cost/must-run power units
y	The relevant year as per the data vintage chosen in Step 3

The  $EF_{EL, m, y}$  is calculated based option A2. I.e.,

$$EF_{EL, m, y} = \frac{EF_{CO2, m, i, y} \times 3.6}{\eta_{m, y}}$$

Where,

$EF_{CO2, i, m, y}$	Average CO <sub>2</sub> emission factor of fuel type "i" used in power unit "m" in year "y" (tCO <sub>2</sub> /GJ)
$\eta_{m, y}$	Average net energy conversion efficiency of power unit "m" in year "y" (ratio)
m	All power units serving the grid in year "y" except low-cost/must-run power units
i	All fossil fuel types combusted in power unit "m" in year "y"
y	The relevant year as per data vintage chosen in Step 3

The electricity generation data of each power plant connected to national grid are taken from respective Pakistan energy year books<sup>/P13/</sup>. Since, the efficiency of the each power plant is not publically available, PP has considered the default efficiency given in the annex 1 of the emission factor tool, v 2.2.1<sup>/B3/</sup>

The calculation given in the emission factor calculation excel sheet<sup>/P2.3/</sup> is verified and found that the OM calculation is correct.

#### STEP 5. Calculate the build margin emission factor ( $EF_{BM, y}$ )

The Build margin is calculated as 0.24079tCO<sub>2</sub>/MWh<sup>/P1.3/P2.3/</sup>.

As per the tool<sup>/B3/</sup> the generation-weighted average emission factor (tCO<sub>2</sub>/MWh) of all power units connected to the electricity system during the most recent years which contributes 20% of the recent year generation (2010-11). It is calculated based on the formula given in the OM calculation above. The calculation given in the emission factor calculation excel sheet<sup>/P2.3/</sup> is verified and found that the OM calculation is correct.

#### STEP 6. Calculate the combined margin (CM) emissions factor

The PP calculated combined margin as 0.41117 tCO<sub>2</sub>/MWh.

As per the tool<sup>/B3/</sup>, the weights of OM & BM for the wind and solar project should be considered as 75% and 25% for the calculation of combined margin emission factor. Since the project is and calculated the combined margin. Since the project is solar energy project the PP has considered same weightage for the calculation of CM. The same is verified through calculation provided in the PoA-DD<sup>/P1.3/</sup> & emission factor calculation sheet<sup>/P2.3/</sup>.

Hence it is concluded that the combined margin emission factor calculated (0.41117 tCO<sub>2</sub>/MWh) in this PoA is correct and appropriate.

### ***Project emissions:***

As per the methodology project the project emissions are calculated as follows if appropriate for the technology employed in the project activity. The project emission are calculated as follows,

$$PE_y = PE_{FF,y} + PE_{GP,y} + PE_{HP,y}$$

$PE_y$  = Project emissions in year y (tCO<sub>2e</sub>)

$PE_{FF,y}$  = Project emissions from fossil fuel consumption in year y (tCO<sub>2e</sub>) (Applicable in case of fossil fuel usage at the project site)

$PE_{GP,y}$  = Project emissions from the operation of geothermal power plants due to the release of non-condensable gases in year y (tCO<sub>2e</sub>) (Not applicable as the PoA proposed to install only Solar PV, Power Plants)

$PE_{HP,y}$  = Project emissions from reservoirs of hydro power plants in year y (tCO<sub>2e</sub>). (Not applicable as the PoA proposed to install only Solar PV Power Plants).

Hence the project emission from the project activity is zero.

### ***Leakage:***

As per the applicable approved methodology ACM0002 V.13.0.0, leakage is to be considered if the energy generating equipment is transferred from another activity. The PoA involves green field solar PV CPAs, the energy generating equipment used in the project activity has not been transferred from any other activity. Hence, leakage is not considered as zero which seems to be correct. .

### ***Emission reduction:***

The emission reductions ( $ER_y$ ) of the project activity are the difference between the baseline emissions ( $BE_y$ ), project emissions ( $PE_y$ ) and the leakage emissions ( $L_y$ ) as follows:

$$ER_y = BE_y - PE_y - LE_y$$

It is confirmed by the DOE by cross-checking the sample ER calculation sheet against all referenced data, calculation, formula, ex-ante emission factor from CEA database and the requirements of applied methodology and methodological tools that:

- All data sources and assumptions used are listed and referenced in the PoA-DD are appropriate. Calculations are correct, applicable to the proposed CPA and will result in a conservative estimation of the emission reductions;
- All documentation used by project participants as the basis for assumptions and source of data is correctly quoted and interpreted in the PoA-DD;
- All values used in the PoA-DD are considered reasonable in the context of the proposed CDM PoA project activity;
- The baseline methodology has been applied correctly to calculate project emissions, baseline emissions and leakage and emission reductions;

In summary, the calculation of emission reductions was correctly demonstrated by the PP according to the methodology ACM 0002, version 13.0.0 and its tool "Tools to calculate emission factor" version 02.2.1.

Validation team based on the review of PoA-DD<sup>/P1.3/</sup>, confirms that the formulae are correctly presented for the determination of emission reductions at CPA level. The parameters and equations presented in the PoA-DD, as well as other applicable documents, have been compared with the information and requirements presented in the methodology. An equation comparison has also been made to ensure consistency between all the formulae presented in the PoA-DD<sup>/P1.3/</sup> and calculation files (for the real case CPA-DD), methodology ACM 0002 version 13.0.0

## **3.10 Monitoring Plan of a typical CPA**

The monitoring plan presented in the PoA-DD<sup>/P2.3/</sup> complies with the requirements of the applicable methodology. The validation team has checked all parameters in the monitoring plan against the requirements of the methodology and no deviations have been found, this is in line with §198 of VVS version 03.



The procedures have been reviewed by the validation team through document review and interviews with the relevant personnel<sup>1/</sup>. The information provided has allowed the validation team to confirm that the proposed monitoring plan is feasible within the project design. The relevant points of monitoring plan have been discussed with the PoA managing entity / CPA implementer.

The management system document of the CME provide sufficient information which forms the confirmation by the validation team on the issues related but not limited to the monitoring methodology, data management, and the quality assurance and quality control procedures to be implemented in the context of the Programme. Therefore, the PoA managing entity and/or CPA implementer(s) will be able to implement the monitoring plan and the achieved emission reductions can be reported ex-post and verified.

### 3.10.1 Parameters determined ex-ante

The project adopts the ex-ante calculation of Combined margin emission factor ( $EF_{grid,CM,y}$ ) of the grid. This calculation process, incl. the applied parameters and equations, were assessed by the validation team in accordance with the Tool to calculate the emission factor for an electricity system, Version 02.2.1 by using the database provided in the Pakistan Energy Yearbooks 2009-2011, published by Ministry of Petroleum and Natural Resources (which was available at the time of webhosting). Please refer to Section 3.9 for the detailed assessment.

The validation team confirms that all relevant parameters have been sufficiently considered and the values of the parameters are real, measureable and conservative.

### 3.10.2 Parameters determined ex-post

According to the methodology ACM0002, version 13.0.0, the only parameter required for the solar energy project to be monitored is:

Sl. No.	Parameters	Description	Measured/calculated
1	$EG_{facility,y}$	Quantity of net electricity generation supplied by the project plant to the grid in year y. (MWh)	Calculated from the electricity exported to grid and electricity imported from grid which are measured through a two way energy meter. ie., $EG_{facility,y} = \text{Energy fed into the national grid} - \text{Energy purchased by the clients from grid}$

The accuracy class of energy meter to be installed for the measurement of Energy fed into the national grid & Energy purchased by the clients will be 0.2 class. This energy meter will be calibrated annually according the monitoring and calibration procedure explained in Appendix 5 of the PoA-DD<sup>P1.3/</sup> requirement.

The measurement and calculation method  $EG_{facility,y}$  given in the PoA-DD is verified and found it is appropriate for this programme. The net electricity is not only monitored for the CDM purpose but it will be the basis for the electricity billing to the respective electricity utility. Hence the  $EG_{facility,y}$  can be cross verified through the monthly sales receipt of electricity during the verification.

In summary, the validation team is convinced of compliance of the monitoring plan with the requirements of the monitoring methodology of ACM0002, version 13.0.0. The validation team interviewed the PP also confirmed that the monitoring arrangements described in the monitoring plan are feasible within the project design. The emission reductions resulting from the proposed CDM project activity can be reported ex-post and verified.

### 3.10.3 Management system and quality assurance

Each CPA implementer will appoint trained technicians for operation and maintenance of the respective solar plant which is also responsible for management of monitoring and reporting of the project. The management team for monitoring of the project is identified in the PoA-DD

Detailed procedures have been developed in the PoA-DD as follows:

- Monitoring organization;

- Monitoring equipment and installation;
- Data collection and QA/QC;
- Training of monitoring personals
- Calibration;
- Data management;
- Monitoring.

The monitoring arrangements described in the monitoring plan of the PoA-DD have been assessed by the validation team, by means of documentation review and from interviewing with the representative from the project owner<sup>/1/</sup>. On that basis the effective implementation of the monitoring plan is considered feasible.

In conclusion, it is the validation team's opinion that the monitoring, management & quality assurance plan of the project identified in the PoA-DD is in compliance with the requirements of the methodology ACM0002, version 13.

### 3.11 Environmental Impacts

Being the Solar PoA, it is expected to have a minimum environmental impact as implementation of CPA will not result in any considerable negative environmental impacts. However as per PoA-DD, the environmental impact assessment will be done on CPA-level.

### 3.12 Local Stakeholder Consultation

The LCS meeting will be conducted for each CPA. However the LSC meeting of the first CPA (PV-CPA-12-001) was jointly conducted for both PoA and the first CPA on 26/06/2012 at Serena Hotel of Islamabad. The stakeholders were invited by the means of invitation letters, Brochure, Posters and local newspaper advertisement<sup>/P7/</sup>. Initially the LSC meeting was planned on 07/06/2012 and the stakeholders were invited for that day. However later the LSC meeting were rescheduled to 26/06/2012 and the same were intimated to stakeholders<sup>/P7/</sup>. The stakeholders invited were from three groups as mentioned below:

#### Group I: National Level

- Power Ministry of Water and Power
- Alternative Energy Development Board
- Ministry of Finance
- National Transmission And Dispatch Company Limited
- Etc.

#### Group II: Regional or Corporation Level

- Employees of DPGC
- Multan Electric Power Company (MEPCO)
- Islamabad Electric Supply Company
- Independent energy consultants
- Etc.

#### Group III: Local Level

- Local Neighbors and Residents

The stakeholders meeting have resulted with 3 comments. All the comments are just clarification request by stakeholders and the same is answered by the project participants. No negative comments raised by the PP. These are confirmed through the minutes of LSC meeting<sup>/P15/</sup>. It is confirmed that stakeholder consultation meeting process is sufficient.

### 3.13 Comments by Parties, Stakeholders and NGOs

The PoA-DD<sup>/P1.1/</sup> and real-case CPA-DD, all dated 06/07/2012 were made publicly available on UNFCCC's website (<http://cdm.unfccc.int/ProgrammeOfActivities/Validation/DB/UGREN3VN3PONTDMM2ZF29VWTOT0957/view.html>) and parties, stakeholders and NGOs were through the CDM website invited to provide comments during a 30 days period from 01/08/2012 to 30/08/2012, where no comment was received.

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## Appendix A

The Validation Protocol for CDM Programme of Activities  
based on CDM Validation and Verification Standard,  
of

PoA Titled “PoA Solar PV in Pakistan”

Report No. 01 997 9105071194-1/2

**Table 1: CDM-SSC-POA-DD Requirements Checklist** ((based on § 37 of the CDM Modalities and Procedures and on VVS ver 03, Project Standard and Standard for demonstration of additionality, development of eligibility criteria and application of multiple methodologies for programme of activities, version 02, annex 05, EB 70)

Checklist	Comment	Ref.	Draft Concl.	Final Conc.
<b>PART I. Programme of activities (PoA)</b>				
<b>SECTION A. General description of PoA</b>				
<b>A.1. Title of the PoA</b>				
A.1.1.Are title, version number and the date of completion of PoA DD given in section A.1 of the PoA-DD?	Yes, title, current version number and the date of document completion has been provided in section A.1 of the PoA DD.	/P1.1/	OK	OK
<b>A.2. Description of the PoA</b>				
A.2.1. Has PoA DD in section A.2 contains the description of the policy/measure or stated goal that the <u>PoA seeks</u> to promote in a transparent manner with sufficient reference of the policy/measure/stated goal if any?	Yes the description of the state goal of the PoA has been provided in the section A.2 of the PoA DD.	/P1.1/	OK	OK
A.2.2. Has PoA DD in section A.2 contains a sufficient description of Framework for the implementation of the proposed PoA.?	Yes the description of the framework of the proposed PoA has been provided in section A.2 of the PoA DD.	/P1.1/	OK	OK
A.2.3.Has a confirmation been given that the proposed PoA is a voluntary action by the coordinating/managing entity?	Yes, the CME has provided confirmation that proposed PoA is a voluntary measure by the CME.	/P1.1/	OK	OK
A.2.4. Has PoA DD in section A.2 contains a brief description of how the proposed PoA contributes to sustainable development	No, the description on how the PoA contributes to sustainable development is missing. Hence CAR-01 is raised	/P1.1/	<del>CAR-01</del>	OK
A.2.5.Does the project qualify as a small scale CDM project activity as defined in decision 4 / CMP.1 annex II?	Not applicable as the PoA is framed for the large scale project activity	/P1.1/	OK	OK
A.2.6. Has the latest version of the CDM-POA DD form been applied?	Yes latest version of PoA DD template has been used. However the PoA-DD template has been modified by CME. Hence CAR-08 is	/P1.1/ /B06/	<del>CAR-08</del>	OK

	raised			
A.2.7. Has the CDM-POA-DD been duly filled in accordance with the latest guidance(s) and procedures and all information are consistently described?	No the PoA DD has not been complete in accordance with the latest available guidelines in some sections of the PoA-DD. Subject to closure of CAR-01, CAR-03 & CAR-07	/P1.1/ /B6/	<del>CAR-01,</del> <del>CAR-03 &amp;</del> <del>CAR-07</del>	OK
<b>A.3. CME and Participants of PoA</b>				
A.3.1 Has CME/s and all project participant in listed in the section A.3 of the PoA DD?  Note: The CME of the proposed PoA, as the entity which communicates with the Board; Project participants to the PoA (project participants may or may not be involved in one of the component project activities (CPAs) related to the PoA).	Yes the CME and PP of the PoA are listed in section A.3 of the PoA DD. However the CME name is not consistent throughout the PoA-DD and the specific CPA-DD. Hence CAR-02 is raised	/P1.1/	<del>CAR-02</del>	OK
<b>A.4 Party(ies)</b>				
A.4.1.1 Have all host countries been correctly listed?	The Islamic Republic of Pakistan is the only Host party the same is included in the PoA-DD.	/P1.1/	OK	OK
A.4.1.2 Is there any Party directly involved as project participant, and if yes, is that Party's contact details included in annex 1 of the PoA-DD?	No parties involved as project participant in the PoA	/P1.1/	OK	OK
A.4.1.3 Has the coordinating/managing entity obtained letters of approval for the implementation of the PoA from each Host Party and Annex I Party involved in the PoA?  <i>Note: Letters of approval shall be issued in accordance with the guidance provided by the CDM Executive Board (EB16, Annex 6).</i>	No, the letter of approvals from Host party (Pakistan) and Annex-I part7 (Germany) is not submitted for this PoA. Hence CAR-05 is raised	/P1.1/	<del>CAR-05</del>	OK
A.4.2. Do the written approvals confirm that the corresponding party is a Party to the Kyoto Protocol?	Subject to closure of CAR-05	/P1.1/	<del>CAR-05</del>	OK
A.4.3. Are the approvals issued from organizations listed as DNAs on the UNFCCC CDM website?  Indicate the means of validation employed to assess the authenticity, i.e. in case of doubt whether LoA has been verified with the DNA. Further describe which entity submitted the LoA for validation.	Subject to closure of CAR-05	/P1.1/	<del>CAR-05</del>	OK

A.4.4. Do the written approvals confirm that the participation is voluntary?	Subject to closure of CAR-05	/P1.1/	<del>CAR-05</del>	OK
A.4.5. Does the written approval from the host country confirm that the project contributes to the sustainable development in the /P1.1/country?	Subject to closure of CAR-05	/P1.1/	<del>CAR-05</del>	OK
A.4.6. Do the written approvals refer to the precise project title in the PoA-DD submitted for registration or an additional specification of the project activity, e.g. PoA-DD version number?	Subject to closure of CAR-05	/P1.1/	<del>CAR-05</del>	OK
A.4.7. Are the written approvals unconditional with regard to A.3.2, A.3.4 to A.3.6?	Subject to closure of CAR-05	/P1.1/	<del>CAR-05</del>	OK
A.4.8. Has the coordinating/managing entity obtained letters of authorization of its coordination of the PoA from each Host Party?  <i>The authorizations for the coordination of the PoA can be granted vide the letters of approval from each Host Party.</i>	Subject to closure of CAR-05	/P1.1/	<del>CAR-05</del>	OK
A.4.9. Is the information regarding the project participants listed in section A3 and in Annex 1 of the PoA-DD internally consistent to each other?	Yes the information provided in the project participants in section A.3 and annex 1 of the PoA DD is consistent. However in other places of PoA-DD and specific CPA-DD the name is not consistent. Hence CAR-02 is raised	/P1.1/	<del>CAR-02</del>	OK
A.4.10. Has the participation to the PoA of each project participant listed in the PoA-DD been approved by at least one Party involved?  <i>Indicate whether the participation of the project participant(s) has been approved by a Party to the Kyoto Protocol. Describe the means of validation employed to draw this conclusion.</i>	Subject to closure of CAR-05	/P1.1/	<del>CAR-05</del>	OK
A.4.11. Are there any other project participants approved but not listed in the PoA DD?	Subject to closure of CAR-05	/P1.1/	<del>CAR-05</del>	OK
<b>A.5 Location of PoA</b>				
A.5.1. Has the location (in terms of a geographical area for e.g. municipality, region within a country, country or several countries within which all CPAs to be included of the PoA been correctly described?	Yes the boundary of this PoA is defined as entire territory of Pakistan. The same is explained in the PoA-DD	/P1.1/	OK	OK
A.5.2 Does the CDM-POA-DD include a definition of the boundary for the PoA in terms of a geographical area (e.g., municipality, region within a	Yes, the PoA DD mentions definition of project boundary in terms of geographical	/P1.1/	OK	OK

country, country or several countries) within which all CPAs included in the PoA will be implemented?	location as Pakistan in PoA DD.			
A.5.3 Are all applicable national and/or sectoral policies and regulations within that chosen boundary reflected in the determination of the baseline?	Not applicable as the methodology itself provide the baseline for this PoA.	/P1.1/	OK	OK
<b>A.6. Technologies/measures of the PoA</b>				
A.6.1 Does the PoA-DD contain a clear, accurate and complete description of the CPAs with regard to the technology / measures to be used?	Yes the PoA DD contains a description of the the technology measure implemented under the PoA.	/P1.1/	OK	OK
A.6.2 Does the project use state of the art technology or would the technology result in a significantly better performance than any commonly used technologies in the host country?	Yes, the project uses solar PV based power generation which is the state of the art technology and this is better than any commonly used technology in Pakistan	/P1.1/	OK	OK
<b>A.7. Public funding of PoA</b>				
A.7.1 Is the PoA involves public funding?	No, the PoA does not involve any public funding	/P1.1/	OK	OK
A.7.2 Is there a confirmation that official development assistance has not been diverted to the implementation of the PoA in case public funding is used?	Not applicable as the PoA does not involve any public funding.	/P1.1/	OK	OK
<b>SECTION B. Demonstration of additionality and development of eligibility criteria</b>				
<b>B.1. Demonstration of additionality for PoA</b>				
B.1.1 Has it been demonstrated by the CME that describe how in the absence of CDM, none of the implemented CPAs would occur.  Note: Refer to “Standard for demonstration of additionality, development of eligibility criteria and application of multiple methodologies for programme of activities, version 02, annex 05, EB 70” for additionality requirement for the PoA.	As per ACM0002, version 13.0.0, the additionality should be justified based on the “Tool for the demonstration and assessment of additionality”. Hence the CPA inclusion criteria mention that each CPA will demonstrate its own additionality as per the tool.	/P1.1/	OK	OK
<b>B.2. Eligibility criteria for inclusion of a CPA in the PoA</b>				
B.2.1. Has the eligibility criteria for inclusion of a CPA under the PoA included in the PoA DD as per “Standard for demonstration of	Yes the PoA DD contains eligibility criteria as per annex 5 of EB70.	/P1.1/	<del>CAR-03</del>	OK

<p>additionality, development of eligibility criteria and application of multiple methodologies for programme of activities, version 02, annex 05, EB 70.</p> <p>Note: Validation team based on its expertise in the sectoral scope and any PoA specific requirement can confirm the requirement of any other eligibility criteria.</p>	Nevertheless CAR-03 is raised			
<b>B.3. Application of methodologies</b>				
B.3.1 Does the PoA DD contains description of the technology/measures and indicated the methodology chosen?	Yes the PoA DD contains description of the technology/measures and indicated the methodology chosen.	/P1.1/	OK	OK
B.3.2 In cases of multiple technologies/measures or multiple methodologies are being applied, dost the PoA DD list all the combinations of technologies/measures and methodologies that will be used in the PoA?	Not applicable for the subject PoA as it utilises only ACM0002 meth.	/P1.1/	OK	OK
B.3.3 In case of sampling plan(If applicable), does the PoA DD provide a description to demonstrate how it meets applicable provisions in the Standard for sampling and surveys for CDM project activities and programme of activities.	Not applicable for the subject PoA as there is no sampling involved	/P1.1/	OK	OK
<b>SECTION C. Management system</b>				
C.1 Does the PoA DD contains the description of the CME's management system in line with § 19 of annex 5, EB 70?	Yes the PoA DD contains the description of the CME's management system in line with § 19 of annex 5, EB 70.	/P1.1/	OK	OK
<b>SECTION D. Duration of PoA</b>				
<b>D.1. Starting Date of the PoA</b>				
D.1.1. What is the starting date of the PoA? Is it Reasonable and does the PoA DD provides how the start date was determined?	Yes the start date of PoA is reasonable and it is the date signing of contract between DACC and Think carbon for the development of PoA	/P1.1/	OK	OK
<b>D.2. Length of the PoA</b>				
<i>The length of the PoA shall be assessed</i>				
D.2.1. What is the length/lifetime of the PoA? Is it reasonable?	Yes the length of the PoA has been considered as 28 years which is reasonable and in line with VVS requirement.	/P1.1/	OK	OK
<i>PoA duration should not exceeding 28 years (60 years for A/R)</i>				
<b>E. Environmental Analysis</b>				



<b>E.1. Level of Analysis</b> <i>The analysis shall be carried out either on PoA or CPA level</i>				
E.1.1. Has it been clearly indicated on which level i.e. PoA or CPA an environmental Analysis has been carried out or will be carried out?	Yes, it has been indicated that the environmental analysis will be done on CPA level.	/P1.1/	OK	OK
<b>E.2. Documentation on the analysis of the environmental impacts</b> <i>The analysis shall be assessed</i>				
C.2.1. Has an environmental analysis of the PoA as per requirements of the CDM modalities and procedures been undertaken and described in the CDM-POA-DD?	Not applicable, as environmental analysis will be done in CPA level	/P1.1/	OK	OK
<b>E.3 Environmental impact Analysis Requirements</b>				
E.3.1. Are there any Host Party requirements for an Environmental Impact Assessment (EIA)?	Not applicable, as environmental analysis will be done in CPA level	/P1.1/	OK	OK
E.3.2. In case an Environmental Impact Assessment (EIA) is requested by the host party, has it been carried out and if applicable duly approved?	Not applicable, as environmental analysis will be done in CPA level	/P1.1/	OK	OK
E.3.3. Are trans boundary environmental impacts considered in the analysis?	Not applicable, as environmental analysis will be done in CPA level	/P1.1/	OK	OK
<b>F. Stakeholders' comments</b>				
<b>F.1. Level of Analysis</b>				
F.1.1. Has it been clearly indicated on which level i.e. PoA or CPA stakeholder comments have been or will be invited?	According to the PoA DD, stakeholders consultation is conducted at PoA level and also the LSC meeting will be conducted at CPA level also.	/P1.1/	OK	OK
<b>F.2. Brief description how comments by local stakeholders have been invited and compiled.</b>				
F.2.1. With regard to the PoA, how have local stakeholders' comments been invited prior to the publication of the DDs and summarized? If applicable, was due account taken of the comments received?	Yes, the stakeholders were invited by the means of invitation letters, Brochure, Posters and local newspaper advertisement. Initially the LSC meeting was planned on 07/06/2012 and the stakeholders were invited for that day.	/P1.1/	<del>CAR-06</del>	OK

	However later the LSC meeting was rescheduled to 26/06/2012 and the same were intimated to stakeholders. The LSC meeting documents were not submitted. Hence CAR-06 is raised			
<b>F.3. Summary of the comments received</b>				
F.3.1. With regard to the PoA, can the summary provided assessed as adequate?	The summary of the comments received are documented in the PoA-DD which is verified and found to be adequate Nevertheless CAR-06 is raised	/P1.1/	CAR-06	OK
<b>F.4. Report on how due account was taken of comments received</b>				
F.4.1. With regard to the PoA, can the report provided assessed as adequate?	All the comments received are just requesting clarification about the project. No negative comments received. Hence no due account is required. Nevertheless CAR-06 is raised	/P1.1/	CAR-06	OK
F.4.2. With regard to the PoA, can the local stakeholder consultation process in general be assessed as adequate?	Subject to closure of CAR-06	/P1.1/	CAR-06	OK
<b>SECTION G. Approval and authorization</b>				
G.1 Does the PoA DD indicates and included the letter(s) of approval from Party(ies) which wishes to be involved in the PoA, and whether it is available at the time of submitting the PoA-DD to the validating DOE.  Note: CME letters of authorization of its coordination of the PoA from each Party shall also been included.	The approval letter from both Host country and Annex I country is not submitted. Hence CAR-05 is raised	/P1.1/	CAR-05	OK
<b>PART II. Generic component project activity (CPA)</b>				
<b>A.1. Purpose and general description of generic CPAs</b>				
A.1.1 Has PoA DD in section A.1 contains the description of the description of each generic CPA within the PoA?	Yes, the Section A.1 PoA-DD contains the description of each generic CPA. Nevertheless CAR-07 is raised	/P1.1/	CAR-07	OK
<b>SECTION B. Application of a baseline and monitoring methodology</b>				
B.1.1. Does the PoA apply an approved and applicable CDM methodology and a valid version thereof?	Yes, the proposed PoA applied ACM0002, version 13.0.0, which is an approved CDM methodology and the version 13.0.0 is the	/P1.1/ /B2/	OK	OK

B.1.2. Does the typical CPA apply one of the approved small scale categories and any methodology and tool referred therein?	latest available version of methodology in the UNFCCC			
<b>B.2. Justification of the choice of the methodology</b>				
B.2.1. Is the justification of the choice of an approved baseline and monitoring methodology for the typical CPA sufficient?	Yes, the justification for choosing ACM 0002 methodology provided is sufficient	/P1.1/	CL 16	OK
B.2.2. Does a typical CPA apply a combination of approved methodologies? If so, has such combination been approved only once in accordance with “Standard for demonstration of additionality, development of eligibility criteria and application of multiple methodologies for programme of activities, version 02, annex 05, EB 70”?	Not applicable, since a typical CPA under this PoA will apply only one methodology i.e. ACM0002, version 13.0.0.	/P1.1/	OK	OK
B.2.3. Are all applicability criteria in the methodology, the applied tools or any other methodology component referred to therein fulfilled? Have the CME Justified the choice of the selected methodology (ies) by showing that each generic CPA meets each applicability condition of the methodology(ies)? Does documentation that has been used as a basis of justification provided or referenced in the PoA DD. If applicable, does the PoA DD provide a general description of the sampling plan.?	The methodology refers the emission factor tool and additionality tool for the grid connected project. The CPA has correctly applied both the tools.	/P1.1/	OK	OK
<b>B.3. Description of the sources and gases included in the boundary</b>				
B.3.1. Are the CPA’s spatial boundaries (geographical) of the CPAs to be included are clearly defined?	The geographical boundary will be defined in the each specific CPA	/P1.1/	OK	OK
B.3.2. Are all sources and GHGs included in the project boundary as required in the applied methodology?	Since the project activity is grid connected renewable energy generation, the CO2 emission from the grid connected fossil fuel power plants will be included in the baseline scenario. No project emission or leakage is applicable for renewable energy project. This is inline with ACM0002, version 13.0.0	/P1.1/	OK	OK

B.3.3. In case the methodology allows to choose whether a source and/or gas is to be included, is the choice sufficiently explained and justified?	Yes, the methodology allows to choose the GHG to be included and source of the GHG. The CO2 emission from the grid connected fossil fuel power plants will be included in the baseline scenario. No project emission or leakage is applicable for renewable energy project. This is inline with ACM0002, version 13.0.0	/P1.1/	OK	OK
<b>B.4. Description of how the baseline scenario is identified and description of baseline scenario</b>				
B.4.1. Does the PoA-DD make provisions to identify possible baseline scenarios to be considered for CPAs?	The applied methodology prescribes the baseline scenario. The PoA DD correctly refers to the same.	/P1.1/	OK	OK
B.4.2. Does the PoA-DD make provisions to identify the list of all the alternatives? Is the list of alternatives complete?	Not applicable, see comment above.	/P1.1/	OK	OK
B.4.3. Does the PoA-DD make provisions to identify the baseline scenario for each CPA?	Not applicable, see comment above.	/P1.1/	OK	OK
B.4.4. Does the PoA-DD make provisions to identify the baseline scenario according to the methodology for each CPA?	Not applicable, see comment above.	/P1.1/	OK	OK
B.4.5. Does the PoA-DD make provisions that any plausible alternative scenario is not excluded?	Not applicable, see comment above.	/P1.1/	OK	OK
B.4.6. Does the baseline alternatives sufficiently take into account relevant national and/or sectoral policies?	Not applicable, see comment above.	/P1.1/	OK	OK
B.4.7. Are the provisions for the baseline scenario determination compatible with the available data and are all literature and sources clearly referenced?	Not applicable, see comment above.	/P1.1/	OK	OK
<b>B.5. CPA additionality</b>				
B.5.1. Assessment and demonstration of CPA additionality				
B.5.1.1. Does the PoA-DD makes provisions to describe the additionality demonstration approach for each generic CPA to meet the eligibility criteria of the PoA including confirmation of additionality of the generic CPA for its inclusion into the PoA.	Yes, the PoA-DD justifies that the additionality of the each CPA-DD will be justified based on the additionality tool. This is also a eligibility criteria for inclusion of	/P1.1/	OK	OK

Does the demonstration follows the requirements of the applied methodology and/or other methodological tools?	CPA.			
<b>Note:</b> Refer to “Standard for demonstration of additionality, development of eligibility criteria and application of multiple methodologies for programme of activities, version 02, annex 05, EB 70” for additionality requirement for the PoA. In case of PoA of having small scale CPAs, the demonstration compliance shall be checked against the requirement of attachment A to appendix B. For PoAs utilizing large scale methodology, additionality tool shall be referred.				
B.5.1.2. Which criteria have been established to assess the additionality of CPA under this PoA?	The additionality of the each CPA-DD will be justified based on the additionality tool.	/P1.1/	OK	OK
<b>Investment Analysis</b>				
B.5.1.3. Does the PoA-DD provide criteria to assess that the proposed CPA of the PoA would not be the most economically or financially attractive alternative or economically / financially feasible without the revenues from the sale of CERs?	The additionality of the each CPA-DD will be justified based on the additionality tool in the respective CPA-DD.	/P1.1/	OK	OK
B.5.1.4. Is the type of investment analysis selected correctly?	The additionality of the each CPA-DD will be justified based on the additionality tool in the respective CPA-DD.	/P1.1/	OK	OK
B.5.1.5. Is the selected financial indicator chosen and applied correctly, if applicable?	The additionality of the each CPA-DD will be justified based on the additionality tool in the respective CPA-DD.	/P1.1/	OK	OK
B.5.1.6. If applicable, were the input values used in the investment analysis valid and applicable at the time of the investment decision and justified?	The additionality of the each CPA-DD will be justified based on the additionality tool in the respective CPA-DD.	/P1.1/	OK	OK
B.5.1.7. If CME proposes to use values from Feasibility Study Reports (FSR) is it possible to verify that the period between the FSR date and investment decision was reasonably short and FSR values did not change materially?	The additionality of the each CPA-DD will be justified based on the additionality tool in the respective CPA-DD.	/P1.1/	OK	OK
B.5.1.8. Is it reasonable to assume that no investment would be made at a rate of return lower than the benchmark by, for example, assessing previous investment decisions by the project participants or some verifiable circumstances that have lead to a change in the benchmark?	The additionality of the each CPA-DD will be justified based on the additionality tool in the respective CPA-DD.	/P1.1/	OK	OK

B.5.1.9. Is the Investment Analysis prepared in compliance with the latest version of the “Guidance on the Assessment of Investment Analysis” as provided by the CDM EB?	The additionality of the each CPA-DD will be justified based on the additionality tool in the respective CPA-DD.	/P1.1/	OK	OK
<b>Barrier Analysis</b>				
B.5.1.10. If applicable, are there any issues addressed in the barrier analysis that have a clear impact on the financial viability of the project activity and that shall be assessed by an investment analysis?	The additionality of the each CPA-DD will be justified based on the additionality tool in the respective CPA-DD.	/P1.1/	OK	OK
B.5.1.11. If applicable, Do the listed barriers exist and is their existence substantiated? Note: (a) by independent sources of data such as relevant national legislation, surveys of local conditions and national or international statistics and/or (b) by interviews with relevant individuals: including members of industry associations, government officials or local experts if necessary?	The additionality of the each CPA-DD will be justified based on the additionality tool in the respective CPA-DD.	/P1.1/	OK	OK
B.5.1.12 Would any of the identified barriers prevent the implementation of the project activity but not equally prevent the implementation of the possible alternatives, in particular the implementation of the identified baseline scenario?	The additionality of the each CPA-DD will be justified based on the additionality tool in the respective CPA-DD.	/P1.1/	OK	OK
<b>Common Practice Analysis</b>				
B.5.1.13. Are the geographical boundaries for the common practice analysis identified correctly?	The additionality of the each CPA-DD will be justified based on the additionality tool in the respective CPA-DD.	/P1.1/	OK	OK
B.5.1.14. Does the PoA DD provides an explanation why this region was selected and deemed more appropriate and is this explanation traceable and reliable?	The additionality of the each CPA-DD will be justified based on the additionality tool in the respective CPA-DD.	/P1.1/	OK	OK
B.5.1.15 Are there similar operational project activities, other than CDM activities, “widely observed and commonly carried out” in the defined region? Note: Use official sources and local and industry expertise?	The additionality of the each CPA-DD will be justified based on the additionality tool in the respective CPA-DD.	/P1.1/	OK	OK
B.5.1.16. In case there are similar commercially operated project activities, other than CDM activities, already “widely observed and commonly carried out” in the defined region, are there essential distinctions between the CDM project activity and the other similar activities?	The additionality of the each CPA-DD will be justified based on the additionality tool in the respective CPA-DD.	/P1.1/	OK	OK
<b>B.6. Estimation of Emission Reductions of CPA</b>				

<b>B.6.1. Explanation of methodological choices</b>				
B.6.1.1. In case the methodology allows for different methodological choices, are the equations applied properly justified and have they been used reflecting the other methodological choices (i.e. baseline identification)?	Yes, the methodology allows for different methodological choices, nevertheless CAR-09, CAR-12, CAR-13, CAR-14 & CAR-15 are raised	/P1.1/	<del>CAR-09</del> <del>CAR-12</del> <del>CAR-13</del> <del>CAR-14</del> <del>CAR-15</del>	OK
<b>B.6.2. Equations, including fixed parametric values used for ER calculation</b>				
B.6.2.1. Are the equations applied correctly according to the applied approved methodology?	Subject to closure of CAR-09, CAR-12, CAR-13, CAR-14 & CAR-15	/P1.1/	<del>CAR-09</del> <del>CAR-12</del> <del>CAR-13</del> <del>CAR-14</del> <del>CAR-15</del>	OK
B.6.2.2. Have conservative assumptions been used when calculating the project emissions?	Not applicable, as there is no project emission to be involved in the solar CPA	/P1.1/	OK	OK
<b>B.6.3. Data and parameters to be reported in the CPA-DD form</b>				
B.6.3.1. Are provisions made to identify all data and parameters which remain fixed throughout the crediting period correct, applicable to the project and will lead to a conservative estimation of emission reductions?	Subject to closure of CAR-09, CAR-12, CAR-13, CAR-14 & CAR-15	/P1.1/	<del>CAR-09</del> <del>CAR-12</del> <del>CAR-13</del> <del>CAR-14</del> <del>CAR-15</del>	OK
B.6.3.2. Does the PoA-DD mention reasonable values for all ex-ante calculation / monitoring parameters?	Subject to closure of CAR-09, CAR-12, CAR-13, CAR-14 & CAR-15	/P1.1/	<del>CAR-09</del> <del>CAR-12</del> <del>CAR-13</del> <del>CAR-14</del> <del>CAR-15</del>	OK
<b>B.7. Application of the monitoring methodology and description of the monitoring plan</b>				
<b>B.7.1. Data and parameters to be monitored by each CPA</b>				
B.7.1.1. Has the PoA DD contains monitoring parameters for the CPAs? Are the means of monitoring of all parameters contained in the monitoring plan feasible and in accordance with the requirements of the applied methodology?	Yes, PoA DD in section B.7.1 provides list of parameters to be monitored by the CPAs of the PoA, nevertheless the monitoring of these parameters are not appropriate and in line with the requirement of meth & PoA filling,	/P1.1/	<del>CAR-10</del>	OK

	in this context CAR-10 has been raised.			
B.7.1.2. Has the PoA DD provides all monitoring parameters as required by the applied methodology required to be implemented by CPA monitoring plan?	Yes, the only parameter required by methodology for the grid connected solar project is “Quantity of net electricity generation supplied by the project plant to the grid in year y.” the same is included as monitoring parameter in PoA-DD	/P1.1/	OK	OK
<b>B.7.2. Description of the monitoring plan for a SSC-CPA:</b>				
B.7.2.1 Has PoA DD contains monitoring plan for a CPA in accordance with the approved monitoring methodology, and identified the monitoring provisions and data parameters a CPA has to apply/monitor?	Yes the PoA DD contains monitoring plan to be employed by any CPA which is in accordance with the methodology	/P1.1/	OK	OK
B.7.2.2. Are the QA/QC procedures described under monitoring appropriate sufficient to ensure the emission reductions achieved from the project activity can be reported ex-post and verified?	No, the QA/QC procedure described under the monitoring plan is not sufficient. Hence CAR-11 is raised	/P1.1/	<del>CAR-11</del>	OK
B.7.2.3. Have all means of implementing the monitoring plan, e.g. equations necessary for ex-post emission reduction calculation, been described clearly and in line with the methodology?	Yes, all means of implementing monitoring plan have been clearly defined which is inline with the methodology. Nevertheless CAR-11 is raised	/P1.1/	<del>CAR-11</del>	OK



<b>Table 2: List of Requests for Corrective Action (CAR) and Clarification (CL)</b>					
<b>No.</b>	<b>CAR/CL</b>	<b>Observation (CAR/CL)</b>	<b>Reference</b>	<b>Summary of project owner response</b>	<b>Validation team conclusion</b>
<b>Part-I</b>					
1.	CAR-01	Section A.2 of the PoA DD: The description is not inline with the PoA-DD filling guidelines ie., EB 67, annex 5. Description on how the PoA contributes to sustainable development is missing.	(PoA) A.2.4 A.2.7	<b>PP reply #1:</b> The PoA DD, section A.2, has been updated with the explanation of how the PoA is contributing to the sustainable development of Pakistan.	<b>DOE assessment #1:</b> The explanation on sustainable development is now included in section A.2 and thus fulfils the requirement of EB 67 annex 5. CAR-01 is closed
2.	CAR-02	Section A.4 of the PoA DD: The CME name is not consistent throughout the PoA-DD and the specific CPA-DD	(PoA) A.3.1 A.4.9	<b>PP reply #1:</b> The name of the CME: DACC Power Generation Company (Private) Limited (DPGC), has been amended in all references in the PoA and in the CPA-DD.	<b>DOE assessment #1:</b> The CME name is now made consistent as “DACC Power Generation Company (Private) Limited” throughout the PoA-DD and CPA-DD. CAR-02 is closed
3.	CAR-03	Section B.2 of PoA DD: Conditions to provide affirmation that funding from Annex I parties does not resulting in diversion of ODA is not included. Hence not fulfilling the minimum requirements mentioned in the § 14 of EB 65 annex 3	(PoA) A.3.1 A.4.9 B.2.1	<b>PP reply #1:</b> The criteria described in section A.2 have been updated with a 10 <sup>th</sup> point, stating that a CPA, in order to be included in the PoA, will have to demonstrate that if it is receiving any kind of finance or funding from an Annex I country, it will not result in a diversion of ODA funds.	<b>DOE assessment #1:</b> The condition criteria on affirmation that finding from Annex-I parties does not resulting in diversion of ODA is now included in the section B.2 of PoA-DD. However the same is not justified in the section B.5 of generic CPA-DD. CAR-03 is open
				<b>PP reply #2:</b>  The criteria of inclusion of the Generic CPA-DD, section B.5 have been updated in order to match the criteria described in the PoA – DD.	<b>DOE assessment #2:</b> The following criteria regarding the ODA is included: <i>“The CPA should demonstrate (for example through a signed confirmation letter) that no funding from Annex I country is received, and if so, this finance would not result in a diversion of Official Development Assistance (ODA) funds.”</i> This seems to be appropriate. It confirms the minimum eligibility requirements mentioned in the § 14 of EB 65 annex 3.

					(also inline with the latest version of the guideline § 15 of EB 70 annex 5) CAR-03 is closed
4.	CL-04	Please clarify whether all the CPA to be included in the CPA will supply power to grid or it will use power to any captive purpose or supply power to third party also. If any CPA is expected to wheel the power to its own industry or sell it to third party, the same needs to be explained in the PoA-DD	-	<b>PP reply #1:</b> According to the 2 <sup>nd</sup> point of the criteria listed in section B.2 of the PoA, for including a CPA into the proposed PoA, “ <i>the CPA consists in the electricity generation and the delivery of such energy to the National Electric Grid</i> ”, therefore all CPA will be delivering the power generated to the National Grid.	<b>DOE assessment #1:</b> PP has confirmed that the all the CPA to be included in the CPA will supply power to grid only. No power will be used for captive consumption or selling to third party. CL-04 is closed
5.	CAR-05	<ol style="list-style-type: none"> <li>Letter of approval letters of authorization of CME coordination of the PoA &amp; approval of parties involved in the proposed PoA are not submitted.</li> <li>Modalities of communication is not submitted.</li> </ol>	(PoA) A.4.1.3 A.4.2 A.4.3 A.4.4 A.4.5 A.4.6 A.4.7 A.4.8 A.4.10 A.4.11 G.1	<b>PP reply #1:</b> <ol style="list-style-type: none"> <li>The letter of approval is being processed by the local DNA's.</li> <li>The modalities of communication has not been submitted yet. Will be carried out within the next few weeks.</li> </ol>	<ol style="list-style-type: none"> <li>The letter of approval from Ministry of Climate Change, the DNA of Pakistan has been submitted for verification. LOA submitted by the CME was reviewed and followings are confirmed.               <ul style="list-style-type: none"> <li>The approval is issued by the Ministry of Pakistan which is listed in the UNFCCC website as the DNA in Pakistan. This is confirmed through the website <a href="http://cdm.unfccc.int/DNA/view.html?CID=164">http://cdm.unfccc.int/DNA/view.html?CID=164</a></li> <li>Point number 3 of LoA confirms that Government of Pakistan ratified the Kyoto Protocol</li> <li>Point number 2.c of LoA confirms that the project participation is a voluntary action.</li> <li>Point number 2..b of LoA confirms that the programme contributes to the sustainable development in the country</li> </ul> </li> </ol>

					<ul style="list-style-type: none"> <li>LoA authorise “DACC Power Generation Company (Private) Limited” which is the CME for this programme. There is no other PP approved by the DNA and not listed in the PoA-DD</li> <li>The PoA title in the LoA is “PoA Solar PV in Pakistan” and matches with the project title mentioned in A.1 of the PoA-DD.</li> <li>LoA is unconditional with regard to protocol checklist § A.3.2, A.3.4 to A.3.6</li> </ul> <p>2. The MoC has been submitted. The same is verified and found that it is inline with para 72 of project standard, version 2.1.</p> <p>CAR-05 is closed</p>
6.	CAR-06	<p>Please submit the following documents</p> <ol style="list-style-type: none"> <li>1. Pakistan Solar PV PoA CME Operational Manual</li> <li>2. The Letter of intention of dated 08/02/2011</li> <li>3. Minutes of stakeholders meeting</li> <li>4. Stakeholders invitation letter</li> </ol>	(PoA) F.2.1 F.3.1 F.4.1 F.4.2	<b>PP reply #1:</b> <ol style="list-style-type: none"> <li>1. The CME Operation Manual can be found in the attached folder with all the evidences, in the file” CME_Operational_Manual_final.doc”.</li> <li>2. The LoI can be also found in the attached folder, in the file “LoI DACC.pdf”.</li> <li>3. The evaluation forms of the LSC and evidences of the consultation can be found in the files “Part -1_validation.pdf”, Part -2_validation.pdf”, “Participants list.pdf”, “Newspaper adv.pdf”.</li> </ol>	<b>DOE assessment #1:</b> <ol style="list-style-type: none"> <li>1. The CME operational manual is submitted. The same is verified and found that the monitoring plan mentioned in the manual seems to be feasible and appropriate for this PoA.</li> <li>2. LoI from Alternative Energy Development Board, Pakistan dated 08/02/2011 has been submitted. The LoI is reviewed and found to be authentic</li> <li>3. LSC invitation letters, public notice invitation, newspaper advertisement, comments received by the stakeholders are submitted. All the documents are verified and assessed</li> </ol>

				<p>4. The Stakeholder invitation letter that were sent, can be found in the attached folder under the folder name: "LSC Invitation Letters"</p> <p>Note: The section F.1, has been amended with the explanation of how Group II and Group III were invited to the LSC.</p>	<p>that the stakeholders meeting conducted for the PoA is sufficient.</p> <p>4. The proof of the means of LSC meeting invitation like LSC invitation letters, public notice invitation, and newspaper advertisement are submitted. All the relevant stakeholders are identified and invited for the consultation meeting.</p> <p>CAR-06 is closed.</p>
7.	CAR-07	<p>Section A.1 of Generic CPA-DD:</p> <ol style="list-style-type: none"> <li>1. The explanation on the description on technology is missing</li> <li>2. Including details of the specific CPA description in the generic CPA-DD is not appropriate</li> </ol>	<p>(PoA) A.2.7</p> <p>(g-CPA) A.1.1</p>	<p><b>PP reply #1:</b></p> <ol style="list-style-type: none"> <li>1. The section A.3 Description of the Generic CPA, and A.5 Technical Description of the CPA, has been modified, including a more detailed description of the technology that will be installed.</li> <li>2. The specific details of a CPA have been deleted.</li> </ol>	<p><b>DOE assessment #1:</b></p> <ol style="list-style-type: none"> <li>1. The technology description is now given in the section A.1 of generic CPA-DD which is now inline with the EB 67, annex 5 requirements</li> <li>2. The information related to specific CPA are now removed from the Section A.2 of the generic CPA-DD</li> </ol> <p>CAR-07 is closed</p>
8.	CAR-08	<p>Description of baseline scenario of Generic CPA-DD:</p> <ol style="list-style-type: none"> <li>1. The template section numbering has been modified from this point forward. To be corrected</li> <li>2. Electricity generation from the grid connected power plants are belongs to the year 2005 which is very old. Latest data available at the time of webhosting should be considered for the same.</li> </ol>	<p>(PoA) A.2.6</p>	<p><b>PP reply #1:</b></p> <ol style="list-style-type: none"> <li>1. The template section numbering has been revised and corrected.</li> <li>2. The Table 2 in section D.4 of the document has been updated with the list of power plants that were connected during the baseline year 2010, the same table that has been included in the PoA – DD.</li> </ol> <p><b>PP reply #2:</b></p> <ol style="list-style-type: none"> <li>1. The title numbering has been updated in all the PoA-DD.</li> <li>2. The data from 2011 has been</li> </ol>	<p><b>DOE assessment #1:</b></p> <ol style="list-style-type: none"> <li>1. The title numbering is corrected only in the baseline scenario section. However the same mistake is still there in the remaining section.</li> <li>2. The 2011 data was available at the time of webhosting of the PoA-DD. So data belongs to 2010 is also not latest.</li> </ol> <p>CAR is open</p> <p><b>DOE assessment #2:</b></p> <ol style="list-style-type: none"> <li>1. The title numbering is corrected all over the PoA-DD.</li> <li>2. The 2011 year data, the latest data</li> </ol>

				updated. Moreover, the baseline year has been changed to 2011, therefore all the calculations are made now with the 2011 information.	available the time of webhosting of PoA-DD is now used CAR-08 is closed
9.	CAR-09	Section B.6.1 of Generic CPA-DD: 1. The version of the emission factor tool used to calculate the CM is not mentioned 2. Evidence for the low cost/must run power plants do not exceed 50% of the total electricity generation in the past 5 years is not provided 3. The OM, BM & CM values calculated is not explained in this section	(g-CPA) B.6.1.1 B.6.2.1 B.6.3.1 B.6.3.2	<b>PP reply #1:</b> 1. The version of the Tool has been updated. 2. The evidence of the low-cost/must-run not exceeding the 50% has been updated in section D.6.1. 3. The Steps and Sub-steps for calculating the OM, the BM and the CM are explained in the section B.6.1. The resulting calculations were updated in the section.	<b>DOE assessment #1:</b> 1. The emission factor tool version 2.2.1 is now used which is the latest version available in the UNFCCC. CAR is closed 2. The calculation of the low cost/must run of the last 5 years is included. However the following mistakes are identified: <ol style="list-style-type: none"> <li>2011 data which is the latest is not used.</li> <li>Nuclear power plants are not considered under low cost/must run</li> <li>Excluding KESC power plants are not correct</li> </ol> CAR is open 3. The calculated OM, BM & CM values are now included in the generic CPA-DD. CAR is closed
				<b>PP reply #2:</b> The calculation of the Low-cost/must-run plants has been updated with the following: <ol style="list-style-type: none"> <li>The 2011 data has been included.</li> <li>Nuclear power plants are now considered.</li> <li>An explanation of why the KESC plants are not part of</li> </ol>	<b>DOE assessment #2:</b> a. The 2011 data, the latest data available at the time of webhosting is now used. CAR is closed b. Nuclear power plants are now considered for the low Cost/must run calculation. CAR is closed c. As per the explanation given in the EF calculation sheet, the KESC power plants are connected to an independent grid and

				<p>the calculation has been provided in the Excel model in the “Nominal Capacity by Tech” tab, and also in the PoA-DD and in the CPA-DD, section B.4 and D.4, respectively.</p>	<p>not connected to the national grid which is confirmed by verifying the KESC website (<a href="http://www.kesc.com.pk/en/article/ourcompany/whatwedo-1.html">http://www.kesc.com.pk/en/article/ourcompany/whatwedo-1.html</a>). Since the KESC plants are connected to a separate electricity system the same not considered in the Low cost must run share calculation. This is seems to be appropriate. However the KESC power plants are considered in the OM &amp; BM calculation. This is not correct as KESC plants are not connected to National grid. CAR is open</p> <p>d) Also in the EF sheet, the CM calculation is based on Simple OM-option B (as per the EF tool). However in PDD it is mentioned that the simple OM option A is used. Similarly the BM calculation is not line with the methodology selected.</p> <p>CAR is open</p>
				<p><b>PP reply #3:</b></p> <p>c) The KESC Plants have been removed from the emission factor calculations in order to avoid any kind of confusion. All the tables in the CPA and PoA DD’s have been updated. Also a note in the “Nominal Capacity by Tech” tab in the excel model has been added including the reference to the KESC website where it can be confirmed that the KESC grid is independent from the National Grid.</p>	<p><b>DOE assessment #3:</b></p> <p>c) The KESC power plants are now removed from the OM &amp; BM calculation which is seems to be appropriate as KESC plants are connected to an independent grid. Moreover</p> <p>d) The OM &amp; BM has been calculated as per the selected option mentioned in the PDD. The efficiency of the power plants has been taken from the default efficiency provided in the emission factor tool, v 2.2.1 which is more conservative.</p>

				d) The emission factor calculation is now modified based on the Simple OM-Option A. since the efficiency of the each power plant is not publically available, the default efficiencies have been considered conservatively for OM & BM calculation.	Due to these changes the combined emission factor comes down to 0.41117 tCO <sub>2</sub> /MWh.  CAR-09 is closed.
10.	CAR10	Section B.7.1 of Generic CPA DD: 1. Explanation on how the import and export electricity are measured and the calculation method of the net electricity supplied to the grid is not explained 2. The following details are missing in the monitoring parameter table a. Equipment used for measurement b. Location of the measuring equipment c. Accuracy of the measurements, d. Person/entity responsible for the measurements e. Frequency of meter calibration	B.7.1.1	<b>PP reply #1:</b> 1. The calculation method of net electricity based on import and export is explained now in the PDD.  2. The information about the monitoring procedure, equipment, frequency, responsibilities has been updated in the section D.7.2 and also in the Appendix 5.	<b>DOE assessment #1:</b> 1. The calculation of net electricity based on import and export is explained in the section B.7.2. Hence OK  2. The required details are included. OK  CAR-10 is closed
11.	CAR-11	Section B.7.2 of Generic CPA-DD: Provisions for the following is not included • Training of monitoring staffs • Emergency preparedness plan • Monitoring & reporting structure • Data management	B.7.2.2 B.7.2.3	<b>PP reply #1:</b> The section D.7.2 indicates the procedure to be followed in case of emergency (failure of both meters) in the monitoring of the net electricity supplied to the grid. Also the Appendix 5 incorporates a list of all the staff involved in the calibration procedure of the equipment, the measurements of the energy and the procedure for recording the data. Please refer to the Appendix 5 for further details.	<b>DOE assessment #1:</b> The required information are included in the section B.7.2 and Appendix 5. CAR-11 is closed.



12.	CAR-12	EF calculation sheet: 1. The years mentioned in the sheet is not consistent with the years mentioned in the Pakistan Energy Book 2. Source for the Energy generation by individual power plant for the year 2009 & 2008 is not provided	B.6.1.1 B.6.2.2 B.6.3.1 B.6.3.2	<b>PP reply #1:</b> The years of reference of the data used for the EF calculations have been updated, according the Pakistan Energy Yearbook.  The source for the information presented for the years 2009 and 2008 has been updated in the Excel model.	<b>DOE assessment #1:</b> 1. The years mentioned in the ER sheet is now made consistent with the respective Pakistan energy year book. 2. Source of the information is now corrected with the respective year book. CAR-12 is closed
13.	CAR-13	EF Calculation sheet> 2008: 1. The total of power generation by Thermal WAPDA calculated in the cell H41 is not correct. 2. Electricity generation by nuclear power plant is not considered	B.6.1.1 B.6.2.2 B.6.3.1 B.6.3.2	<b>PP reply #1:</b> 1. The cell H41 has been corrected. 2. The generation by nuclear power plants have been incorporated into the total amount of electricity generated.	<b>DOE assessment #1:</b> 1. Still the mistake is not rectified. The cell H40 is not considered in the 'total' calculated in the H41. CAR is open 2. The electricity generation by the nuclear power plant is now considered. CAR is closed
				<b>PP reply #2:</b>  The total power generation in all the tabs of the Excel model has been updated and corrected. The sums of the total power delivered by the different power plants have been rectified.	<b>DOE assessment #2:</b> 1. The Cell H40 is now considered in the calculation of total in the cell H41 CAR-13 is closed
	CAR-14	EF calculation sheet> EF e,l,m,y,: 1. The lower bound value of emission factor given in the IPCC for the fuels is considered for the EF calculation which is not conservative 2. Emission factor is wrongly selected in the cell 'E82' and 'E91'	B.6.1.1 B.6.2.2 B.6.3.1 B.6.3.2	<b>PP reply #1:</b> 1. The values of the emission factors used for the calculations have been updated with the default values of the IPCC. 2. The values selected in the cells: E53 : E 93 have been updated according the correction made in the previous point.	<b>DOE assessment #1:</b> 1. The IPCC default values are now used. However for the EF of coal, the EF of lignite is considered and justified it is conservative which is not correct. The EF lignite is not conservative compared to Other Bituminous and sub-bituminous coal. CAR is open 2. The emission factors are now correctly selected for the calculation.

				<b>PP reply #2:</b>  1. The IPCC value for the coal has been changed. The type of coal that is used has not been specified in the official information, however in order to keep a conservative approach, the lower EF value of "Other Bituminous coal" has been used.	CAR is closed  <b>DOE assessment #2:</b>  1. For the coal power plants the emission factor of other Bituminous coal" is now used which is seems to be conservative CAR-14 is closed
14.	CAR-15	EF calculation sheet> Simple OM_2nd version: 1. Source for the fuel consumption for thermal power generation is not given 2. OM & BM is calculated based on the gross electricity generation which is not correct 3. Import electricity is not considered for the OM calculation which is not correct 4. Total electricity generation for the year 2010 calculated in the cell 'G24' is not correct 5. The percentage of electricity generation from the BM power plants calculated in the cells G27:G43 are not correct.	B.6.1.1 B.6.2.2 B.6.3.1 B.6.3.2	<b>PP reply #1:</b> 1. The source of the fuel consumption values have been updated in the Excel model, in the cell E 41. 2. Based on the auxiliary consumption the net electricity is calculated for each power plant and based on the net electricity the OM & BM is calculated now. 3. The imports of electricity have been updated in the calculations. 4. The percentage of the built margin have been corrected.	<b>DOE assessment #1:</b> 1. The source for the fuel consumption is the respective year energy book. The same is now included in the ER sheet. CAR is closed 2. The net electricity is now used for the calculation of OM & BM. CAR is closed 3. The import electricity is now considered in the operating margin calculation. CAR is closed 4. The percentage of electricity generation from the BM power plant calculation is now corrected. CAR-15 is closed

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## Appendix B

### Certificates of Competence

## Qualification

MP, Kanal /

## Emission Trading

### United Nations Framework Convention on Climate Change

(The following data is set by the certification body)

Auditor No.:

(AuditorenRegNr)

Appointed:  
(Zugelassen)

ja

Qualification Level: Lead Auditor  
(Qualifikationsstufe)External:  
(Externer)Add. reviewer:  
(Zusätzlicher Prüfer)EAC Scopes:  
(EAC Branchen)

CDM 01 - Energy industries (renewable - / non-renewable sources)  
CDM 03 - Energy demand  
CDM 06 - Construction  
CDM 13 - Waste handling and disposal  
CDM 15 - Agriculture

Add. qualification:  
(zus. Qualifikation)First Appointment: 06/02/2012  
(Erstberufung)Valid to:  
(Gültig bis)

05/02/2015

Remarks:

TA. 1.2, 3.1, 6.1, 13.1/13.2, 15.1

Languages:

English

Tamil

Hindi

## Experience Exchange

Date

Location

Remarks

Accreditation(s)

## Monitoring

Latest Monitoring:  
(letzte Beurteilung)Next Monitoring:  
(nächste Beurteilung)

Remarks:

### History of scope allocation

Date: 2012-07-04  
Change: EAC CDM, CDM, CDM, CDM, CDM added  
By: Praveen Urs  
Reason:

### History

Created:	03/12/2012 01:18:50 PM ZE5B	Kanal MP/Ind/TUV
Modified:	07/04/2012 02:21:23 PM ZE8	Praveen Urs/Chn/TUV
	06/29/2012 01:57:34 PM ZE8	Praveen Urs/Chn/TUV
	03/12/2012 01:19:19 PM ZE5B	Kanal MP/Ind/TUV

## Qualification

R, Narendra Kumar /

### Emission Trading

#### United Nations Framework Convention on Climate Change

(The following data is set by the certification body)

Auditor No.:

(AuditorenRegNr)

Appointed:  
(Zugelassen)

ja

Qualification

Lead Auditor

Level:

(Qualifikationsstufe)

External:  
(Externer)

Add. reviewer:

(Zusätzlicher Prüfer)

EAC Scopes:  
(EAC Branchen)

CDM 03 - Energy demand

CDM 01 - Energy industries (renewable - / non-renewable sources)

Add.  
qualification:  
(zus. Qualifikation)First  
Appointment:  
(Erstberufung)

15-05-2012

Valid to:  
(Gültig bis)

14-05-2015

Remarks:

TA. 1.2, 3.1

Languages:

Tamil

English

Hindi

### Experience Exchange

Date

Location

Remarks

Accreditation(s)

### Monitoring

Latest Monitoring:  
(letzte Beurteilung)Next Monitoring:  
(nächste Beurteilung)

Remarks:

### History of scope allocation



Date: 2012-06-29  
Change: EAC CDM removed; CDM added  
By: Praveen Urs  
Reason:

Date: 2012-06-28  
Change: EAC CDM, CDM added  
By: Praveen Urs  
Reason:

## History

Created:	27-06-2012 12:58:24	Kaustubh Rane/Ind/TUV
Modified:	29-06-2012 18:18:45 ZE8	Praveen Urs/Chn/TUV
	28-06-2012 18:04:05 ZE8	Praveen Urs/Chn/TUV
	27-06-2012 12:58:53	Kaustubh Rane/Ind/TUV

## Qualification

C, Indumathi /

## Emission Trading

### United Nations Framework Convention on Climate Change

Auditor No.:

(AuditorenRegNr)

Appointed:  
(Zugelassen)☒ jaQualification Level:  
(Qualifikationsstufe)

Lead Auditor

External:  
(Externer)☐ jaAdd. reviewer:  
(Zusätzlicher Prüfer)☒ yesEAC Scopes:  
(EAC Branchen)

CDM 01 - Energy industries (renewable - / non-renewable sources)

Add. qualification:  
(zus. Qualifikation)First Appointment:  
(Erstberufung)

06/06/2012

Valid to:  
(Gültig bis)

05/06/2015

Remarks:

TA 1.2

Languages:

Tamil  
English  
Hindi

## Experience Exchange

Date

Location

Remarks

Accreditation(s)

## Monitoring

Latest Monitoring:  
(letzte Beurteilung)Next Monitoring:  
(nächste Beurteilung)

Remarks:

## History of scope allocation