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Validation Report

VALIDATION OF THE CDM-PROJECT:
TACNA SOLAR 20 TS: 20 MW SOLAR
PHOTOVOLTAIC POWER PLANT.

REPORT NO. 600500729

24 January 2012

TÜV SÜD Industrie Service GmbH
Carbon Management Service
Westendstr. 199 - 80686 Munich – GERMANY

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Subject: Validation of the CDM Project TACNA SOLAR 20 TS: 20 MW Solar Photovoltaic Power Plant.

Accredited TÜV SÜD Unit:

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Certification Body "climate and energy"
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TÜV SÜD Contract Partner:

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Westendstr. 199
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Project Participant(s):

Tacna Solar S.A.C. (Client)
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Lima
Peru

Project Site(s):

Tacna City, Tacna Province, Republic of Peru
GPS coordinates:
A -17.989941°S, -70.341185°W
B -17.990019°S, -70.329854°W
C -17.999113°S, -70.341255°W
D -17.999191°S, -70.329922°W

Applied Methodology / Version:

ACM0002 / Version 12.2.0

Scope(s):

1

Technical Area(s):

1.2

First PDD Version (GSP):

PDD version date: 30-05-2011
Version No.: 01
Starting Date of GSP 09-06-2011

Final PDD version:

PDD version date: 18-01-2012
Version No.: 05

Estimated Annual Emission Reduction:

34 006 tCO₂e

Assessment Team Leader:

Katrin Hartmann

Assessment Team Members:

Karin Wagner
Luis Miguel Aparicio Alcázar

Trainees:

-

Technical Review:

Caiyang Wu

Responsible Certification Body:

Thomas Kleiser

Summary of the Validation Opinion:

- ☒ The review of the project design documentation and the subsequent follow-up interviews have provided TÜV SÜD with sufficient evidence for the determination of the project's fulfilment of all stated criteria. In our opinion, the project meets all relevant UNFCCC requirements for the CDM. Therefore, TÜV SÜD recommends the project for registration by the CDM Executive Board if the letters of approval of all Parties involved will be available before the expiring date of the applied methodology(ies) or the applied methodology version respectively.
- ☐ The review of the project design documentation and the subsequent follow-up interviews have not provided TÜV SÜD with sufficient evidence for the determination of the project's fulfilment of all stated criteria. Therefore, TÜV SÜD will not recommend the project for registration by the CDM Executive Board and will inform the project participants and the CDM Executive Board of this decision.

Abbreviations

ACM	Approved Consolidated Methodology
AM	Approved Methodology
BM	Build Margin
CAR	Corrective Action Request
CDM	Clean Development Mechanism
CDM EB	CDM Executive Board
CER	Certified Emission Reduction
CM	Combined Margin
CMP	Conference of the Parties serving as the Meeting of the Parties to the Kyoto Protocol
CL	Clarification Request
DNA	Designated National Authority
DOE	Designated Operational Entity
EF	Emission Factor
EIA	Environmental Impact Assessment
ER	Emission Reduction
FAR	Forward Action Request
FSR	Feasibility Study Report
GHG	GreenHouse Gas(es)
IPCC	Intergovernmental Panel on Climate Change
IRL	Information Reference List
IRR	Internal Rate of Return
KP	Kyoto Protocol
NGO	Non Governmental Organisation
OM	Operational Margin
PDD	Project Design Document
PP	Project Participant
TÜV SÜD	TÜV SÜD Industrie Service GmbH
UNFCCC	United Nations Framework Convention on Climate Change
VVM	Validation and Verification Manual

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1 INTRODUCTION

1.1 Objective

The objective of the validation process is to provide an independent assessment by a third party, a Designated Operational Entity (DOE), of a proposed project activity. The assessment involves the evaluation of the project basis and design identified in the Project Design Document (PDD) using the defined criteria outlined by the registration under the Clean Development Mechanism (CDM). Validation is part of the CDM project cycle and results in a conclusion by the executing DOE on whether or not a project activity is valid to be submitted for registration to the CDM Executive Board (CDM-EB). The ultimate decision on the registration of a proposed project activity rests with the CDM-EB and the Parties involved.

The project addressed in this validation report has been submitted under the following project title:
TACNA SOLAR 20 TS: 20 MW Solar Photovoltaic Power Plant

1.2 Scope

The scope of any assessment is defined by the underlying legislation, regulation and guidance given by relevant entities or authorities. In the case of CDM project activities, the scope is set by:

- The Kyoto Protocol, in particular § 12 and modalities and procedures for the CDM
- Decision 2/CMP1 and Decision 3/CMP.1 (Marrakech Accords)
- Further COP/MOP decisions with reference to the CDM (e.g. decisions 4 – 8/CMP.1)
- Decisions and specific guidance outlined by the EB which are published under <http://cdm.unfccc.int>
- Guidelines for Completing the Project Design Document (CDM-PDD) and the Proposed New Baseline and Monitoring Methodology (CDM-NM)
- Baselines and monitoring methodologies (including GHG inventories)
- Management systems and auditing methods
- Environmental issues relevant to the applicable sectoral scope
- Applicable environmental and social impacts and aspects of CDM project activity
- Sector specific technologies and their applications
- Current technical and operational knowledge of the specific sectoral scope and information on best practice

The validation process is not meant to provide any form of consulting for the project participant (PP). However, stated requests for clarifications, corrective actions, and/or forward actions may provide input for improvement of the project design.

Once TÜV SÜD receives the PDD, it is made publicly available on the UNFCCC website and on TÜV SÜD's website, which initiates a 30 day global stakeholder consultation process (GSP). In special circumstances, such as when a project design changes, the GSP may need to be repeated. Information on the PDDs is presented on page 1 of this report.

The purpose of a validation is to demonstrate compliance or non-compliance of the project with all stated and valid CDM requirements. Additionally, the purpose of validation is to enable the registration of CDM projects, which is only a part of the total CDM project cycle.

2 VALIDATION METHODOLOGY

The project assessment is based on the “Clean Development Mechanism Validation and Verification Manual” and is conducted using standard auditing techniques to assess the correctness of the information provided by the project participants. Before the assessment begins, members of the team covering the technical scope(s), sectoral scope(s), and relevant host country experience for evaluating the CDM project activity are appointed. Once the project is made available for the stakeholder consultation process, members of the team carry out the desk review, follow-up actions, resolution of issues identified, and the preparation of the validation report. The prepared validation report and other supporting documents then undergo an internal quality control by the CB “climate and energy” before being submitted to the CDM-EB.

In order to ensure transparency, assumptions must be clear and stated explicitly and background material must also be referenced. TÜV SÜD has developed a methodology-specific protocol customized for the project. The protocol demonstrates, in a transparent manner, the project criteria (requirements), discussion on each criterion by the assessment team, and the results from validating the identified criteria.

The validation protocol serves the following purposes:

- To organize the details and provision of clarifications on the requirements of which a CDM project is expected to meet
- To elucidate how a particular requirement has been validated as well as to document the results of the validation and any adjustments made to the project design document.

The validation protocol consists of three tables. The different columns in these tables are described in the tables below.

Validation Protocol Table 1: Conformity of Project Activity and PDD				
Checklist Topic / Question	Reference	Comments	PDD in GSP	Final PDD
<i>The checklist is organised in sections following the arrangement of the applied PDD version. Each section is then sub-divided. The lowest level constitutes a checklist question / criterion.</i>	<i>The section gives reference to documents in which the answer to the checklist question or item is found in case the comment</i>	<i>The section is used to elaborate and discuss the checklist question and/or the conformance to the question. It is used to explain the conclusions reached. In some cases sub-checklists are applied indicating yes/no decisions on the compliance with</i>	<i>The section is used to present conclusions based on the assessment of the first PDD version. The PDD is either acceptable based on evidence provided (<input checked="" type="checkbox"/>) or a Corrective Action Request (CAR) is issued due to non-compliance with the checklist question (See below). Clarification Request (CR) is used when the validation team has identified a need for further clarification. Forward</i>	<i>Conclusions are presented in the same manner based on the assessment of the final PDD version and further documents including assumptions presented in the documentation.</i>

	<i>refers to documents other than the PDD.</i>	<i>the stated criterion. Any Request has to be substantiated within this column.</i>	<i>Action Request is issued to highlight issues related to project implementation that require review during the first verification.</i>	
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Validation Protocol Table 2: Resolution of Corrective Action and Clarification Requests			
Clarifications and corrective action requests	Ref. to table 1	Summary of project owner response	Validation team conclusion
<i>If the conclusions from table 1 are either a Corrective Action, a Clarification or a Forward Action Request, these should be listed in this section.</i>	<i>Reference to the checklist question number in Table 1 where the issue is explained.</i>	<i>The responses given by the client or other project participants during communication with the validation team should be summarised in this section.</i>	<i>This section should summarise the discussion on and revision to project documentation together with the validation team's responses and final conclusions. The conclusions should be reflected in Table 1, under "Final PDD".</i>

In case it is found that the project activity does not meet the CDM requirements, more detailed information on this decision is presented in Table 3.

Validation Protocol Table 3: Unresolved Corrective Action and Clarification Requests		
Clarifications and corrective action requests	Id. of CAR/CR	Explanation of the Conclusion for Denial
<i>Referenced request if final conclusions from table 2 resulted in a denial.</i>	<i>Identifier of the Request.</i>	<i>Detailed explanation of why the project is considered non-compliant with a criterion and a clear reference to the criterion</i>

The completed validation protocol is enclosed in Annex 1.

2.1 Appointment of the Assessment Team

According to the technical scopes and experiences in the sectoral or national business environment, TÜV SÜD has composed a project team in accordance with the appointment rules of the TÜV SÜD certification body "climate and energy".

The composition of an assessment team has to be approved by the Certification Body (CB) to assure that the required skills are covered by the team. The CB TÜV SÜD operates the following qualification levels for team members that are assigned by formal appointment rules:

- Assessment Team Leader (ATL);
- Validator (V);
- Validator Trainee (T);
- Technical Expert (TE).

It is required that the sectoral scope(s) and the technical area(s) linked to the methodology and project have to be covered by the assessment team.

Assessment Team:

Name	Qualification	Coverage of scope	Coverage of technical area	Coverage of financial aspect	Host country experience
Katrin Hartmann	ATL	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> (1.2)	<input checked="" type="checkbox"/>	-
Karin Wagner	V	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> (1.2)	<input checked="" type="checkbox"/>	-
Luis Miguel Aparicio Alcázar	CE	-	-	-	<input checked="" type="checkbox"/>

Technical Reviewer: Caiyang Wu

2.2 Review of Documents

The PDD for the GSP was submitted to the DOE in June 2011. The PDD and additional background documents related to the project design and baseline have been reviewed to verify the correctness, credibility, and interpretation of the presented information. Furthermore, a cross-check between information provided and information from other sources (see annex 2 for details) has been done as an initial step of the validation process. A complete list of all documents and evidence material reviewed is attached as annex 2 to this report.

2.3 Follow-up Interviews

During 19/08/2011 to 23/08/2011, TÜV SÜD performed various interviews with project stakeholders and a physical site inspection to confirm relevant information, and to resolve issues identified in the first document review. The following table provides a list of all persons interviewed in this process.

Persons Interviewed:

Name	Organisation
Margoth Espinoza	Deuman
Gianina Ibarra	Deuman
Ignacio Careaga	Tacna Solar SAC
Luis Velasco	Redesur
Javier Arellano	Solarpack
Alex Cruz	Tacna Regional Government
David Chambi	Tacna Regional Government
Pedro Saiz	Centro Cristo Rey del Nino y el Adolescente
Liz Herrera	Centro Cristo Rey del Nino y el Adolescente
Fiorella Acero	Centro Cristo Rey del Nino y el Adolescente
Martin Paz	Moquegua Provincial Municipality
Alfredo Gamio	Centro Cristo Rey del Nino y el Adolescente

2.4 Cross-check

During the validation process the team has made reference to available information related to similar projects or technologies as the CDM project activity. Project documentation has also been reviewed against the approved methodology/ies applied to confirm the appropriateness of formulae and correctness of calculations.

2.5 Resolution of Clarification and Corrective Action Requests

The objective of this phase of the validation is to resolve the requests for corrective actions, clarifications, and any other outstanding issues which need to be clarified for TÜV SÜD's conclusion on the project design. The CARs and CRs raised by TÜV SÜD are resolved during communication between the client and TÜV SÜD. To guarantee the transparency of the validation process, the concerns raised and responses that have been given are documented in more detail in the validation protocol in annex 1.

The final PDD version submitted January 2012 serves as the basis for the final assessment presented. Additional changes to the project during the validation process are not considered to be significant with respect to the main CDM objectives. The two CDM main objectives are the reduction of anthropogenic GHG emissions and the contribution of sustainable development to the host country.

2.6 Internal Quality Control

Internal quality control is the final step of the validation process and is conducted by the CB "climate and energy" who checks the final documentation, which includes the validation report and annexes. The completion of the quality control indicates that each report submitted has been approved either by the head of the CB or the deputy. In projects where either the Head of the CB or his/her deputy is part of the assessment team, the approval is given by the one not serving on the project team.

After confirmation by the PP, the validation opinion and relevant documents are submitted to the EB through the UNFCCC web-platform.

3 SUMMARY

The assessment work and the main results are described below in accordance with the VVM reporting requirements. The reference documents indicated in this section and annex 1 are stated in annex 2 of this report.

3.1 Approval

The project participant is Tacna Solar S.A.C. of Peru. The host party, i.e. Peru meets the requirements to participate in the CDM.

The DNA of Peru issued a LoA (IRL 51) on 31/08/2011 authorizing Tacna Solar S.A.C. as a project participant. TÜV SÜD received this letter from the project participant directly and considers the provided letter as authentic.

The approval of this CDM project activity has been confirmed by the DNA of Peru via Email on 17/11/2011 (IRL 73).

Furthermore, after checking the provided LoA, TÜV SÜD confirms that the letter correctly refers to the precise proposed CDM project activity title in line with the title in the PDD "TACNA SOLAR 20 TS: 20 MW Solar Photovoltaic Power Plant".

The letter further indicates that the participating Party is a Party to the Kyoto Protocol, and that the participation in the "TACNA SOLAR 20 TS: 20 MW Solar Photovoltaic Power Plant" project is voluntary. The Peruvian LoA also confirms that the proposed CDM project activity contributes to the sustainable development of Peru (host country). Based on the information given in this letter, TÜV SÜD considers the approval as unconditional with respect to these items.

The LoA has been issued by the respective Party's DNA – the Ministry of Environment. The LoAs do not refer to a specific version of the PDD or validation report.

TÜV SÜD considers that the requirements of VVM (§§ 45-48) have been met.

3.2 Participation

The participant of the project activity has been approved by the corresponding Party, which is confirmed by the issued LoA.

The means of validation used are similar to the ones described in Section 3.1, specifically in regard to the approval process of the project activity.

3.3 Project design document

The PDD is compliant with relevant form and guidance as provided by UNFCCC. The most recent version of the PDD form was used.

TÜV SÜD considers that the guidelines for the completion of the PDD in their most recent version have been followed. Relevant information was provided by the participants in the applicable PDD sections. Completeness was assessed through the protocol included in annex 1.

3.4 Project description

The following description of the project as per PDD was verified during the on-site audit:

The project involves the construction and operation of a solar photovoltaic power plant (PV) with a total installed capacity of 20 MW. The project is located in Southern Peru, close to Tacna City, covering a total area of 121.8 ha. The plant consists of around 70,000 to 80,000 modules, each with a peak power between 270 Wp and 290 Wp.

The PV plant is expected to generate 49,680 MWh per year. The generated electricity will be supplied to the Peruvian National Interconnected Electric System (SEIN). By replacing part of the electricity generated by fossil fuel fired plants of the SEIN grid, the project aims to achieve an annual CO₂ emission reduction of 34,006 tCO₂e (with the renewable first 7-year crediting period starting on 01/11/2012).

The baseline scenario is the scenario existing prior to the start of implementation of the project activity. This corresponds to the scenario where electricity delivered to the grid by the project activity would otherwise be generated by the operation of grid-connected power plants within the SEIN Grid.

In summary, the proposed project activity intends to reduce greenhouse gas (GHG) emissions that result from the carbon intensive fossil fuel utilization for power within the SEIN Grid.

The information presented in the PDD on the technical design is consistent with the actual planning and implementation of the project activity confirmed in the following ways:

- A review and cross check of data and information (see annex 2).
- An on-site visit with relevant stakeholder and personnel with knowledge of the project in attendance.
- A review of information related to similar projects or technologies which have been used to validate the accuracy and completeness of the project description.

In conclusion, TÜV SÜD confirms that the project description, as included in the PDD, is sufficiently accurate and complete in order to comply with the requirements of the CDM.

3.5 Baseline and monitoring methodology

3.5.1 Applicability of the selected methodology

Compliance with each applicability condition as listed in the chosen baseline and monitoring methodology ACM0002 (Version 12.2.0) and the relevant tools (Tool for the demonstration and assessment of additionality (Version 05.2.1) and the Tool to calculate the emission factor for an electricity system (Version 02.2.1)) has been demonstrated.

The assessment was carried out for each applicability criterion and included, among other checks, a compliance check of the local project setting with the applicability conditions in regard to baseline setting and eligible project measures. This assessment also included the review of secondary sources to demonstrate the compliance with applicability conditions.

The methodology-specific protocol, included in annex 1, documents the assessment process. The results of the compliance check as well as relevant evidence are detailed in the protocol and the information reference list.

TÜV SÜD confirms that the chosen baseline and monitoring methodology is applicable to the project activity.

Emission sources, not addressed by the applied methodology and expected to contribute more than 1% of the overall expected average annual emission reductions, have not been identified.

3.5.2 Project boundary

The project boundary was assessed considering information gathered from the physical site inspection, interviews, and secondary evidence received on the design of the project.

The spatial extent of the project boundary comprises all equipment installed and used as part of the project activity, such as the power generation facilities. In addition, the project activity supplies power to the SEIN Grid, hence all power plants physically connected to the SEIN Grid are also within the project boundary.

Baseline emissions include only CO₂ emissions generated by the power plants connected to the SEIN Grid. There are no project emissions according to the applied methodology.

Relevant documents assessed to confirm the project boundary are the following:

- Various documents countersigned by the local government confirming that the land is under contract for the PV plant (IRL 26, 27, 41), and
- Call for tender documents, tender results and further bid documents as well as feasibility study (IRL 7, 9, 16, 34, 35, 36, 37, 45, 47, 70), confirming that the proposed project activity will be connected to the grid (i.e. SEIN), and
- Grid connection sketches (IRL 53), further confirming the layout of the proposed project activity and the connection to the grid, and
- Annual power generation statistics of the grid (SEIN; IRL 49).

Further details and observations are listed in annex 1.

Therefore, TÜV SÜD confirms that the identified boundary, the selected sources, and gases as documented in the PDD are justified for the project activity and are fully in line with the requirements set by the applied methodology.

3.5.3 Baseline identification

The PDD defines the following baseline scenario, which could also be confirmed by the audit team:

Based on the applied methodology, ACM0002 (Version 12.2.0), the baseline scenario equals the scenario prior to the implementation of this project activity. This scenario simply involves the continued electricity generation within the SEIN Grid which predominantly consists of carbon intensive fossil fuel energy sources.

The information presented in the PDD has been validated by an initial document review of all data. Further confirmation has been made based on the on-site visit and a review of information from similar projects and/or technologies. The sources referenced in the PDD have been quoted correctly. The information was verified against credible sources, such as the following:

- Bid documents including feasibility study outlining the proposed project design and relevant approvals by the government (IRL 7, 9, 34, 35, 36, 37, 47, 70), and
- Various internet websites and other publications (IRL 54, 62, 63, 64, 72) indicating the lack of other renewable energy sources in the area, thereby eliminating the possibility of the construction and operation of another renewable power plant.

Based on the validated assumptions used for project activity calculations, TÜV SÜD considers that the identified baseline scenario is reasonable.

Taking the definition of the baseline scenario into account, TÜV SÜD confirms that all relevant CDM requirements, including relevant and/or sectoral policies and circumstances, have been identified correctly in the project PDD.

A verifiable description of the baseline scenario has been included in the PDD.

In regard to item 86 of VVM, TÜV SÜD confirms the following statements:

- (a) All the assumptions and data used by the project participants are listed in the PDD, including their references and sources;
- (b) All documentation used is relevant for establishing the baseline scenario and correctly quoted and interpreted in the PDD;
- (c) Assumptions and data used in the identification of the baseline scenario are justified appropriately, supported by evidence, and can be deemed reasonable;
- (d) Relevant national and/or sectoral policies and circumstances are considered and listed in the PDD;
- (e) The approved baseline methodology has been correctly applied to identify the most reasonable baseline scenario, and the identified baseline scenario reasonably represents what would occur in the absence of the proposed CDM project activity.

3.5.4 Algorithm and/or formulae used to determine emission reductions

TÜV SÜD has assessed the calculations of baseline emissions and resulting emission reductions (IRL 80, 81). Corresponding calculations have been carried out based on calculation spreadsheets (IRL 28, 29, 80). The parameters and equations presented in the PDD, as well as other applicable documents, have been compared with the information and requirements presented in the methodology and respective tools (3, 5, 49). An equation comparison has been made to ensure consistency between all the formulae presented in the calculation files and in the PDD, methodology, and tools.

The assumptions and data used to determine the emission reductions are listed in the PDD and all the sources have been checked (34, 70).

Based on the information reviewed it is confirmed that the sources used are correctly quoted and interpreted in the PDD.

The values presented in the PDD are considered reasonable based on the documentation and references reviewed and the results of the interviews (IRL 34, 49, 70).

The baseline methodology has been applied correctly according to requirements.

The estimate of the baseline emissions are considered correct as the calculations have been reproduced by the audit team with the attainment of the same results.

Detailed information on the verification of the parameters used in the equations are found in annex 1. The algorithms for the determination of the baseline, project, and leakage are discussed in the following sections.

3.5.4.1 Baseline Emissions

The calculation of the baseline emissions followed the procedures described in the methodology ACM0002 Version 12.2.0. The SEIN Grid is considered to be the project boundary.

As per the methodology ACM0002, the baseline emissions for the year y are correctly determined as following:

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

Where the included parameters are correctly described as following:

- BE_y is baseline emissions in year y (tCO₂/yr).
- $EG_{PJ,y}$ is 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/yr).

- $EF_{grid,CM,y}$ is combined margin CO_2 emission factor for grid connected power generation in year y calculated using “Tool to calculate the emission factor for an electricity system (version 02.2.1)”.

According to baseline methodology ACM0002, it can be confirmed that the following equation is applicable for greenfield renewable energy power plants:

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

Where the included parameters are correctly described as following:

- $EG_{PJ,y}$ is 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/yr).
- $EG_{facility,y}$ is quantity of net electricity generation supplied by the project plant to the grid in year y (MWh/yr).

Based on this data the audit team confirms that the parameters have been calculated correctly.

The grid emission factor ($EF_{grid,CM,y}$) and its underlying calculations are in conformity with the requirements of the “Tool to calculate the emission factor for an electricity system” (Version 02.2.1). The six steps were correctly applied as discussed in the following paragraphs:

Step 1: The SEIN was correctly identified as the relevant electricity system.

Step 2: Off-grid power plants are excluded from the project electricity system, which is in line with the available options provided by the tool.

Step 3: The dispatch data analysis OM method (3c) was applied to calculate the OM. The data will be calculated ex-post every year, which is in line with the options provided by the tool for the OM determination.

Step 4: The EF_{OM} is calculated according to the dispatch method. because data are publicly available. This option has been correctly chosen and applied. The procedure followed for the calculation of the operating margin was correctly described in the PDD and the Annex 3 and the formulae have been assessed by the validation team against the methodology, the tool and the data provided by COES (Estadística Annual de Operaciones - 2010). These data were used in order to compare the sum of the hourly data of all the power plants of the National interconnected System. The values of the Oxidation Factors and Emission Factors of the different fuels were obtained from official sources (2006 IPCC Guidelines).

Step 5: In terms of vintage of data, the Option 1 was chosen where EF_{BM} is calculated ex-ante. The sample group of power units m used to calculate the BM was determined as per the procedures described in the tool consisting of “The set of power capacity additions in the electricity system that comprise 20% of the system generation (in MWh) and that have been built most recently”. This option has been correctly chosen since the sum of the generation of these power plants is higher than the sum of the last built power plants.

The Project participant has chosen to update annually the calculations in accordance with an ex-post approach. These calculations have been included in a transparent and open way in the Emission Reduction calculation spreadsheets.

Step 6: The EF_{CM} was correctly calculated by applying the following formula:

$$EF_{grid,CM,y} = EF_{grid,OM,y} \times w_{OM} + EF_{grid,BM,y} \times w_{BM} \quad (\text{Formula 13 from the tool}).$$

Where $w_{OM} = 0.75$ and $w_{BM} = 0.25$.

Hence, in summary, TÜV SÜD considers the applied values for the operating and build margin emission factor (i.e. 0.7229 and 0.5692 tCO₂e/MWh, respectively) as realistic based on the applied data sources as well as the underlying calculations which were exactly following the tool.

3.5.4.2 Project Emissions

As per the methodology ACM0002, project emissions may include emissions due to (1) Project emissions from fossil fuel consumption; (2) Project emissions from the operation of geothermal power plants due to the release of non-condensable gases; and (3) Project emissions from water reservoirs of hydro power plants.

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

- PE_y = Project emissions in year y (tCO₂e/yr).
- $PE_{FF,y}$ = Project emissions from fossil fuel consumption in year y (tCO₂/yr).
- $PE_{GP,y}$ = Project emissions from the operation of geothermal power plants due to the release of non-condensable gases in year y (tCO₂e/yr)
- $PE_{HP,y}$ = Project emissions from water reservoirs of hydro power plants in year y (tCO₂e/yr)

No fossil fuels are consumed due to the project activity. Hence: $PE_{FF,y} = 0$.

This project is not a geothermal project activity. Hence: $PE_{GP,y} = 0$.

This project is not a hydropower project activity. Hence: $PE_{HP,y} = 0$.

Therefore the project emissions of the proposed project are zero, i.e. $PE_y = 0$ tCO₂e, which is deemed to be correct by the audit team.

3.5.4.3 Leakage Emissions

No leakage emission is considered as indicated by the applied methodology.

3.5.4.4 Emission Reductions

In summary, the calculation of the baseline emissions, and the emission reductions are considered to be correct as following:

$$ER_y = BE_y - PE_y \text{ (with } PE_y = 0 \text{ as discussed above).}$$

3.6 Additionality

The additionality of the project has been presented in the PDD in a step-wise manner applying the latest version of the “Tool for the Demonstration and Assessment of Additionality” (Version 05.2.1). It has been demonstrated that the emission reductions due to the project activity are additional to any that would have occurred in the absence of the project activity.

The approach used in the PDD has been assessed initially through the document review, during which the following documents were reviewed:

- Various tender and bid documents including feasibility study (IRL 7, 9, 16, 34, 35, 36, 37, 45, 47, 70), and
- Annual power generation statistics of the grid (SEIN; IRL 49), confirming that there is no Solar PV plant operational in Peru so far, and
- Early CDM consideration documents (IRL 11, 43).

On site, the additionality was discussed principally with Ignacio Careaga (Tacna Solar SAC) and with Javier Arellano (Solarpack). The full list of those interviewed and documents reviewed during the site visit is provided in the Information Reference List (annex 2).

Finally, the data, rationales, assumptions, justifications, and documentation provided have been verified using local knowledge as well as sectoral and financial expertise. This information was also confirmed through the following documentation:

- Public tender results (IRL 24), confirming that the bid was awarded to the proposed project activity,
- Meeting Minutes of Board of Directors in January 2010 (IRL 55), where the final investment decision was taken for the proposed project activity.

Based on the aforementioned approach, TÜV SÜD confirms that the documentation provided is appropriate for this project.

3.6.1 Prior and on-going CDM consideration

The starting date of the project activity is determined by the date when the first contract was signed, which was on 31 March 2010 (i.e. the contract signed between the PP and the Ministry of Energy and Mines to guarantee the power supply by the PV plant to the SEIN; IRL 35).

Since the starting date is after 02 August 2008, the project is considered as a “New Project Activity” as per the “Guidelines on the demonstration and assessment of prior consideration of the CDM” (Version 03).

For such new project activities, it is required that the project participant must inform the Host Party DNA and the UNFCCC secretariat in writing of the commencement of the project activity and of their intention to seek CDM status. These actions were cross-checked and could be confirmed via the following documents and links:

- UNFCCC webpage: <http://cdm.unfccc.int/Projects/PriorCDM/notifications/index.html> (Notification received on 09 September 2010; IRL 43), and
- LoA (IRL 51), issued on 31/08/2011.

Given the fact that the time between the time the UNFCCC secretariat was informed about the project (September 2010) and GSP start (June 2011) is less than two years, the audit team confirms that the on-going CDM consideration requirements of the above mentioned guidelines are also fully met (i.e. as per paragraph 8a).

In summary, it can be confirmed that the project complies with the requirements to demonstrate the prior and on-going consideration of the CDM.

3.6.2 Identifications of alternatives

The output of the project is electricity, which is delivered to the Peruvian national grid (SEIN).

The list of alternatives to supply the above mentioned outputs presented in the PDD includes the implementation of the project activity without registration as a CDM project. The remaining alternatives presented include all plausible scenarios taking into account the local and sectoral situations for the mentioned outputs. The list of alternatives is considered complete.

3.6.3 Investment analysis

The PP uses the investment analysis to demonstrate the additionality. The financial returns of the proposed project are insufficient to justify the investment. This was demonstrated by applying the benchmark analysis.

The parameters that were used for the calculation of the IRR of this project are mostly derived from the tender and bid documents issued by the government and other official authorities (for a detailed discussion please refer to the table below). Furthermore, these values could be confirmed via the interviews performed on-site.

The final investment decision was taken in January 2010 (IRL 55), hence, it can be confirmed that the period of time between the finalization of the documents listed below and the investment decision (January 2010) as well as the project starting date (March 2010) is sufficiently short so that the audit team confirms that it is unlikely that the input values have significantly changed in the meantime. For further cross-checking and assessment of each value, please refer to the following table:

Parameter	Value in PDD	References (IRL)	Conclusion
Benchmark	12% (post-tax, project IRR)	Several studies and official government decisions (IRL 13, 59, 60, 61, 76)	<p>The audit team confirms that the applied benchmark of 12% is appropriate and applicable to the proposed project activity, which could be further confirmed via the following documents:</p> <ul style="list-style-type: none"> • Decree No 015-2007: Terms of reference for feasibility studies for rural electrification in Peru. This document mentions that for private evaluation the 12% discount rate should be used for rural electrification projects, which include electricity generation projects. Ministry of Economy and Finance (IRL 59), and • "Technical report 085-2005-EF/68.1" issued by the Ministry of Economy and Finance of Peru published in May 2005, regarding the evaluation of a project in the electric sector. This report establishes that the discount rate is 12% for private sector evaluation (IRL 60), and • Decree Law 25844 (Electricity concessions Law). This rate has been established by the Ministry of Energy and Mining (MINEM) for every energy-related project assessment. Article 79 (IRL 61), and • "Economic and Technical feasibility of Hydropowers in Peru". A study made by the World Bank in 2009 and a Peruvian Agency for the Promotion of Private Investment (Proinversion) which confirm the use of 12% as a benchmark for investment decisions in the renewable energy sector (IRL 13). <p>In summary, based on the documents listed above as well as based on TÜV SÜD's local and sectoral expertise, the applied benchmark is deemed to be reasonable and suitable. It could</p>

Parameter	Value in PDD	References (IRL)	Conclusion
			be further confirmed that the type of benchmark applied is suitable for the type of financial indicator presented (i.e. post-tax, project IRR).
Installed capacity	20 MW	Bid documents (IRL 70), Public tender results (IRL 34)	The capacity is in all documents consistently listed with 20 MW, hence, the audit team considers this value as real. Based on local and sectoral expertise the value is reasonable.
Total investment	91 million US\$	Pre-feasibility study of Tacna Solar (IRL 82); Bid offer documents (IRL 70) Amendment of the PPA (IR 78); technical report (IRL 57)	In the pre-feasibility study of Tacna Solar the level of investment has been provided on 15/01/2010, which can be confirmed to be the investment decision. During the board meeting (15/01/2010), the final level of investment of the project to be presented in the bid process was decided, which can be confirmed with the bid offer documents (IRL 70). In addition in the previous version of the PDD 85 million US\$ have been indicated: This level of investment (85 mio) is the one officially stated in front of the Energy Ministry (MINEM) in the Amendment of the PPA contract from 2011, which could be confirmed with IRL 78. Also, the level of investment (4,255,000 USD/MW AC) is within the market ranges for a PV project ECP. This was justified through an independent and confidential technical report for a 1 MW project in a similar location that was shown physically to TÜV SÜD on the 23rd of August 2011 in Tacna, IRL 57. The value was further cross-checked with the data presented by the UNEP Risoe. As a result, the audit team confirms that the applied value is fairly conservative, with a specific unit investment of 4550 US\$/kW, whereas the average is 6231,3 US\$/kW for all registered Solar PVs worldwide (n = 24 all registered Solar PVs worldwide, where data is available). Based on local and sectoral expertise the value is deemed to be reasonable.
O&M costs	329,575, US\$ / year or 16,479 US\$/MW	Solarpacks own assumption; Financial analysis (IRL 32); technical report (IRL 58)	The project is not operational yet, hence no real O&M costs incurred, no final absolute value for the O&M costs can be provided, and no real power generation sheets are available. However, an O&M plan draft for the project activity has been submitted to the audit team, which includes all the items of prediction and modules works, inverters works, monitoring works, structures and electrical works and civil works. This cost can be considered reasonable and has been further cross-checked through an inde-

Parameter	Value in PDD	References (IRL)	Conclusion
			pendent and confidential technical report by a technical independent advisor appointed by a bank for a 1 MW project in a similar location that was shown physically to TÜV SÜD on the 23rd of August 2011 in Tacna during the on-site audit (O&M costs = 15,000 US\$/MW), IRL 58. Based on this document as well as based on TÜV SÜD's local expertise and knowledge in this sector, it can be confirmed that the applied values are within the typical. In addition, TÜV SÜD would like to point out that the project remains additional, even without any O & M costs (i.e. O&M costs equals zero; IRR =11.24 %). Based on local and sectoral expertise the value is deemed to be reasonable.
Total energy generation; Energy production under Contract	49,680 MWh / 47,196 MWh	Bidding documents (IRL 70); Public tender results (IRL 34)	The energy production under contract (i.e. 47,196 MWh) could be confirmed via the publicly available tender results (IRL 34). This value is 95% of the total energy production (i.e. 49,680 MWh), which is considered to be reasonable by the audit team. In addition, the cashflow takes into account the value of the total energy generation for the IRR calculation (see further discussion on tariff below), which is considered to be conservative. Based on local and sectoral expertise the value is deemed to be reasonable.
Plant load factor (PLF)	28.4% (i.e. 49,680 MWh / 20 MW / 8760 hours *100)	Bidding documents (IRL 70); Public tender results (IRL 34; indicates 26.9%, which is referring to 47, 196 MWh)	It could be verified that the plant load factor (PLF) was determined ex-ante in the PDD and was provided to the government while applying for implementation approval. Hence, TÜV SÜD confirms that the PLF has been defined correctly in the PDD (as per EB48, Annex 11; section II.3.A.) and based on local and sectoral expertise of the assessment team the value is deemed to be reasonable.
Annual operating hours	2484 and 3548 hours	See energy production and PLF discussion; UNEP Risoe (IRL 4).	The lower value is based on the annual energy production, i.e. 49,680 MWh/20MW = 2484 hours per year (i.e. the plant is operational at full capacity). The higher value which is also indicated in the PDD is the total number of hours per year where the plant is expected to be operational, at a capacity above 0 Watts. Based on the DOE's local and sectoral expertise, both values are considered to be reasonable. The lower value, which is also linked with the PLF and is therefore also included in the cash flow analysis, was further double-checked with the results of the UNEP Risoe data and deemed to

Parameter	Value in PDD	References (IRL)	Conclusion
			be fairly conservative (n=29 all registered Solar PVs worldwide; average = 1561 hours). Based on local and sectoral expertise the value is deemed to be reasonable.
Tariff (under contract)	0.225 US\$/kWh	Bidding documents (IRL 70); Public tender results (IRL 34)	All documents show that the actual electricity tariff under contract is consistent with the assumed value in the bidding documents (IRL 70). The same value was further confirmed by the Energy and Mining Investment Supervisory Body and is publicly available on the internet (IRL 34). Hence, the audit team confirms that the applied value for the tariff under contract is reasonable and applicable to the proposed project activity based on local and sectoral expertise of the assessment team.
Additional parameters for the tariff	Indexation of the tariff (2%) Tariff update incremental trigger (5%) Average financial income from deferred premium (6%)	(IRL 70); Bureau of Labor Statistics (IRL 65) and Bidding documents, annex 3 and clause 7.4.4	The indexation, the tariff update incremental trigger and the average financial income from deferred premium is in all documents consistently listed with 2%, 5% and 6%, hence, the audit team considers this value as real based on local and sectoral expertise of the assessment team.
Tariff (spot market)	0.3 US\$/kWh	Electricity plan reference 2008-2017 (IRL 14)	Based on TÜV SÜD's local expertise and knowledge in this sector, it can be confirmed that the applied value is within a reasonable range.
Tax rate	Income tax = 30%	Peruvian Government (IRL 67)	After cross-checking with the relevant publication from the Peruvian Government, the audit team confirms that the applied value for the tax is appropriate and credible.
Depreciation, Fair Value, Interest Rate	Depreciation Rate = 4,550,000 US\$ (accounting); Accelerated depreciation (20% yearly straight line-method) = 18,200,000 US\$ (for renewable)	Peruvian Government (IRL 74 and 61); IRL 79	TÜV SÜD confirms that depreciation, the fair value as well as interest rates are calculated as per the latest investment guidance (IRL 30).

Parameter	Value in PDD	References (IRL)	Conclusion
	energy generators); Fair Value on year 21 = 6,247,023 Interest Rate = 7,00%		
Lifetime	30 years	PPA between Tacna Solar and MINEM (IRL 69) and the usufruct contract (IRL 75)	The operating lifetime is 30 years. The investment analysis was calculated for 21 years (PPA +1 year for the liquidation of the premium of year 20) and a terminal value was based on cash flows from the operations from year 22 to year 30, which is considered as a fairly conservative approach by the audit team based on local and sectoral expertise of the assessment team..

As a result, it can be seen that the parameters are plausible and can be considered acceptable under the project situation.

The sensitivity analysis was analyzed in detail and the validation team confirms that the underlying assumptions, parameters and chosen values are appropriate and that the calculations have been performed correctly. Sensitivity analysis was performed on the electricity tariff, the electricity generation (i.e. load factor), investment and annual O&M costs. The validation team considers the selected parameters as complete as well as reproducible.

A reverse calculation was applied in order to determine how much each parameter has to increase or decrease in order to reach the benchmark. The validation team considers the selected parameters as complete as well as reproducible.

The validation team was able to verify the results of the sensitivity analysis and confirms that the necessary increase and decrease in these parameters in order to overcome the benchmark is highly unlikely (investment costs need to decrease by 13%, O&M costs can be neglected in order to reach the benchmark, whereas the tariff can increase by 14.6% and the load factor by more than 92.5% in order to reach the benchmark). Hence, the audit team would also like to point out that it is highly unlikely that the project IRR becomes financially attractive by taking into account the 10% variations as suggested by the latest investment analysis guidelines.

The project IRR (post-tax) of the proposed project is 10.18%, which is well below the benchmark of 12%. The financial calculation has been verified and no mistakes have been found. Hence, the validation team considers the project activity as not financially attractive.

It may be noted that the IRR in the GSP PDD was lower (9.50%) as in the final PDD due to change in the investment cost. It has been explained in the final PDD that the level of investment has been changed to reflect the actual investment proposed in the bis documents at the time of the investment decision, which was accepted by the assessment team.

3.6.4 Barrier analysis

Not mandatory.

3.6.5 Common practice analysis

The region for the common practice analysis has been defined as Peru. The geographical scope, i.e. the entire host country of Peru is considered to be conservative. The similar technology is considered to include any PV plants, which is also considered to be in line with requirements of the latest additionality tool.

The PDD indicates that there are no similar projects in the defined region (i.e. no Solar PV plants in Peru). This could be confirmed via the public available webpage provided by COES (IRL 49), that confirms that no Solar PV plant was operational in 2010 and also in any previous years.

As a result, it can be confirmed that there is no similar project. Hence it can be confirmed that the proposed CDM activity is not a common practice in the defined region.

3.7 Monitoring plan

The monitoring plan presented in the PDD complies with the requirements of the applicable methodology (i.e. ACM0002, version 12.2.0.). The assessment team has verified all parameters in the monitoring plan against the requirements of the methodology and no deviations have been found.

The procedures have been reviewed by the assessment team through document review and interviews with the relevant personnel. The information provided and a physical inspection has allowed the assessment 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 PP. Specifically; these points include the location of meters, data management, and the quality assurance and quality control procedures to be implemented in the context of the project.

The net electricity supplied to the grid ($EG_{\text{facility},y}$) will be continuously measured by an electricity meter owned and operated by Tacna Solar S.A.C, which will be installed at the substation plant. The electricity meter (class 0.2) will be calibrated at least every two years. Invoices of electricity sold to the grid will be used to further cross-check the monitored values. Hence, the monitoring is fully in line with the applied methodology.

In addition, the audit team confirms that the relevant parameters for the determination of the emission factor are also correctly presented in the PDD and in line with the emission factor tool.

Therefore, the audit team confirms that the PP will be able to implement the monitoring plan and the achieved emission reductions can be reported ex-post and verified.

3.8 Sustainable development

The LoA of the host country presented a statement that the project contributes to the sustainable development of the host party.

3.9 Local stakeholder consultation

The relevant local stakeholders have been invited via invitation letters, press notes (IRL 20) and informative panels to a meeting, which took place on 08/02/2011 at 4.00 pm in the Jorge Bassadre Grohmann Convention Center, located in the district of Tacna. The evidence of these invitations is given by IRL 19, 21 and 22. The assessment team has reviewed the documentation in order to validate the inclusion of relevant stakeholders. The local expert has confirmed that the communication method used to invite the stakeholders is appropriate. The summary of comments presented in the PDD has been verified with the documentation of the stakeholder consultation and has been found to be complete.

Comments presented by the local stakeholders have been taken into account by the PP and has been verified with information obtained during interviews.

Hence, the local stakeholder consultation has been performed adequately according to the CDM requirements.

3.10 Environmental impacts

An analysis of environmental impacts has been conducted by the project participants (i.e. Environmental Impact Declaration; IRL 54) as per the requirements of the responsible authorities (IRL 50). The assessment team has reviewed the documentation of the presented information. The IRL 38 and 39 (Approval of environmental impact declaration by the Ministry of Energy and Mines) confirm the correctness of the approach used by the PP. In conclusion, the PP have followed the requirements of the host country with regards to addressing environmental impacts (see IRL 50).

4 COMMENTS BY PARTIES, STAKEHOLDERS AND NGOS

TÜV SÜD published the project documents on the UNFCCC website and invited comments by affected Parties, stakeholders, and non-governmental organisations during a 30 day period.

All key information gathered is presented in the table bellow.

GSP Comments

website:	
http://cdm.unfccc.int/Projects/Validation/DB/0CMZAH AUGPI0PA6463MZPFIWSJNUH8/view.html	
Starting date of the global stakeholder consultation process:	
09/06/2011	
Comment submitted by:	Issues raised:
Submitted by: zhong zhou li and sud	<p>Compilation of submitted inputs:</p> <p>It is evident from the PDD that the values are consistent and it is definitely forged and cooked up values to show a non CDM project as a CDM project. What is this? DoE to check the Detailed Project Report and Feasibility Report which is submitted to the other agencies and Banks by Project owner and ensure that the values match with the DPR/FR submitted to DoE also. After careful study of PDD it is found that DPR/FR is in different versions made and submitted with different purposes to different agencies which is totally unacceptable, illegal and unethical. PP/Consultant may show some undertaking letter from bank manager to DoE stating that both DPR's are same. These kinds of letters should not be accepted and entertained by DoE. While collecting the DPR/FR from banks and other agencies, all DPR/FR pages should be counter signed by Banks and other agencies so that the real DPR/FR given to other parties by the PP/Consultant is same as the one submitted to DOE. In this particular project there is clear cut evidence that DPR/FR values are changed/ fabricated mischievously and intentionally. This must be probed fully. DOE must take a written undertaking from the PP/Consultant about the list of parties to whom this DPR/FR is submitted and for what purposes. Then DOE should cross check with all the parties and confirm that the same DPR/FR is submitted to all the parties correctly without any changes. DOE must not accept any reports and undertakings from PP/Consultant. DOE must make independent evaluation and use totally different parties without informing the PP or Consultant to cross check the facts. DOE to write to the party who prepared the DPR/FR which is submitted to the banks and other agencies and the same is verified against the one submitted to the DOE by PP/Consultant. This project is a fabricated and fake CDM project and must be rejected by the DOE right away. DOE should not support this kind of projects otherwise CDM EB should suspend this DOE for at least one year.</p> <hr/> <ol style="list-style-type: none"> 1) DOE to ensure that the PDD values are consistent and ensure that the CDM project is a genuine project. 2) DoE to check the Detailed Project Report and Feasibility Report which is submitted to the other agencies and Banks by Project owner and ensure that the values match with the DPR/FR submitted to DoE also. 3) Careful study must be done so that the DPR/FR is not in different versions made and submitted with different purposes to different agencies, which is totally unacceptable, illegal and unethical. 4) Project owner should show some undertaking letter from bank manager to DoE stating that both DPR's are same. These kinds of letters should not be accepted and entertained by DoE at face value, but must be checked independently. While collecting the DPR/FR from banks and other agencies, all DPR/FR pages should be counter signed by Banks and other agencies so that the real DPR/FR given to other parties by the PP/Consultant is same as the one submitted to DOE. 5) DPR/FR values must be probed fully. DOE must take a written undertaking from the PP/Consultant about the list of parties to whom this DPR/FR is submitted and for what purposes. Then DOE should cross check with all the parties and confirm that the same DPR/FR is submitted to all the parties correctly without any changes. DOE must not accept any reports and undertakings from PP/Consultant. DOE must make independent evaluation and use totally different parties without informing the PP or Consultant to cross check the facts. 6) DOE to write to the party who prepared the DPR/FR which is submitted to the banks and other agencies and the same is verified against the one submitted to the DOE by PP/Consultant. 7) DOE must not entertain this project any more if found the DPR/FR is tampered with at any point in time. PP can not give different DPR's and FR's. They must submit only the one given to Banks and other agencies while obtaining loans and decision making time. 8) Has the PP considered the CDM revenues while envisaging the project? Without CDM the project was not viable, is it right? This project is having a debt component? Then how bankers or lenders gave the loan? Have

	<p>the bankers or lenders considered the CDM revenues while agreeing to give loan to this projects? If not this project should be rejected right away by DOE by terminating the contract forthwith. If yes, where is the proof? What is the date of the evidence document from bank? Is this document printed now a days or earlier. DOE to independently check the same. If the document is available from Bank it must be checked from all angles so that it is genuine and not forged and date changed by putting back dated. This is normally done, DOE to be aware of this please. Please check the communication the PP had during that time with banks, emails and postal receipts and the weights and dates mentioned on the receipts. Do not believe in courier bills and receipts since these can be cooked up easily. Insist on government owned postal service receipts only. If the project is fully equity project then on what basis the PP has invested full equity in to the project while considering the CDM revenue? DOE to check the same in detail and bring out the facts. Is there any past record of this PP to invest or not to invest at returns what he is talking about in this project? Proper evidences must be reviewed and digged out by the DOE and take decision on the project based on established facts. Do not ask documents from PP, DOE to collect the same from different sources to do independent evaluation.</p> <p>9) Is the project equipment purchased second hand equipment or sourced from cheap foreign sources? If yes, the issue must be probed by DOE since invoices will invariably be inflated and forged. Total project costs mentioned by PP will not be the same as originals. Hence no additionality. These facts must be probed in full by DOE by checking all documents and money transactions along with bank statements and certified accounts by a legally acceptable financial analyst.</p> <p>10) From DOE side which auditor has done marketing and business development for acquiring this business of validating this project? With whom he or she was co-ordinating at PP or CER buyer? The same person who has done the marketing and business development to acquire the business do validation or participate in any manner what so ever in the validation process? One cannot do like that. It is against the accreditation rules and norms followed since ages. DOE should send auditors from different offices or countries to do this validation audit. DOE must take care of impartiality and accreditation rules. Due to the targets set by the DOE managements auditors are doing marketing and meeting clients and giving promises that the project will be taken care. Is it acceptable and fair? This must be stopped. No auditor should do marketing. Only non-auditing staff should do marketing. DOE to ensure the same please.</p> <p>11) If applicable only: Is these machines, equipment was a part of any bundle of CDM activity envisaged and developed earlier. DOE to check the same through independent sources also. Once some bundles are non-additional and getting negative validation from a DOE, PP is rolling out the same project as an individual project which is not a CDM project at all. DOE to verify the same from independent sources and also take undertaking in the form of an affidavit from the PP's that any misrepresentation or false statement with respect this would attract strict legal action from UNFCCC and DOE. Furthermore the registered project must be de-registered in case of any future findings contradicting the submissions made by the project owner.</p> <p>12) DOE to be more careful so that this is a genuine CDM project. What is the exact project cost? The project cost is covering what? Each value considered must be validated with proof. The machinery is second hand purchased or fresh and new from an OEM? In either case DOE to check all the quotations, proposals, purchase orders, invoices, way bills, transport bills, proof of payments like bank statements. DOE to check with banks by way of written confirmation the amount transacted, to whom the money is paid, when the money is paid, is the party paid is the correct party as shown in the purchase orders. It may so happen that the values, party names, dates are fabricated and misrepresented in this project. DOE should terminate their contract for this project immediately. This is the only way out to protect the value of CDM process. If the PP is purchasing second hand or second quality equipment and inflating the purchase order values and invoices, this must be probed thoroughly and real values to taken for additionality calculation. Then I'm sure the additionality is not there at all in such a situation.</p> <p>13) How is the base line defined in this project? Is Base line hypothetically defined with no proper evidences and proper justification? In such case, DOE cannot take the base line as suggested by the PDD. Please check that there are real emission reductions beyond the real and factual base line. It may so happen that this project qualifies for no CER's. DOE cannot assume values and things as giving by this PP. Whatever values are considered throughout the project in all documents including the real DPR (not the one prepared for CDM, the one given to the banks and others), they must be validated, verified and double checked. Do not ask PP for DPR. Ask the parties who have been given DPR by the PP. Get directly from the bank and others by each page of the DPR and Feasibility report signed. Such document can be considered as a real DPR or FR. UNFCCC CDM process cannot be degraded by fabricating and misinterpreting the project base line and additionality.</p>
	<p>Response by TÜV SÜD:</p> <p>As mentioned above, TÜV SÜD has done a thorough assessment of the proposed project activity. The sources for the applied input values could be confirmed via various third party documents, most of them even from official authorities (for a detailed assesement of these values, please refer to section 3.6.3 above). In addition, TÜV SÜD would like to point out that the indicated baseline, which equals the pre-project scenario was confirmed via on-site observations as well as further documentation (see section 3.5.3 above).</p>

5 VALIDATION OPINION

TÜV SÜD has performed a validation of the following proposed CDM project activity:

TACNA SOLAR 20 TS: 20 MW Solar Photovoltaic Power Plant

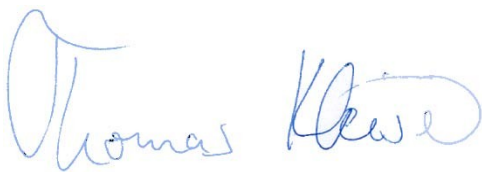
Standard auditing techniques have been used for the validation of the project. A methodology-specific protocol for the project has been prepared to conduct the validation process in a transparent and comprehensive manner.

The review of the project design documentation, subsequent follow-up interviews, and further verification of references have provided TÜV SÜD with sufficient evidence to determine the fulfilment of stated criteria in the protocol. In the opinion of TÜV SÜD, the project meets all relevant UNFCCC requirements for the CDM if the underlying assumptions do not change. TÜV SÜD recommends the project for registration by the CDM Executive Board.

An analysis, as provided by the applied methodology, demonstrates that the proposed project activity is not a likely baseline scenario. Emission reductions attributable to the project are additional to any that would occur in the absence of the project activity. Considering that the project will be implemented as designed, the project is likely to achieve the estimated amount of emission reductions of 34,006 tCO₂e and a total estimated of 238,042 tCO₂e as specified within the final PDD version.

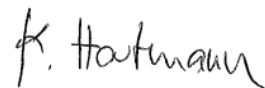
The validation has been performed following the requirements of the latest version of the CDM VVM and on the basis of the contractual agreement. The single purpose of this report is its use during the registration process as part of the CDM project cycle. Based on the work described in this report, nothing has come to our attention that causes us to believe that any project component or issue has not been covered by the validation process.

Munich, 24/01/2012



Thomas Kleiser
Certification Body "climate and energy"
TÜV SÜD Industrie Service GmbH

Munich, 24/01/2012



Katrin Hartmann
Assessment Team Leader



Industrie Service

Annex 1

Validation Protocol

Validation Protocol

Project Title: TACNA SOLAR 20 TS: 20 MW Solar Photovoltaic Power Plant

Date of Completion: 24/01/2012

Number of Pages: 36



Industrie Service

Table 1 Conformity of Project Activity and PDD

CHECKLIST TOPIC / QUESTION	Ref.	COMMENTS	PDD in GSP	Final PDD
A. General description of project activity				
A.1. Title of the project activity				
A.1.1.Does the used project title clearly enable to identify the unique CDM activity?	8, 51	Yes, the project is titled with the name of the project location and the energy source of the project. Hence, it can be clearly identified.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
A.1.2.Are there any indication concerning the revision number and the date of the revision?	8	The PDD that was uploaded for GSP starts with version 01 and is dated 30 May 2011. There are no concerns regarding this date and the version number. However, <u>Corrective Action Request No.1</u> The dates of the entire document shall be presented in the format dd/mm/yyyy.	CAR1	<input checked="" type="checkbox"/>
A.1.3.Is this consistent with the time line of the project's history?	8	Yes, the GSP was started with the first version of the PDD. This was also confirmed during the on-site visit by DEUMAN (PDD consultant).	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
A.2. Description of the project activity				
A.2.1.Is the description delivering a transparent overview of the project activities?	8, 34	The proposed project activity is described transparently in the PDD. The project is located in the Tacna region, Peru with a capacity of 20 MW and will have a yearly generating capacity of 49,680.5 MWh/year. The reduction of the baseline emissions results from the displacement of electricity generated by power plants of the Peruvian electricity system SEIN including fossil-fuel based power plants. The project activity involves the construction of 78,000 photovoltaic modules of approximately 270W each. Furthermore, the project activity will contribute to the sustainable development by increasing employment opportunities to local residents and reducing emissions of local pollutants as NOx, SOx and PM through the reduction of thermal power plants operation in the SEIN. <u>Corrective Action Request No.2</u>	CAR2	<input checked="" type="checkbox"/>

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		As discussed on-site, the PP shall include the information on nominal and peak power in the PDD (i.e 20 MW, number of modules, etc.). In addition, where the final design is not fully set yet, the PDD should include the estimated ranges for the design (such as numbers of modules, etc).		
A.2.2.What proofs are available demonstrating that the project description is in compliance with the actual situation or planning?	10, 31, 47, 48, 53, 54, 38, 39	<p>The proposed project activity involves the construction and operation of a clean and renewable source power plant, i.e. a solar photovoltaic plant.</p> <p>The following documents were checked during the on-site:</p> <ul style="list-style-type: none"> • Bidding documents • PPA (= Concession Contract) • Inscription of the company in the registry (Business Licence) • Grid connection sketches (PPT and AutoCAD) • DIA (Environmental Impact declaration) and approvals; <p>No contracts have been signed for the construction or any equipment yet, hence there were no documents available during the on-site visit.</p>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
A.2.3.Is the information provided by these proofs consistent with the information provided by the PDD?	8	Yes, the information is consistent. The reviewed documents further substantiate the information presented in the PDD as well as could be further confirmed via the interviews.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
A.2.4.Is all information presented consistent with details provided by further chapters of the PDD?	8	Yes. All information presented is consistent with details provided by further chapters of the PDD. However, for details, see requests above.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
A.3. Project participants				
A.3.1.Is the form required for the indication of project participants correctly applied?	8	Yes, the form is correctly applied. Tacna Solar S.A.(C.?) is considered as the only project participant. However, under section A.3. the type of the company of the project participant is mentioned as S.A.C., while in	CAR3	<input checked="" type="checkbox"/>

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		Annex 1 it is mentioned as S.A. <u>Corrective Action Request No.3</u> Under section A.3. the type of the company of the project participant is mentioned as S.A.C., while in Annex 1 it is mentioned as S.A. The PP shall clarify the type of the company and adapt the wrong description accordingly.		
A.3.2.Is the participation of the listed entities or Parties confirmed by each one of them?	8, 51, 52	Yes, the participation is confirmed by the respective LoA.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
A.3.3.Is all information on participants / Parties provided in consistency with details provided by further chapters of the PDD (in particular annex 1)?	8	Yes. The participant information is consistent with Annex 1 of the PDD. Please refer to Corrective Action Request No.3.	See CAR3	<input checked="" type="checkbox"/>
A.4. Technical description of the project activity				
<i>A.4.1.Location of the project activity</i>				
A.4.1.1. Does the information provided on the location of the project activity allow for a clear identification of the site(s)?	1, 8	The project is located close to Tacna city, in Tacna province, Peru. The GPS coordinates were taken during on-site visit: Point A: S17°59'23.8"; W70°20'24.4" Point B: S17°59'24.0"; W70°19'47.5" Point C: S17°59'57.1"; W70°19'47.7" Point D: S17°59'56.8"; W70°20'28.5" <u>Corrective Action Request No.4</u> Information presented in the PDD has to be in English language and a clear description has to be provided within the PDD. E.g. Punto A-D is mentioned in the PDD and its meaning is not clear. GPS coordinates supposed to be in the format requested by the UN view page (i.e. degree values with decimal format, i.e. 45.50° e.g.). In addition, any writing on the maps/figures shall be in a readable format (i.e. the descrip-	CAR4	<input checked="" type="checkbox"/>

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		tions on Figure 2 of the GSP PDD are too blurry). PP shall revise and update accordingly.		
A.4.1.2. How is it ensured and/or demonstrated, that the project proponents can implement the project at this site (ownership, licenses, contracts etc.)?	35, 36, 37, 41	Yes, it could be demonstrated that the PP can implement the project at the indicated site via the following documents: <ul style="list-style-type: none"> • Concession contract for providing the energy (=PPA) • Concession on generation • Land granting agreement (no final land lease contract signed at the time of the on-site audit). 	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
A.4.2. Category(ies) of project activity				
A.4.2.1. To which category(ies) does the project activity belonging to? Is the category correctly identified and indicated?	3, 8	Yes, the project falls into scope 1, energy industries (renewable sources). The category is correctly identified and indicated in A.4.2 of the PDD. As this is a solar photovoltaic power project, the type is correctly identified.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
A.4.3. Technology to be employed by the project activity				
A.4.3.1. Does the technical design of the project activity reflect current good practices?	1, 8	Yes. The technical design of the project activity reflects current good practices. The proposed project involves the installation of about 78,000 polycrystalline silicon solar modules of around 270 W each (based on most recent information available at the time of the on-site audit, final design was still pending at that time). However, see Corrective Action Request No.2.	See CAR2	<input checked="" type="checkbox"/>
A.4.3.2. Does the description of the technology to be applied provide sufficient and transparent input/ information to evaluate its impact on the greenhouse gas balance?	1, 8	<u>Corrective Action Request No.5</u> As required by the Guidance of completing the CDM-PDD some more paragraphs shall be included into the PDD giving a concise description of: 1. PP shall indicate the lifetime of the equipment based on manufac-	CAR5	<input checked="" type="checkbox"/>

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		<p>turer's specifications and industry standards as this can be considered as a key parameter. In addition PP shall indicate the operation hours in this section, and submit relevant evidence if applicable.</p> <p>2. the scenario existing prior to the start of implementation of the project activity;</p> <p>3. The baseline scenario, as identified in section "B.4 Description of how the baseline scenario is identified and description of the identified baseline scenario";</p> <p>4. Please indicate sufficient and transparent information if the technology may impact on the greenhouse gas balance.</p> <p>5. The PP shall clarify if the implementation of the project activity requires any technology transfer from annex-I-countries to the host country.</p>		
A.4.3.3. Does the implementation of the project activity require any technology transfer from annex-I-countries to the host country(ies)?	1, 8	No, based on current planning, the technology will be mainly imported from China.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
A.4.3.4. Is the technology implemented by the project activity environmentally safe?	1, 8	<p>Yes, the project activity is utilizing solar photovoltaic for electricity generation, and it is expected that it will not create any negative environmental and/or social impact. However,</p> <p><u>Corrective Action Request No.6</u></p> <p>PP shall give a clear statement in the PDD if the implemented technology is environmentally safe.</p>	CAR6	<input checked="" type="checkbox"/>
A.4.3.5. Is the information provided in compliance with actual situation or planning?	1, 8	Yes, the project was still at an early planning stage during the on-site visit.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
A.4.3.6. Does the project use state of the art	1, 8	Based on the country expertise of the validation team and the informa-	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

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technology and / or does the technology result in a significantly better performance than any commonly used technologies in the host country?		tion reviewed from the electricity entities from the host country, it can be confirmed that the common used technologies for electricity generation are mostly hydro and fossil fuel fired power plants. Therefore, the proposed project activity, being a solar power technology, definitely will result in a significantly better performance in terms of environmental conditions.		
A.4.3.7. Is the project technology likely to be substituted by other or more efficient technologies within the project period?	1, 8	<u>Corrective Action Request No.7</u> PP shall include in the PDD a statement indicating whether the project technology would likely to be substituted by other or more efficient technologies within the project period.	CAR7	<input checked="" type="checkbox"/>
A.4.3.8. Does the project require extensive initial training and maintenance efforts in order to be carried out as scheduled during the project period?	1, 8, 54	According the information provided in the PDD, as part of the sustainable development, provision of direct and indirect jobs to local people will be performed. The DIA indicates that the PP compromised to hire local staff, if capable and available. The PP is already operating other solar plants – hence, they are experienced with the operation and maintenance.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
A.4.3.9. Is information available on the demand and requirements for training and maintenance?	1, 8	No, since this project is at an early planning stage. The only documents that indicate any information on staff hire and training is the DIA.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
A.4.3.10. Is a schedule available for the implementation of the project and are there any risks for delays?	1, 8	See timeline discussion in section B.5.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<i>A.4.4. Estimated amount of emission reductions over the chosen crediting period</i>				
A.4.4.1. Is the form required for the indication of projected emission reductions correctly applied?	8	Yes. The form is correctly applied according to the table in section A.4.4.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
A.4.4.2. Are the figures provided consistent with other data presented in the PDD?	8	Yes, the figures provided are consistent with other data in the PDD.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

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A.4.5. Public funding of the project activity				
A.4.5.1. Is the information provided on public funding provided in compliance with the actual situation or planning as available by the project participants?	1, 8	It could be confirmed during the on-site that there is no public funding for this project. This could be further substantiated by the fact that the PP is in contact with two commercial banks regarding the investment of this project.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
A.4.5.2. Is all information provided consistent with the details given in remaining chapters of the PDD (in particular annex 2)?	8	Yes, the information is consistent.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
B. Application of a baseline and monitoring methodology				
B.1. Title and reference of the approved baseline and monitoring methodology				
B.1.1. Are reference number, version number, and title of the baseline and monitoring methodology clearly indicated?	3, 8	Yes, the version of ACM0002 (version 12.2) has been applied and the reference is clearly indicated.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
B.1.2. Is the applied version the most recent one and / or is this version still applicable?	3, 8	Yes, ACM0002 version 12.2 was applied in the PDD, which is still applicable.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
B.1.3. Does the methodology refer to the following tools with its latest approved versions: <ul style="list-style-type: none"> - Tool to calculate the emission factor for an electricity system - Tool for the demonstration and assessment of additionality - Tool to calculate project or leakage CO₂ emissions from fossil fuel com- 	3, 8, 5, 6	The proposed project refers to the following tools: 1) Tool to calculate the emission factor for an electricity system Version 02.2.1; 2) Tool for the demonstration and assessment of additionality Version 05.2.1	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

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bustion														
B.2. Justification of the choice of the methodology and why it is applicable to the project activity														
B.2.1.Is the applied methodology considered the most appropriate one?	3, 8	Yes. The approved methodology ACM0002 v12.2 is exactly applicable to the solar power project.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>										
Fill in the required amount of sub checklists for applicability criteria as given by the methodology applied and comment at least every line answered with “No”														
B.2.2.Criterion 1: the project is the installation, capacity addition, retrofit or replacement of a power plant/unit of one of the following types: hydro power plant/unit (either with a run-of-river reservoir or an accumulation reservoir), wind power plant/unit, geothermal power plant/unit, solar power plant/unit, wave power plant/unit or tidal power plant/unit.	1, 3, 8	<table><tr><th>Applicability checklist</th><th>Yes / No</th></tr><tr><td>Criterion discussed in the PDD?</td><td>Yes</td></tr><tr><td>Compliance provable?</td><td>Yes</td></tr><tr><td>Evidences provided in the PDD?</td><td>Yes</td></tr><tr><td>Compliance verified?</td><td>Yes</td></tr></table> <p>The project activity is the installation of a solar power plant at a site where no renewable power plant was operated prior to the implementation of the project activity (greenfield plant), which was finally evidenced during the on-site activity.</p>	Applicability checklist	Yes / No	Criterion discussed in the PDD?	Yes	Compliance provable?	Yes	Evidences provided in the PDD?	Yes	Compliance verified?	Yes	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Applicability checklist	Yes / No													
Criterion discussed in the PDD?	Yes													
Compliance provable?	Yes													
Evidences provided in the PDD?	Yes													
Compliance verified?	Yes													
B.2.3.Criterion 2 (in the case of capacity additions, retrofits or replacements (except for wind, solar, wave or tidal power capacity addition projects which use Option 2: on page10 to calculate the parameter $EG_{PJ,y}$): The existing plant started commercial operation prior to the start of a minimum historical reference period of five years, used for the calculation of baseline emissions and defined in the baseline emission section, and no capacity ex-	1, 3, 8	<table><tr><th>Applicability checklist</th><th>Yes / No</th></tr><tr><td>Criterion discussed in the PDD?</td><td>Yes</td></tr><tr><td>Compliance provable?</td><td>Yes</td></tr><tr><td>Evidences provided in the PDD?</td><td>n.a.</td></tr><tr><td>Compliance verified?</td><td>Yes</td></tr></table>	Applicability checklist	Yes / No	Criterion discussed in the PDD?	Yes	Compliance provable?	Yes	Evidences provided in the PDD?	n.a.	Compliance verified?	Yes	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Applicability checklist	Yes / No													
Criterion discussed in the PDD?	Yes													
Compliance provable?	Yes													
Evidences provided in the PDD?	n.a.													
Compliance verified?	Yes													

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pansion or retrofit of the plant has been undertaken between the start of this minimum historical reference period and the implementation of the project activity.														
B.2.4.Criterion 3 (in the case of hydro plants): -The project activity is implemented in an existing reservoir, with no change in the volume of reservoir or -The project activity is implemented in an existing reservoir, where the volume of reservoir is increased and the power density of the project activity is greater than 4 W/m ² or -The project activity results in new reservoirs and the power density of the power plant is greater than 4 W/m ² .	1, 3, 8	<table><tr><th>Applicability checklist</th><th>Yes / No</th></tr><tr><td>Criterion discussed in the PDD?</td><td>Yes</td></tr><tr><td>Compliance provable?</td><td>Yes</td></tr><tr><td>Evidences provided in the PDD?</td><td>n.a.</td></tr><tr><td>Compliance verified?</td><td>Yes</td></tr></table>	Applicability checklist	Yes / No	Criterion discussed in the PDD?	Yes	Compliance provable?	Yes	Evidences provided in the PDD?	n.a.	Compliance verified?	Yes	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Applicability checklist	Yes / No													
Criterion discussed in the PDD?	Yes													
Compliance provable?	Yes													
Evidences provided in the PDD?	n.a.													
Compliance verified?	Yes													
B.2.5.Criterion 4 (in the case of retrofit, replacement or capacity addition): The most plausible baseline scenario, as a result of the identification of baseline scenario, is “the continuation of the current situation, i.e. to use the power generation equipment that was already in use prior to the implementation of the project activity and undertaking business as usual maintenance”	1, 3, 8	<table><tr><th>Applicability checklist</th><th>Yes / No</th></tr><tr><td>Criterion discussed in the PDD?</td><td>Yes</td></tr><tr><td>Compliance provable?</td><td>Yes</td></tr><tr><td>Evidences provided in the PDD?</td><td>n.a.</td></tr><tr><td>Compliance verified?</td><td>Yes</td></tr></table>	Applicability checklist	Yes / No	Criterion discussed in the PDD?	Yes	Compliance provable?	Yes	Evidences provided in the PDD?	n.a.	Compliance verified?	Yes	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Applicability checklist	Yes / No													
Criterion discussed in the PDD?	Yes													
Compliance provable?	Yes													
Evidences provided in the PDD?	n.a.													
Compliance verified?	Yes													
B.2.6.Criterion 5: Defined electricity grid boundaries	1, 3, 8, 47	<table><tr><th>Applicability checklist</th><th>Yes / No</th></tr><tr><td>Criterion discussed in the PDD?</td><td>Yes</td></tr></table>	Applicability checklist	Yes / No	Criterion discussed in the PDD?	Yes	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>						
Applicability checklist	Yes / No													
Criterion discussed in the PDD?	Yes													

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		<table><tr><td>Compliance provable?</td><td>Yes</td></tr><tr><td>Evidences provided in the PDD?</td><td>n.a.</td></tr><tr><td>Compliance verified?</td><td>Yes</td></tr></table>	Compliance provable?	Yes	Evidences provided in the PDD?	n.a.	Compliance verified?	Yes							
Compliance provable?	Yes														
Evidences provided in the PDD?	n.a.														
Compliance verified?	Yes														
		The project is connected to the SEIN, which has been demonstrated by the grid connection agreement.													
B.2.7.Criterion 6: Approved inclusion in other methodologies (if applied only)	1, 3, 8	Not applicable.		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>										
B.2.8.Criterion 7: Exclusion of fuel switching activities	1, 3, 8	<table><tr><td>Applicability checklist</td><td>Yes / No</td></tr><tr><td>Criterion discussed in the PDD?</td><td>Yes</td></tr><tr><td>Compliance provable?</td><td>Yes</td></tr><tr><td>Evidences provided in the PDD?</td><td>n.a.</td></tr><tr><td>Compliance verified?</td><td>Yes</td></tr></table>	Applicability checklist	Yes / No	Criterion discussed in the PDD?	Yes	Compliance provable?	Yes	Evidences provided in the PDD?	n.a.	Compliance verified?	Yes		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Applicability checklist	Yes / No														
Criterion discussed in the PDD?	Yes														
Compliance provable?	Yes														
Evidences provided in the PDD?	n.a.														
Compliance verified?	Yes														
		Confirmed during the on-site visit.													
B.2.9.Criterion 8: Exclusion of biomass fired power plants	1, 3, 8	<table><tr><td>Applicability checklist</td><td>Yes / No</td></tr><tr><td>Criterion discussed in the PDD?</td><td>Yes</td></tr><tr><td>Compliance provable?</td><td>Yes</td></tr><tr><td>Evidences provided in the PDD?</td><td>n.a.</td></tr><tr><td>Compliance verified?</td><td>Yes</td></tr></table>	Applicability checklist	Yes / No	Criterion discussed in the PDD?	Yes	Compliance provable?	Yes	Evidences provided in the PDD?	n.a.	Compliance verified?	Yes		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Applicability checklist	Yes / No														
Criterion discussed in the PDD?	Yes														
Compliance provable?	Yes														
Evidences provided in the PDD?	n.a.														
Compliance verified?	Yes														
		Confirmed during the on-site visit.													
B.2.10. Criterion 9: Exclusion of hydro power plants that result in new reservoirs or in the increase in existing reservoirs where	1, 3, 8	<table><tr><td>Applicability checklist</td><td>Yes / No</td></tr><tr><td>Criterion discussed in the PDD?</td><td>Yes</td></tr><tr><td>Compliance provable?</td><td>Yes</td></tr><tr><td>Evidences provided in the PDD?</td><td>n.a.</td></tr></table>	Applicability checklist	Yes / No	Criterion discussed in the PDD?	Yes	Compliance provable?	Yes	Evidences provided in the PDD?	n.a.		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		
Applicability checklist	Yes / No														
Criterion discussed in the PDD?	Yes														
Compliance provable?	Yes														
Evidences provided in the PDD?	n.a.														

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the power density of the power plant is less than 4 W/m ² .		Compliance verified?	Yes												
Confirmed during the on-site visit.															
B.3. Description of the sources and gases included in the project boundary															
B.3.1.Source: Fugitive Emissions from non-condensable gases contained in geo-thermal steam (geothermal power plants only) Gas(es): CO ₂ , CH ₄ Type: Project Emissions	1, 3, 8	<table><tr><th>Boundary checklist</th><th>Yes / No</th></tr><tr><td>Source and gas(es) discussed by the PDD?</td><td>N/A</td></tr><tr><td>Inclusion / exclusion justified?</td><td>N/A</td></tr><tr><td>Explanation / Justification sufficient?</td><td>N/A</td></tr><tr><td>Consistency with monitoring plan?</td><td>N/A</td></tr></table>		Boundary checklist	Yes / No	Source and gas(es) discussed by the PDD?	N/A	Inclusion / exclusion justified?	N/A	Explanation / Justification sufficient?	N/A	Consistency with monitoring plan?	N/A	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Boundary checklist	Yes / No														
Source and gas(es) discussed by the PDD?	N/A														
Inclusion / exclusion justified?	N/A														
Explanation / Justification sufficient?	N/A														
Consistency with monitoring plan?	N/A														
B.3.2.Source: Emissions from the reservoir (hydro power plants only) Gas(es): CH ₄ Type: Project Emissions	1, 3, 8	<table><tr><th>Boundary checklist</th><th>Yes / No</th></tr><tr><td>Source and gas(es) discussed by the PDD?</td><td>N/A</td></tr><tr><td>Inclusion / exclusion justified?</td><td>N/A</td></tr><tr><td>Explanation / Justification sufficient?</td><td>N/A</td></tr><tr><td>Consistency with monitoring plan?</td><td>N/A</td></tr></table>		Boundary checklist	Yes / No	Source and gas(es) discussed by the PDD?	N/A	Inclusion / exclusion justified?	N/A	Explanation / Justification sufficient?	N/A	Consistency with monitoring plan?	N/A	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Boundary checklist	Yes / No														
Source and gas(es) discussed by the PDD?	N/A														
Inclusion / exclusion justified?	N/A														
Explanation / Justification sufficient?	N/A														
Consistency with monitoring plan?	N/A														
B.3.3. Source: Emission from combustion of fossil fuels for electricity generation in solar power plants and geothermal power plants Gas(es): CO ₂ Type: Project Emissions	1, 3, 8	<table><tr><th>Boundary checklist</th><th>Yes / No</th></tr><tr><td>Source and gas(es) discussed by the PDD?</td><td>Yes</td></tr><tr><td>Inclusion / exclusion justified?</td><td>No</td></tr><tr><td>Explanation / Justification sufficient?</td><td>No</td></tr><tr><td>Consistency with monitoring plan?</td><td>No</td></tr></table> <p><u>Corrective Action Request No.8</u> Please include complete table from the methodology and discuss each gas as applicable to the given project activity (for project emissions). In</p>		Boundary checklist	Yes / No	Source and gas(es) discussed by the PDD?	Yes	Inclusion / exclusion justified?	No	Explanation / Justification sufficient?	No	Consistency with monitoring plan?	No	CAR8	<input checked="" type="checkbox"/>
Boundary checklist	Yes / No														
Source and gas(es) discussed by the PDD?	Yes														
Inclusion / exclusion justified?	No														
Explanation / Justification sufficient?	No														
Consistency with monitoring plan?	No														

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		addition, please clarify why CO ₂ emissions from the combustion of fossil fuels from electricity generation are considered as a main emission source for project emissions.												
B.3.4.Source: Emissions from electricity generation in fossil fuel fired power plants that are displaced due to the project activity Gas(es): CO ₂ Type: Baseline Emissions	1, 3, 8	<div>This is main emission source in the project boundary.</div> <table><tr><th>Boundary checklist</th><th>Yes / No</th></tr><tr><td>Source and gas(es) discussed by the PDD?</td><td>Yes</td></tr><tr><td>Inclusion / exclusion justified?</td><td>Yes</td></tr><tr><td>Explanation / Justification sufficient?</td><td>Yes</td></tr><tr><td>Consistency with monitoring plan?</td><td>Yes</td></tr></table>	Boundary checklist	Yes / No	Source and gas(es) discussed by the PDD?	Yes	Inclusion / exclusion justified?	Yes	Explanation / Justification sufficient?	Yes	Consistency with monitoring plan?	Yes	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Boundary checklist	Yes / No													
Source and gas(es) discussed by the PDD?	Yes													
Inclusion / exclusion justified?	Yes													
Explanation / Justification sufficient?	Yes													
Consistency with monitoring plan?	Yes													
B.3.5.Do the spatial and technological boundaries as verified on-site comply with the discussion provided by the PDD?	1, 3, 8	<u>Corrective Action Request No.9</u> According to the latest CDM Guidelines the PP shall include a flow diagram to delineate the project boundary by differentiating the project activity and project boundary and including all equipments and infrastructures.	CAR9	<input checked="" type="checkbox"/>										
B.4. Description of how the baseline scenario is identified and description of the identified baseline scenario														
B.4.1.Is it clearly described that the baseline is represented by the combined margin of the grid the activity will be connected to? Is the baseline scenario correctly identified as per the three categories of ACM0002 (i.e. installation of a new grid-connected renewable power plant/unit, or capacity addition to existing grid-connected renewable power plant/unit or retrofit or replacement of existing grid-connected renewable power plant/unit(s) at the project site).	1, 3, 5, 8	<div>The project activity is the installation of a new grid-connected renewable power plant/unit (i.e. a new solar power plant) and the baseline scenario could be confirmed as the following: Electricity delivered to the grid by the project activity would have otherwise been generated by the operation of grid-connected power plants and by the addition of new generation sources, as reflected in the combined margin (CM) calculations described in the “Tool to calculate the emission factor for an electricity system”. This is also clearly described in chapter B.6.1 and Annex 3 of the GSP-PDD. This is the first of the three categories indicated by the meth and is deemed to be the correct one based on on-site observations, document review and interviews.</div>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>										

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B.4.2. In case of any modification or retrofit of existing facilities: Is data available to determine the historic production level?	1, 3, 5, 8	Not applicable, the project is a new grid-connected solar power plant.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
B.4.3. In case of any modification or retrofit of existing facilities: Have conservative assumptions been applied in order to estimate the point in time when the existing equipment needs to be replaced?	1, 3, 5, 8	Not applicable, the project is a new grid-connected solar power plant, hence the three steps of the ACM00002 Ver12.2 to identify the baseline scenario for a modification or retrofit project are not applicable for this CDM project activity.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Changes required for methodology implementation in 2 nd and 3 rd crediting periods				
B.4.4. Has the continued validity of the baseline been correctly assessed?	-	Not applicable.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
B.4.5. Has the baseline been updated with new data?	-	Not applicable.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
B.5. Description of how the anthropogenic emissions of GHG by sources are reduced below those that would have occurred in the absence of the registered CDM project activity (assessment and demonstration of additionality):				
B.5.1. Is evidence provided, that CDM has been considered seriously in the decision to proceed with the project activity (CDM decision before project start)?	1, 8, 11, 43, 55	<u>Corrective Action Request No.10</u> Please provide an implementation timeline of the proposed CDM project activity. The timeline should include the date when the investment decision was made (see also EB62, Annex 5, para 6), the date when construction works will start, the date when commissioning will start (if applicable) and the date of start-up (e.g. the date when commercial production is expected). The starting date of the project activity is previous to the date of validation. In the PDD it is indicated that the CDM prior consideration can be evidenced by the submission of the CDM consideration to UNFCCC and DNA	CAR10	<input checked="" type="checkbox"/>

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B.5.2. Have realistic and credible alternatives been identified providing comparable outputs or services? (step 1a)	1, 8, 9	The following three scenarios alternatives were discussed in chapter B.5 1) The Project activity, but not undertaken as CDM project activity; 2) Continuation of the current situation; 3) Construction of a fossil fuel power plant <u>Corrective Action Request No.11</u> PP shall clarify why other plausible and credible alternatives to the project activity, i.e. other renewable energy like wind, hydro etc. has not been considered as an alternative.	CAR11	<input checked="" type="checkbox"/>
B.5.3. Is the project activity without CDM included in these alternatives? (step 1a)	8	Yes, see alternative 1 above in the B.5.2.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
B.5.4. Is a discussion provided for all identified alternatives concerning the compliance with applicable laws and regulations? (step 1b)	8	All three alternatives meet national laws and regulations. This was confirmed during the on-site visit.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
B.5.5. In case the PDD argues that specific laws are not enforced in the country or region: Is evidence available concerning that statement? (step 1b)	-	Not applicable.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
B.5.6. In case of applying step 2 / investment analysis of the additionality tool: Is the analysis method identified appropriately (step 2a)?	1, 3, 8	Step 2 of the investment analysis has been applied: benchmark analysis.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
B.5.7. In case of Option I (simple cost analysis): Is it demonstrated that the activity produces no economic benefits other than CDM income?	-	Not applicable. The simple cost analysis does not apply as the proposed project not only obtains CDM revenue but also revenue through electricity sales.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
B.5.8. In case of Option II (investment comparison analysis): Is the most suitable finan-	-	Not applicable.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

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cial indicator clearly identified (IRR, NPV, cost benefit ratio, or (levelized) unit cost)?				
B.5.9. In case of Option III (benchmark analysis): Is the most suitable financial indicator clearly identified (IRR, NPV, cost benefit ratio, or (levelized) unit cost)?	1, 8, 13, 59, 60, 61	<p>The Project IRR will be used, and the Internal Rate of Return (IRR) has been selected as the most suitable financial indicator. The benchmark is 12%, which has been determined by the Ministry of Energy and Mining (MINEM) for every energy-related project assessment.</p> <p><u>Clarification Request No. 1.</u></p> <p>Please shall clarify why the report published by the World Bank in 2008 with the title "Economic and Technical feasibility of Hydropower in Peru" is also applicable to solar projects since it only provides information on hydro projects.</p>	CL1	<input checked="" type="checkbox"/>
B.5.10. In case of Option II or Option III: Is the calculation of financial figures for this indicator correctly done for all alternatives and the project activity?	1, 8, 12	The calculation of financial figures for IRR is done for the project activity with and without the revenues from the sale of CERs.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
B.5.11. In case of Option II or Option III: Is the analysis presented in a transparent manner including publicly available proofs for the utilized data?	14, 35, 36, 37	<p>The analysis is presented in a transparent manner.</p> <p>The cash flow analysis is based on two electricity prices: the "tariff for electricity from auction" (i.e. 225 US\$/MWh) and the "energy spot market tariff" (i.e. 30 US\$/MWh). The first values could be confirmed via the bidding and auction documents, where the auction tariff of 225 US\$/MWh has been granted for 47,196 MWh per year for the first 20 years of operation. Any surplus generated electricity will be sold on the spot market, with a current price of 30 US\$/MWh (based on online publications from the Ministry of Energy and Mines). The sensitivity analysis was checked and could be confirmed to be in line with the given requirements (for details please refer to the validation report). However, the following issues are still open:</p> <p><u>Corrective Action Request No.12</u></p> <ul style="list-style-type: none"> The PDD shall provide clear references to the source of the values 	CAR12	<input checked="" type="checkbox"/>

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		<p>(including their dates) used for the IRR calculation.</p> <ul style="list-style-type: none"> In addition, a breakdown of the O&M costs shall be provided (i.e. what is included in these costs). In addition, PP shall clearly indicate the type of IRR, i.e. post-tax or pre-tax according to EB 62, annex 12, para 12. In case a post-tax benchmark is used, PP shall ensure that actual interest payable is taken into account in the calculation of the income tax. In addition, the IRR calculation is missing any fair value as per the latest investment guidance. Hence, PP shall address the fair value in the Excel cash flow file. PP shall clarify the "indexation of the tariff (2%) and the "tariff update incremental trigger (5%) on the spot market tariff and the auction tariff, respectively. 		
B.5.12. In case of applying step 3 (barrier analysis) of the additionality tool: Is a complete list of barriers developed that prevent the different alternatives to occur?	1, 8, 49	<p><u>Corrective Action Request No.13</u></p> <p>As discussed on-site, PP shall discuss the barrier due to prevailing practice in the PDD (including references in the PDD).</p> <p>In addition, PP shall further substantiate the indicated barriers according to EB50, Annex 13 (i.e. investment barrier and barriers due to lack of reliable data).</p>	CAR13	<input checked="" type="checkbox"/>
B.5.13. In case of applying step 3 (barrier analysis): Is transparent and documented evidence provided on the existence and significance of these barriers?	1, 8, 49	See Corrective Action Request No.13.	See CAR13	<input checked="" type="checkbox"/>
B.5.14. In case of applying step 3 (barrier analysis): Is it transparently shown that the execution of at least one of the alternatives is not prevented by	1, 8, 49	See Corrective Action Request No.13.	See CAR13	<input checked="" type="checkbox"/>

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the identified barriers?				
B.5.15. Have other activities in the host country / region similar to the project activity been identified and are these activities appropriately analyzed by the PDD (step 4a)?	1, 8	<u>Corrective Action Request No.14</u> PP shall clearly identify the similar technology and the region for the common practice activity, as required by step 4 of the additionality tool (version 5.2.1).	CAR14	<input checked="" type="checkbox"/>
B.5.16. If similar activities are occurring: Is it demonstrated that in spite of these similarities the project activity would not be implemented without the CDM component (step 4b)?	1, 8, 49	No, there are no similar activities occurring, which could be confirmed via the following website: http://www.coes.org.pe/wcoes/coes/estadistica/EstadisticaDiaria.aspx	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
B.5.17. Is it appropriately explained how the approval of the project activity will help to overcome the economic and financial hurdles or other identified barriers?	1, 8	Yes. The CDM registration will make the project more financial attractive and the additionality of the Project is demonstrated within the PDD.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
B.6. Emissions reductions				
<i>B.6.1.Explanation of methodological choices</i>				
B.6.1.1. Is it explained how the procedures provided in the methodology are applied by the proposed project activity?	3, 5, 8	The CO2 emission factor has been calculated according to the methodology ACM0002 ver.12.2 and the “tool to calculate the emission factor for an electricity system” version 02.2.1. The Operational Margin and the Build Margin have been calculated and combined to obtain the Baseline Emission factor. To calculate the operating margin CO2 emission factor ($EF_{grid,OM,y}$) the Dispatch Data Analysis method has been selected. Public information is available for the Peruvian power units – provided by COES. Hence, the method requires ex-post monitoring of $EF_{grid,OM,y}$. The determination of the Build Margin emission ($EF_{grid,BM,y}$) is based on	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

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		the power plant capacity additions in the electricity system that comprises 20% of the system generation. $EF_{grid,BM,y}$ will be calculated ex-post and therefore it shall be updated annually.		
B.6.1.2. Is every selection of options offered by the methodology correctly justified and is this justification in line with the situation verified on-site?	3, 5, 8	<p>Every selection of options has been mentioned, however not justified in detail.</p> <p>The sample group of power units m used to calculate the build margin consists of either:</p> <p>(a) The set of five power units that have been built most recently; or</p> <p>(b) The set of power capacity additions in the electricity system that comprise 20% of the system generation (in MWh) and that have been built most recently.</p> <p>PP chose the second option from above, which comprises the larger annual generation. The applied approach could be confirmed to be correct after thorough review of the provided xls calculation sheet (i.e. the 20% of power capacity additions that were built most recently are actually built throughout the last ten years; CDM projects were correctly excluded in line with the tool).</p> <p>Regarding the calculation of the OM, hourly data is correctly presented in the OM xls calculation file for the electricity generation in line with the requirements of the emission factor tool for the dispatch data analysis.</p> <p><u>Corrective Action Request No.15</u></p> <p>PP shall clearly justify every selection of options used in the EF calculation tool. In addition, regarding the calculation of the emission factor, the following issues have been identified:</p> <ul style="list-style-type: none"> • BM calculation: linkage between two Excel spreadsheets - effective power – capacity is not clear. How are the numbers rounded? • EF-CO₂ values – indicate the source in the PDD (i.e. IPCC) • Add the SI unit to any number presented in the Excel files (where this is missing) 	CAR15	<input checked="" type="checkbox"/>

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		<ul style="list-style-type: none"> PP shall check the formulas of the OM calculation to be in line with the applicable formulas of the tool. The emission factor in the IRR xls file is not consistent with the emission factor in the PDD and OM/BM calculation files. PP shall correct this accordingly and use a consistent value. 		
B.6.1.3. Are the formulae required for the determination of project emissions correctly presented, enabling a complete identification of parameter to be used and / or monitored?	3, 5, 8	No project emissions are considered according to the methodology ACM0002. The only power source for any potential internal power consumption is the grid.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
B.6.1.4. Are the formulae required for the determination of baseline emissions correctly presented, enabling a complete identification of parameter to be used and / or monitored?	3, 5, 8	Yes, the formulae required for the determination of emission reductions are correctly presented in B.6.3 of the PDD.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
B.6.1.5. Is the choice of options to determine the emissions factor (OM, BM) justified in a suitable and transparent manner?	3, 5, 8	No, please refer to Corrective Action Request No.15	See CAR15	<input checked="" type="checkbox"/>
B.6.1.6. Are the seven steps as defined as per the "Tool for calculation of emission factor for electrical systems" correctly applied by the project participants?	3, 5, 8	Yes. The relevant steps as defined as per the applied emission factor tool are correctly applied.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
B.6.1.7. In case of alternative weighing factors for the Combined Margin: Is the quantification of the alternative weighing factor justified in a suitable and transparent manner?	3, 5, 8	The default weights (OM 0.75 and BM 0.25) for solar or wind power generation projects are correctly used.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

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B.6.1.8. In case of alternative weighing factors for the Combined Margin: Is the guidance for the PDD concerning the acceptability of alternative weights considered in the discussion?	3, 5, 8	Not applicable.		
B.6.1.9. Are the formulae required for the determination of leakage emissions correctly presented, enabling a complete identification of parameter to be used and / or monitored?	3, 5, 8	No leakage is considered according to the methodology ACM0002.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<i>B.6.2. Data and parameters that are available at validation</i>				
B.6.2.1. Is the list of parameters presented in chapter B.6.2 considered to be complete with regard to the requirements of the applied methodology?	3, 5, 8	As per the PDD guidelines: "This section shall include a compilation of information on the data and parameters that are not monitored throughout the crediting period but that are determined only once and thus remains fixed throughout the crediting period AND that are available when validation is undertaken. Data that becomes available only after validation of the project activity (e.g. measurements after the implementation of the project activity) should not need to be included here but in the table in section B.7.1." Hence, no parameters need to be presented here.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
B.6.2.2. Is the choice of ex-ante or ex-post vintage of OM and BM factors clearly specified in the PDD?	3, 5, 8	Yes, the choice of ex-post vintage of OM and BM is clearly specified in the PDD.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
B.6.2.3. Parameter Title: GWP_{CH_4} Global warming potential of methane valid for the relevant commitment period (tCO ₂ /tCH ₄)	3, 5, 8	Not applicable.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
B.6.2.4. Parameter Title: $EG_{historical}$ (only applicable to modification/retrofit of an	3, 5, 8	Not applicable.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

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existing grid-connected renewable power plant/unit) Average of historical electricity delivered by the existing facility to the grid (MWh)				
B.6.2.5. Parameter Title: DATE _{BaselineRetrofit} (only applicable to modification/retrofit of an existing grid-connected renewable power plant/unit) Point in time when the existing equipment would need to be replaced in the absence of the project activity	3, 5, 8	Not applicable.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
B.6.2.6. Parameter Title: EF _{Res} (only applicable to hydro-power plants with reservoir) Default emission factor for emissions from reservoirs (kgCO2e/MWh)	3, 5, 8	Not applicable.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
B.6.2.7. Parameter Title: CAP _{BL} (W) (only applicable to modification/retrofit of an existing grid-connected renewable power plant/unit) Installed capacity of the hydro power plant before the implementation of the project activity. For new hydro power plants, this value is zero.	3, 5, 8	Not applicable.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

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B.6.2.8. Parameter Title: A_{BL} (only applicable to hydropower plant projects with reservoir) Area of the reservoir measured in the surface of the water, before the implementation of the project activity, when the reservoir is full (m ²). For new reservoirs, this value is zero (m ²).	3, 5, 8	Not applicable.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
B.6.2.9. Parameter Title: Emission factor of the grid (EF_{CM} in tCO ₂ /MWh)	3, 5, 8	Not applicable.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
B.6.2.10. Parameter Title: Operating margin (EF_{OM} in tCO ₂ /MWh) emission factor of the grid	3, 5, 8	Not applicable.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
B.6.2.11. Parameter Title: Build margin (EF_{BM} in tCO ₂ /MWh) emission factor of the grid	3, 5, 8	Not applicable.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
B.6.2.12. Parameter Title: $FC_{i,m,y}$, $FC_{i,y}$, $FC_{i,j,y}$, $FC_{i,k,y}$, $FC_{i,n,y}$ and $FC_{i,n,h}$ Amount of fossil fuel type i consumed by power plant / unit m,j,k or n (or in the project electricity system in case of $FC_{i,y}$) in year y or hour h (mass or volume unit)	3, 5, 8	Not applicable.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
B.6.2.13. Parameter Title: $NCV_{i,y}$ Net calorific value (energy content) of fossil fuel type i in year y (GJ /	3, 5, 8	Not applicable.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

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mass or volume unit)				
B.6.2.14. Parameter Title: $EF_{CO_2,i,y}$ and $EF_{CO_2,m,i,y}$ CO2 emission factor of fossil fuel type i in year y (tCO2/GJ)	3, 5, 8	Not applicable.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
B.6.2.15. Parameter Title: $EG_{m,y}$, EG_y , $EG_{j,y}$, $EG_{k,y}$ and $EG_{n,h}$ Net electricity generated and delivered to the grid by power plant / unit m,j,k or n (or in the project electricity system in case of EG_y) in year y or hour h (MWh)	3, 5, 8	Not applicable.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
B.6.2.16. Parameter Title: $EG_{PJ,h}$ Electricity displaced by the project activity in hour h of year y (in MWh) (only applicable for the dispatch data OM)	3, 5, 8	Not applicable.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
B.6.2.17. Parameter Title: $\eta_{m,y}$ Average net energy conversion efficiency of power unit m in year y	3, 5, 8	Not applicable.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
B.6.2.18. Parameter Title: APJ (only applicable to hydropower plant projects with reservoir) Area of the reservoir measured in the surface of the water, after the implementation of the project activity, when the reservoir is full.	3, 5, 8	Not applicable.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
B.6.2.19. Parameter Title:	3, 5,	Not applicable.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

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fraction of time with low costs /must run plant at the margin (for simple adjusted OM only)	8			
B.6.3. Ex-ante calculation of emission reductions				
B.6.3.1. Is the projection based on the same procedures as used for future monitoring?	3, 8	Yes, the projection is using mostly data that is available by the national dispatch centre, so the information can be considered official.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
B.6.3.2. Are the GHG calculations documented in a complete and transparent manner?	3, 8	Yes, the GHG calculations are documented in a complete and transparent manner.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
B.6.3.3. Is the calculation of the operating margin and build margin emission factors documented electronically in a spreadsheet with the relevant information as defined per the "Tool for calculation of emission factor for electrical systems"? Has this spreadsheet been submitted to the validation team?	3, 8	The calculation of the operating margin and build margin emission factors is documented electronically in a spreadsheet, based on the "Tool for calculation of emission factor for electrical systems".. Please refer to Corrective Action Request No.15	See CAR15	<input checked="" type="checkbox"/>
B.6.3.4. Is the data provided in this section consistent with data as presented in other chapters of the PDD?	3, 8	Yes, there is no inconsistency of data within the PDD.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
B.6.4. Summary of the ex-ante estimation of emission reductions				
B.6.4.1. Will the project result in fewer GHG emissions than the baseline scenario?	8	Yes, the project will result in a reduction of 234,288 tCO ₂ e for the first crediting period of 7 years.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
B.6.4.2. Is the form/table required for the indication of projected emission	8	Yes. The table is correctly applied, listing the baseline emissions, project emissions, leakage emissions and emission reductions.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

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reductions correctly applied?				
B.6.4.3. Is the projection in line with the envisioned time schedule for the project's implementation and the indicated crediting period?	1, 8	Yes, it is in line with the timeline.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
B.6.4.4. Is the data provided in this section in consistency with data as presented in other chapters of the PDD?	8	Yes, no inconsistency has been found in the other chapters of the PDD.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
B.7. Application of the monitoring methodology and description of the monitoring plan				
<i>B.7.1. Data and parameters monitored</i>				
B.7.1.1. Is the list of parameters presented by chapter B.7.1 considered to be complete with regard to the requirements of the applied methodology?	3, 5, 8	Yes, a list of parameters has been presented in section B.7.1 of the PDD. However, the list is not complete, please see below.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Integrate the required amount of sub-checklists for monitoring parameter and comment on any line answered with "No"				
B.7.1.2. Parameter Title: EG _{facility,y} Quantity of net electricity supplied to the grid in year y in MWh/y	3, 5, 8	See B.7.1.8 below.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
B.7.1.3. Parameter Title: TEG _y Total electricity produced by the project activity, including the electricity supplied to the grid and the electricity supplied to internal loads, in year y (in MWh).	3, 5, 8	Not applicable.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

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B.7.1.4. Parameter Title: EF _{grid,CM,y} Combined margin CO2 emission factor for grid connected power generation in year y calculated using the “Tool to calculate the emission factor for an electricity system” (tCO2/MWh)	3, 5, 8	<table><tr><th>Monitoring Checklist</th><th>Yes / No</th></tr><tr><td>Title in line with methodology?</td><td>Yes</td></tr><tr><td>Data unit correctly expressed?</td><td>Yes</td></tr><tr><td>Appropriate description of parameter?</td><td>Yes</td></tr><tr><td>Source clearly referenced?</td><td>Yes</td></tr><tr><td>Correct value provided for estimation?</td><td>Yes</td></tr><tr><td>Has this value been verified?</td><td>Yes</td></tr><tr><td>Measurement method correctly described?</td><td>Yes</td></tr><tr><td>Correct reference to standards?</td><td>Yes</td></tr><tr><td>Indication of accuracy provided?</td><td>Yes</td></tr><tr><td>QA/QC procedures described?</td><td>Yes</td></tr><tr><td>QA/QC procedures appropriate?</td><td>Yes</td></tr></table>	Monitoring Checklist	Yes / No	Title in line with methodology?	Yes	Data unit correctly expressed?	Yes	Appropriate description of parameter?	Yes	Source clearly referenced?	Yes	Correct value provided for estimation?	Yes	Has this value been verified?	Yes	Measurement method correctly described?	Yes	Correct reference to standards?	Yes	Indication of accuracy provided?	Yes	QA/QC procedures described?	Yes	QA/QC procedures appropriate?	Yes	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Monitoring Checklist	Yes / No																											
Title in line with methodology?	Yes																											
Data unit correctly expressed?	Yes																											
Appropriate description of parameter?	Yes																											
Source clearly referenced?	Yes																											
Correct value provided for estimation?	Yes																											
Has this value been verified?	Yes																											
Measurement method correctly described?	Yes																											
Correct reference to standards?	Yes																											
Indication of accuracy provided?	Yes																											
QA/QC procedures described?	Yes																											
QA/QC procedures appropriate?	Yes																											
B.7.1.5. Parameter Title: EFCO2,i,y and EFCO2,m,i,y CO2 emission factor of fossil fuel type i in tCO2e/GJ Monitoring/Recording Frequency: As per the “Tool to calculate project or leakage CO2 emissions from fossil fuel combustion” Measurement Methods and Procedures: As per the “Tool to calculate project or leakage CO2 emissions from fossil fuel combustion”	3, 5, 8	<table><tr><th>Monitoring Checklist</th><th>Yes / No</th></tr><tr><td>Title in line with methodology?</td><td>Yes</td></tr><tr><td>Data unit correctly expressed?</td><td>No</td></tr><tr><td>Appropriate description of parameter?</td><td>Yes</td></tr><tr><td>Source clearly referenced?</td><td>Yes</td></tr><tr><td>Correct value provided for estimation?</td><td>Yes</td></tr><tr><td>Has this value been verified?</td><td>Yes</td></tr><tr><td>Measurement method correctly described?</td><td>Yes</td></tr><tr><td>Correct reference to standards?</td><td>Yes</td></tr><tr><td>Indication of accuracy provided?</td><td>Yes</td></tr><tr><td>QA/QC procedures described?</td><td>Yes</td></tr><tr><td>QA/QC procedures appropriate?</td><td>Yes</td></tr></table> <u>Corrective Action Request No.16</u> PP shall correct the parameter unit to be consistent with the require-	Monitoring Checklist	Yes / No	Title in line with methodology?	Yes	Data unit correctly expressed?	No	Appropriate description of parameter?	Yes	Source clearly referenced?	Yes	Correct value provided for estimation?	Yes	Has this value been verified?	Yes	Measurement method correctly described?	Yes	Correct reference to standards?	Yes	Indication of accuracy provided?	Yes	QA/QC procedures described?	Yes	QA/QC procedures appropriate?	Yes	CAR16	<input checked="" type="checkbox"/>
Monitoring Checklist	Yes / No																											
Title in line with methodology?	Yes																											
Data unit correctly expressed?	No																											
Appropriate description of parameter?	Yes																											
Source clearly referenced?	Yes																											
Correct value provided for estimation?	Yes																											
Has this value been verified?	Yes																											
Measurement method correctly described?	Yes																											
Correct reference to standards?	Yes																											
Indication of accuracy provided?	Yes																											
QA/QC procedures described?	Yes																											
QA/QC procedures appropriate?	Yes																											

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		ment of the tool.																										
B.7.1.6. Parameter Title: NCV_{i,y} Net calorific value of fossil fuel type i in MJ per unit volume or mass unit Monitoring/Recording Frequency: As per the “Tool to calculate project or leakage CO2 emissions from fossil fuel combustion” Measurement Methods and Procedures: As per the “Tool to calculate project or leakage CO2 emissions from fossil fuel combustion”	3, 5, 8	Not applicable.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>																								
B.7.1.7. Parameter Title: EG_{m,y} , EG_y , EG_{k,y} and EG_{n,h} Net electricity generated and delivered to the grid by power plant /unit m or n in year y or hour h, in MWh . Monitoring frequency: Dispatch data OM: Hourly. Further guidance can be found in Step 3 of the Tool	3, 5, 8	<table><tr><th>Monitoring Checklist</th><th>Yes / No</th></tr><tr><td>Title in line with methodology?</td><td>Yes</td></tr><tr><td>Data unit correctly expressed?</td><td>Yes</td></tr><tr><td>Appropriate description of parameter?</td><td>Yes</td></tr><tr><td>Source clearly referenced?</td><td>Yes</td></tr><tr><td>Correct value provided for estimation?</td><td>Yes</td></tr><tr><td>Has this value been verified?</td><td>Yes</td></tr><tr><td>Measurement method correctly described?</td><td>Yes</td></tr><tr><td>Correct reference to standards?</td><td>Yes</td></tr><tr><td>Indication of accuracy provided?</td><td>Yes</td></tr><tr><td>QA/QC procedures described?</td><td>Yes</td></tr><tr><td>QA/QC procedures appropriate?</td><td>Yes</td></tr></table> <u>Corrective Action Request No.17</u> PP shall clarify the monitoring frequency in order to be in line with the	Monitoring Checklist	Yes / No	Title in line with methodology?	Yes	Data unit correctly expressed?	Yes	Appropriate description of parameter?	Yes	Source clearly referenced?	Yes	Correct value provided for estimation?	Yes	Has this value been verified?	Yes	Measurement method correctly described?	Yes	Correct reference to standards?	Yes	Indication of accuracy provided?	Yes	QA/QC procedures described?	Yes	QA/QC procedures appropriate?	Yes	CAR17	<input checked="" type="checkbox"/>
Monitoring Checklist	Yes / No																											
Title in line with methodology?	Yes																											
Data unit correctly expressed?	Yes																											
Appropriate description of parameter?	Yes																											
Source clearly referenced?	Yes																											
Correct value provided for estimation?	Yes																											
Has this value been verified?	Yes																											
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Correct reference to standards?	Yes																											
Indication of accuracy provided?	Yes																											
QA/QC procedures described?	Yes																											
QA/QC procedures appropriate?	Yes																											

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		tool.																										
B.7.1.8. Parameter Title: EG_{PJ,h} and EG_{PJ,y} Net Electricity displaced by the project activity in hour <i>h</i> of year <i>y</i> . (=EG _{facility})	3, 5, 8	<table><tr><th>Monitoring Checklist</th><th>Yes / No</th></tr><tr><td>Title in line with methodology?</td><td>No</td></tr><tr><td>Data unit correctly expressed?</td><td>Yes</td></tr><tr><td>Appropriate description of parameter?</td><td>Yes</td></tr><tr><td>Source clearly referenced?</td><td>Yes</td></tr><tr><td>Correct value provided for estimation?</td><td>Yes</td></tr><tr><td>Has this value been verified?</td><td>Yes</td></tr><tr><td>Measurement method correctly described?</td><td>No</td></tr><tr><td>Correct reference to standards?</td><td>Yes</td></tr><tr><td>Indication of accuracy provided?</td><td>Yes</td></tr><tr><td>QA/QC procedures described?</td><td>Yes</td></tr><tr><td>QA/QC procedures appropriate?</td><td>Yes</td></tr></table> <p><u>Corrective Action Request No.18</u></p> <p>PP shall correct the parameter title for EG_y to be consistent with the requirement of the ACM0002. In addition, the monitoring frequency shall be added as well as the applied standards for the monitoring equipment.</p> <p><u>Clarification Request No. 2.</u></p> <p>Please clarify the difference between these two parameters and the monitored parameter EG_{facility} (i.e. the first parameter mentioned in B.7.1 of the PDD). In addition, please indicate whether this parameter is measured hourly or yearly (as per the tool).</p>	Monitoring Checklist	Yes / No	Title in line with methodology?	No	Data unit correctly expressed?	Yes	Appropriate description of parameter?	Yes	Source clearly referenced?	Yes	Correct value provided for estimation?	Yes	Has this value been verified?	Yes	Measurement method correctly described?	No	Correct reference to standards?	Yes	Indication of accuracy provided?	Yes	QA/QC procedures described?	Yes	QA/QC procedures appropriate?	Yes	CAR18 CL2	<input checked="" type="checkbox"/>
Monitoring Checklist	Yes / No																											
Title in line with methodology?	No																											
Data unit correctly expressed?	Yes																											
Appropriate description of parameter?	Yes																											
Source clearly referenced?	Yes																											
Correct value provided for estimation?	Yes																											
Has this value been verified?	Yes																											
Measurement method correctly described?	No																											
Correct reference to standards?	Yes																											
Indication of accuracy provided?	Yes																											
QA/QC procedures described?	Yes																											
QA/QC procedures appropriate?	Yes																											
B.7.1.9. Parameter Title: η_{m,y} and η_{k,y} Average net energy conversion efficiency of power unit “m” in year “y”.	3, 5, 8	<table><tr><th>Monitoring Checklist</th><th>Yes / No</th></tr><tr><td>Title in line with methodology?</td><td>Yes</td></tr><tr><td>Data unit correctly expressed?</td><td>Yes</td></tr></table>	Monitoring Checklist	Yes / No	Title in line with methodology?	Yes	Data unit correctly expressed?	Yes	CAR19	<input checked="" type="checkbox"/>																		
Monitoring Checklist	Yes / No																											
Title in line with methodology?	Yes																											
Data unit correctly expressed?	Yes																											

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		<table><tr><td>Appropriate description of parameter?</td><td>Yes</td></tr><tr><td>Source clearly referenced?</td><td>Yes</td></tr><tr><td>Correct value provided for estimation?</td><td>Yes</td></tr><tr><td>Has this value been verified?</td><td>Yes</td></tr><tr><td>Measurement method correctly described?</td><td>No</td></tr><tr><td>Correct reference to standards?</td><td>Yes</td></tr><tr><td>Indication of accuracy provided?</td><td>Yes</td></tr><tr><td>QA/QC procedures described?</td><td>Yes</td></tr><tr><td>QA/QC procedures appropriate?</td><td>Yes</td></tr></table>	Appropriate description of parameter?	Yes	Source clearly referenced?	Yes	Correct value provided for estimation?	Yes	Has this value been verified?	Yes	Measurement method correctly described?	No	Correct reference to standards?	Yes	Indication of accuracy provided?	Yes	QA/QC procedures described?	Yes	QA/QC procedures appropriate?	Yes									
Appropriate description of parameter?	Yes																												
Source clearly referenced?	Yes																												
Correct value provided for estimation?	Yes																												
Has this value been verified?	Yes																												
Measurement method correctly described?	No																												
Correct reference to standards?	Yes																												
Indication of accuracy provided?	Yes																												
QA/QC procedures described?	Yes																												
QA/QC procedures appropriate?	Yes																												
		<u>Corrective Action Request No.19</u>																											
		Please clarify why the monitoring frequency is annually, although the tool suggests monitoring it “once for the crediting period”?																											
B.7.1.10. Parameter Title: Merit Order	3, 5, 8	<table><tr><td>Monitoring Checklist</td><td>Yes / No</td></tr><tr><td>Title in line with methodology?</td><td>Yes</td></tr><tr><td>Data unit correctly expressed?</td><td>Yes</td></tr><tr><td>Appropriate description of parameter?</td><td>Yes</td></tr><tr><td>Source clearly referenced?</td><td>Yes</td></tr><tr><td>Correct value provided for estimation?</td><td>Yes</td></tr><tr><td>Has this value been verified?</td><td>Yes</td></tr><tr><td>Measurement method correctly described?</td><td>Yes</td></tr><tr><td>Correct reference to standards?</td><td>Yes</td></tr><tr><td>Indication of accuracy provided?</td><td>Yes</td></tr><tr><td>QA/QC procedures described?</td><td>Yes</td></tr><tr><td>QA/QC procedures appropriate?</td><td>Yes</td></tr></table>	Monitoring Checklist	Yes / No	Title in line with methodology?	Yes	Data unit correctly expressed?	Yes	Appropriate description of parameter?	Yes	Source clearly referenced?	Yes	Correct value provided for estimation?	Yes	Has this value been verified?	Yes	Measurement method correctly described?	Yes	Correct reference to standards?	Yes	Indication of accuracy provided?	Yes	QA/QC procedures described?	Yes	QA/QC procedures appropriate?	Yes		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Monitoring Checklist	Yes / No																												
Title in line with methodology?	Yes																												
Data unit correctly expressed?	Yes																												
Appropriate description of parameter?	Yes																												
Source clearly referenced?	Yes																												
Correct value provided for estimation?	Yes																												
Has this value been verified?	Yes																												
Measurement method correctly described?	Yes																												
Correct reference to standards?	Yes																												
Indication of accuracy provided?	Yes																												
QA/QC procedures described?	Yes																												
QA/QC procedures appropriate?	Yes																												
B.7.1.11. Parameter Title: PE _{FC,j,y} CO2 emissions from fossil fuel com-	3, 5, 8	Not applicable		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>																								

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bustion in process j during the year y (tCO ₂ /yr). Calculated as per the "Tool to calculate project or leakage CO ₂ emissions from fossil fuel combustion"				
B.7.1.12. Parameter Title: Cap _{PJ} (only applicable to hydropower plant projects) Installed capacity of the hydro power plant after the implementation of the project activity (W).	3, 5, 8	Not applicable.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
B.7.1.13. Title: A _{PJ} (only applicable to hydropower plant projects with reservoir) Area of the reservoir measured in the surface of the water, after the implementation of the project activity, when the reservoir is full (m ²).	3, 5, 8	Not applicable.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
B.7.1.14. Parameter Title: w _{Main,CO₂} Average mass fraction of CO ₂ in the produced steam tCO ₂ /t steam (for geothermal projects only)	3, 5, 8	Not applicable.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
B.7.1.15. Parameter Title: w _{Main,CH₄} Average mass fraction of CH ₄ in the produced steam (tCH ₄ /t steam). for geothermal projects only)	3, 5, 8	Not applicable.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
B.7.1.16. Parameter Title: M _{S,y} Quantity of steam produced during the year y.	3, 5, 8	Not applicable.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

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(for geothermal projects only)				
B.7.2. Description of the monitoring plan				
B.7.2.1. Is the operational and management structure clearly described and in compliance with the envisioned situation?		Section B.7.2. does not describe the operational and management structure and any leakage effects generated by the project activity. <u>Corrective Action Request No.20</u> PP shall put the relevant information related to the description of the monitoring plan under section B.7.2. rather than in Annex 4. In addition, this section shall include a description on the meter location, calibrations, and potential back-up meters as per the latest PDD guidelines.	CAR20	<input checked="" type="checkbox"/>
B.7.2.2. Are responsibilities and institutional arrangements for data collection and archiving clearly provided?		No, please refer to Corrective Action Request No.20	See CAR20	<input checked="" type="checkbox"/>
B.7.2.3. Does the monitoring plan provide current good monitoring practice?		See Corrective Action Request No.20	See CAR20	<input checked="" type="checkbox"/>
B.7.2.4. If applicable: Does annex 4 provide useful information enabling a better understanding of the envisioned monitoring provisions?		See Corrective Action Request No.20	See CAR20	<input checked="" type="checkbox"/>
B.8. Date of completion of the application of the baseline study and monitoring methodology an the name of the responsible person(s)/entity(ies)				
B.8.1. Is there any indication of a date when the baseline was determined?	8	Yes. The baseline was determined to be completed on 30/05/2011 in the GSP PDD.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
B.8.2. Is this consistent with the time line of the PDD history?	8	Yes, it is consistent with the time line of the PDD history.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
B.8.3. Is the information on the person(s) / entity(ies) responsible for the application of	8	Yes, the information of responsible entity involved is DEUMAN, Energy and Climate Change consultant.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

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the baseline and monitoring methodology provided consistent with the actual situation?				
B.8.4. Is information provided whether this person / entity is also considered a project participant?	8	<p>The mentioned entity is not a project participant.</p> <p><u>Corrective Action Request No.21</u></p> <p>Please provide contact information of the person(s)/entity(ies) responsible for the application of the baseline and monitoring methodology to the project activity.</p>	CAR21	<input checked="" type="checkbox"/>
C. Duration of the project activity / crediting period				
C.1. Duration of the project activity				
C.1.1. Are the project's starting date and operational lifetime clearly defined and reasonable?	1, 8, 35	<p>The starting date is defined as 31/03/2010. Nevertheless in this section is not explained to which activity this date is related.</p> <p>According the Glossary of CDM terms, there are different situation to determine the starting date of the project activity. This is not clearly presented in the PDD and in particular within this section.</p> <p><u>Corrective Action Request No.22</u></p> <p>The section C.1 of the PDD shall include to which activity the starting date of the project activity is related (earliest date of construction, implementation or real action).</p>	CAR22	<input checked="" type="checkbox"/>
C.2. Choice of the crediting period and related information				
C.2.1. Is the assumed crediting time clearly defined and reasonable (renewable crediting period of max 7 years with potential for 2 renewals or fixed crediting period of max. 10 years)?	8	The crediting period is defined as a 7 years (with two renewals).	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

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D. Environmental impacts				
D.1. Documentation on the analysis of the environmental impacts, including transboundary impacts				
D.1.1. Has the analysis of the environmental impacts of the project activity been sufficiently described?	1, 8, 38, 39, 54	Yes. The analysis of the environmental impacts of the project activity has been sufficiently described in the Environmental Impact Declaration (DIA). It has been evaluated by the General Direction of Environmental and Energy Issues (Dirección General de Asuntos Ambientales Energéticos – DGAAE) that is part of the Ministry of Energy and Mines and approved by Directorial Resolution (“Resolución Directorial, RD”) No 119-2011-MEM/AEE on 03/05/2011 (final one, correcting the mistake in a previous one)	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
D.1.2. Are there any Host Party requirements for an Environmental Impact Assessment (EIA), and if yes, has an EIA been approved?	1, 8, 50	Yes, but an EIA is not required for this type of project. Only a DIA (Simplified EIA is required).	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
D.1.3. Will the project create any adverse environmental effects?	1, 8, 38, 39, 54	According to the information provided by the PP and the local authorities (MINAM), there are no relevant environmental impacts.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
D.1.4. Were transboundary environmental impacts identified in the analysis?	1, 8, 38, 39, 54	There are no transboundary environmental impacts for the proposed project.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
D.2. If environmental impacts are considered significant by the project participants or the host Party, please provide conclusions and all references to support documentation of an environmental impact assessment undertaken in accordance with the procedures as required by the host Party				
D.2.1. Have the identified environmental	1, 8,	Yes, the environmental impacts have been properly addressed. The	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

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impacts been addressed in the project design sufficiently?	38, 39, 54	given information could be further confirmed with the DIA as well as on-site interviews and observations.		
D.2.2. Does the project comply with environmental legislation in the host country?	1, 8, 38, 39, 54	Yes, the project is in conformity with the environmental legislation of Peru and only a DIA according to article 4 of the Law of the National Environmental Impact Assessment System.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
E. Stakeholders' comments				
E.1. Brief description how comments by local stakeholders have been invited and compiled				
E.1.1. Have relevant stakeholders been consulted?	1, 8, 19-24	Yes, relevant stakeholders have been invited through letters, press notes and informative panels to a meeting, which took place on February 8 th , 2011. <u>Corrective Action Request No.23</u> The participant list has been attached to the PDD in annex 5, however according to the CDM-PDD-Guidelines, the CDM templates shall not be altered. Hence please remove this Annex from the PDD.	CAR23	<input checked="" type="checkbox"/>
E.1.2. Have appropriate media been used to invite comments by local stakeholders?	1, 8, 19-24	Yes, stakeholders were invited to via press note to visit the webpage of the project developer to make comments on the project activity. Further specific information about the project activity was presented under the following link: http://www.solarpack.es/cas/bonus_peru.aspx , which was also published on the press note.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
E.1.3. If a stakeholder consultation process is required by regulations/laws in the host country, has the stakeholder consultation process been carried out in accordance with such regulations/laws?	1, 8, 19-24	There are no regulations/laws in Peru for carrying out the stakeholder consultation process for this project activity. This could be confirmed during the on-site visit.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
E.1.4. Is the undertaken stakeholder process	1, 8,	Yes, the stakeholder process was described in a complete and transpa-	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

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that was carried out described in a complete and transparent manner?	19-24	rent manner. The provided information from the PDD could be confirmed via on-site interviews with various people (see participation list).		
E.2. Summary of the comments received				
E.2.1. Is a summary of the stakeholder comments received provided?	1, 8, 19-24	Yes, E.2. of the PDD provides a summary of stakeholder comments received. This could further be confirmed during the on-site visit.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
E.3. Report on how due account was taken of any comments received				
E.3.1. Has due account been taken of any stakeholder comments received?	1, 8, 19-24	According to the PP all questions of stakeholders were answered and clarified directly during the meeting. This could be further confirmed during the on-site observations.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
F. Annexes 1 – 4				
Annex 1: Contact Information				
F.1.1. Is the information provided consistent with the one given under section A.3?	8	No, please see Corrective Action Request No.3	See CAR3	<input checked="" type="checkbox"/>
F.1.2. Is the information on all private participants and directly involved Parties presented?	1, 8	Yes, the information is presented and has been confirmed by the validation team during the on-site visit.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Annex 2: Information regarding public funding				
F.1.3. Is the information provided on the inclusion of public funding (if any) in consistency with the actual situation presented by the project participants?	1, 8, 9, 16	Yes, the information is consistent.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
F.1.4. If necessary: Is an affirmation available	1, 8,	Not necessary.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

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that any such funding from Annex-I countries does not result in a diversion of ODA?	9, 16			
Annex 3: Baseline information				
F.1.5.If additional background information on baseline data is provided: Is this information consistent with data presented by other sections of the PDD?	8, 28, 29	Yes, the provided information on baseline data is the same as data presented by other sections of the PDD.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
F.1.6.Is the data provided verifiable? Has sufficient evidence been provided to the validation team?	8, 28, 29, 56	Yes, the evidencing data provided is verifiable and sufficient. For further validation of the sample group please refer to the descriptions provided in B.6.1.2 above. See Corrective Action Request No.15	See CAR15	<input checked="" type="checkbox"/>
F.1.7.Does the additional information substantiate / support statements given in other sections of the PDD?	8, 28, 29	Yes, the additional information supports statements in other sections of the PDD.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Annex 4: Monitoring information				
F.1.8.If additional background information on monitoring is provided: Is this information consistent with data presented in other sections of the PDD?		See Corrective Action Request No.20	See CAR20	<input checked="" type="checkbox"/>
F.1.9.Is the information provided verifiable? Has sufficient evidence been provided to the validation team?		See Corrective Action Request No.20	See CAR20	<input checked="" type="checkbox"/>
F.1.10. Do the additional information and / or documented procedures substantiate / support statements given in other sec-		See Corrective Action Request No.20	See CAR20	<input checked="" type="checkbox"/>

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CHECKLIST TOPIC / QUESTION	Ref.	COMMENTS	PDD in GSP	Final PDD
tions of the PDD?				

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Table 2 Resolution of Corrective Action and Clarification Requests

Clarifications and corrective action requests by validation team	Ref. to table 1	Summary of project owner response	Validation team conclusion
<u>Corrective Action Request No.1</u> The dates of the entire document shall be presented in the format dd/mm/yyyy.	A.1.2.	The date format has been changed in the new version of the PDD according to the format request.	<input checked="" type="checkbox"/> Ok, the revised PDD (IRL 68) applies a consistent and clear date format of DD/MM/YYYY.
<u>Corrective Action Request No.2</u> As discussed on-site, the PP shall include the information on nominal and peak power in the PDD (i.e 20 MW, number of modules, etc.). In addition, where the final design is not fully set yet, the PDD should include the estimated ranges for the design (such as numbers of modules, etc).	A.2.1.	The description of the project activity has been improved in the new version of the PDD. The technical information of the project in nominal terms and complementary information has been included in the PDD, such as: <ul style="list-style-type: none"> • The peak power (PV module power) of the plant will range between 20 MWp and 22 MWp. • The peak power of the polycrystalline photovoltaic modules will range between 270 Wp and 290 Wp. • The number of PV modules in the plant will range between 81,481 modules (22 MWp using 270 Wp modules) and 68,966 modules (20 MWp using 290 Wp modules). 	<input checked="" type="checkbox"/> Additional information has been included in the latest PDD.
<u>Corrective Action Request No.3</u> Under section A.3. the type of the company of the project participant is mentioned as S.A.C., while in Annex 1 it is mentioned as S.A. The PP shall clarify the type of the company and adapt the wrong description accordingly.	A.4.1.1	The legal reason of the company is Tacna Solar S.A.C. The mistake has been corrected in the Annex of the new version of the PDD.	<input checked="" type="checkbox"/> The revised PDD (IRL 68) indicates a consistent company name (i.e. Tacna Solar S.A.C.). Hence, this CAR is closed.
<u>Corrective Action Request No.4</u> Information presented in the PDD	A.4.1.1.	Description of geographical location of the project activity has been improved in the new version of the PDD. The following in-	<input checked="" type="checkbox"/> The latest PDD has been up-

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has to be in English language and a clear description has to be provided within the PDD. E.g. Punto A-D is mentioned in the PDD and its meaning is not clear. GPS coordinates supposed to be in the format requested by the UN view page (i.e. degree values with decimal format, i.e. 45.50° e.g.). In addition, any writing on the maps/figures shall be in a readable format (i.e. the descriptions on Figure 2 of the GSP PDD are too blurry). PP shall revise and update accordingly.		<p>formation has been included:</p> <ul style="list-style-type: none"> • A map which shows the vertices of the polygon of the project area. • Geographic coordinates in sexagesimal system. <p>Moreover, the project location map (Figure 2 of the PDD) is in english language and legibly format.</p>	dated with the requested information.
<p><u>Corrective Action Request No.5</u></p> <p>As required by the Guidance of completing the CDM-PDD some more paragraphs shall be included into the PDD giving a concise description of:</p> <ol style="list-style-type: none"> 1. PP shall indicate the lifetime of the equipment based on manufacturer's specifications and industry standards as this can be considered as a key parameter. In addition PP shall indicate the operation hours in this section, and submit relevant evidence if applicable. 2. the scenario existing prior to the 	A.4.3.2.	<p>The new version of the PDD has been adjusted to the requirements of the Guidance of completing the CDM-PDD. The following information has been included:</p> <ol style="list-style-type: none"> 1. The lifetime of the solar module (main equipment) can go up to over 35 years. The manufacturers typically guarantee 80% of the production at year 25 although the modules still work after that. The annual operation hours of the solar photovoltaic power will be 3548 hours. 2. The scenario existing prior to the start of the implementation of the project activity is similar to the baseline scenario. 3. The baseline scenario is the continuation of the current (previous) situation of delivered electricity in the Peruvian Electric grid. The energy that would be generated by the solar photovoltaic power would have been covered by the operation of grid-connected power plants and by the addi- 	<p>☑</p> <p><i>Follow-up 1:</i></p> <p>1a. Lifetime varies between 20 years and 40 years throughout the documents. Please clarify.</p> <p>1b. Operational hours of 3548 are not clear (3548 / 8760 = 0.41, hence the PLF would result in 41%, or an annual power generation of 3548 h * 20 MW = 70,960 MWh). Please clarify.</p> <p>2. Please clarify why the scenario existing prior to the start of the project activity is only</p>

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<p>start of implementation of the project activity;</p> <p>3. The baseline scenario, as identified in section "B.4 Description of how the baseline scenario is identified and description of the identified baseline scenario";</p> <p>4. Please indicate sufficient and transparent information if the technology may impact on the greenhouse gas balance.</p> <p>The PP shall clarify if the implementation of the project activity requires any technology transfer from annex-I-countries to the host country.</p>		<p>tion of new generation sources.</p> <p>4. Solar photovoltaic power is an environmentally friendly energy source as it is clean, renewable, and will not produce greenhouse gas emissions during operation.</p> <p>The main equipment such as solar modules, inverters and trackers will be imported from China and Spain.</p> <p><i>Response wrt follow-up 1:</i></p> <p>1a. The different dates have been explained further in the PDD:</p> <p>The expected operational life of the project activity considered is 30 years. As indicated in A.4.3., the lifetime of PV plants can go as far as 35 years and in fact PV module manufacturers typically give a 25 year performance guarantee on their modules ensuring a power output of 80% of the initial power of their equipment. Therefore, it is conservative to assume that the project activity will be able to operate during 30 years, which is also the length of the usufruct contract signed with the Superintendencia Nacional de Bienes Estatales ("SBN") on November 10th 2011.</p> <p>As for the economic analysis, the project proponent has considered an operational period of 21 years (length of the PPA plus year 21 for the liquidation of the premium of year 20) after which a terminal value is considered based on the discounted estimated cash flows generated from year 22 to year 30.</p> <p>1b. It has been explained further in the PDD that the 3548 hours figure refers to the total number of hours in which the plant is operating at a capacity above 0 Watts. This has nothing to do with the load factor or the equivalent hours ratio which are just ways of expressing the percentage of the time in a year or the number of hours in which the project would have to be operating</p>	<p>similar and not equal to the baseline scenario (i.e. what are the differences)?</p> <p><i>Conclusion follow-up 1:</i></p> <p>The expected operational lifetime of the project activity could be confirmed to be 30 years, IRL 75.</p> <p>The explanation of the operational hours is deemed to be reasonable. The annual power generation of 49680 MWh and the resulting PLF of 28.4% could be confirmed via IRL 70.</p> <p>The latest PDD indicates that the pre-project scenario is equal to the baseline scenario, which was also confirmed on-site.</p>

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		at full capacity to produce the total energy generated in one year. 2. The scenario existing prior to the start of the project activity is equal to the baseline scenario. This has been corrected in the new version of the PDD.	
<u>Corrective Action Request No.6</u> PP shall give a clear statement in the PDD if the implemented technology is environmentally safe.	A.4.3.4.	The following information has been described in the new version of the PDD: Solar photovoltaic power is an environmentally friendly energy source as it is clean, renewable, and does not produce greenhouse gas emissions during operation. In addition, the technology adopted by the proposed project will not result in a negative damage to the ecosystem. Thus, the technology implemented by the project activity is environmentally safe.	<input checked="" type="checkbox"/> The revised PDD includes a clear statement regarding the environmental safe technology (IRL 68).
<u>Corrective Action Request No.7</u> PP shall include in the PDD a statement indicating whether the project technology would likely to be substituted by other or more efficient technologies within the project period.	A.4.3.7.	The following information has been described in the new version of the PDD: The main equipment such as solar modules, inverters and trackers will not be substituted during the project period.	<input checked="" type="checkbox"/> No major replacement will take place during the project period. This is also confirmed in the revised PDD (IRL 68).
<u>Corrective Action Request No.8</u> Please include complete table from the methodology and discuss each gas as applicable to the given project activity (for project emissions). In addition, please clarify why CO ₂ emissions from the combustion of fossil fuels from electricity generation are considered as a main emission	B.3.3.	Table N° 1 (full table) of the methodology ACM0002 has been included in the new version of the PDD. According to the methodology ACM0002 for solar power project, PE _y = 0. Thus, the typing error in the table of the PDD has been corrected. <i>Response wrt follow-up 1:</i> The inconsistency in section B.3 (Table 1 of the ACM0002) has been corrected in the new version of the PDD.	<input checked="" type="checkbox"/> <i>Follow-up 1:</i> PP shall clarify the inconsistency in section B.3: no project emissions will occur, however, the table indicates that project emissions are included for various components with a "YES".

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source for project emissions.			<i>Conclusion follow-up 1:</i> The latest PDD has been corrected accordingly (IRL 68).
<u>Corrective Action Request No.9</u> According to the latest CDM Guidelines the PP shall include a flow diagram to delineate the project boundary by differentiating the project activity and project boundary and including all equipments and infrastructures.	B.3.5.	A flow diagram to delineate the project boundary to differentiate the project activity has been included in the new version of the PDD.	<input checked="" type="checkbox"/> The revised PDD (IRL 68) includes the required flow diagram. After checking the new diagram, the audit team confirms that the project boundaries are clearly as well as the equipment etc. is clearly indicated.
<u>Corrective Action Request No.10</u> Please provide an implementation timeline of the proposed CDM project activity. The timeline should include the date when the investment decision was made (see also EB62, Annex 5, para 6), the date when construction works will start, the date when commissioning will start (if applicable) and the date of start-up (e.g. the date when commercial production is expected).	B.5.1.	The implementation timeline has been described in the new version of the PDD, including the date requested. The date included are: <ul style="list-style-type: none"> • The Board made a decision to invest in the project (15/01/2010) • The CDM validation contract with DOE was signed (24/05/2011) • Approval of DIA (10/05/2011) • GSP was opened in UNFCCC website (09/06/2011) • The project owner submitted LoA application form to Peruvian DNA (15/07/2011) • On-site validation (August,2011) • Peruvian LoA reception (31/08/2011) 	<input checked="" type="checkbox"/> <i>Follow-up 1:</i> PP shall provide the board meeting notes as well as the Presentation of the Technical and Economical proposal (considering CDM revenue) from January 2010. The DIA approval is indicated with 10/05/2011, however, submitted documents indicated a different date. PP shall clarify. <i>Conclusion follow-up 1:</i> The requested documents have been provided IRL 55

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		<ul style="list-style-type: none"> Expected date of construction start (1/03/2012) Expected date of start commissioning (15/10/2012) Expected date of commissioning start-up (01/11/2012) <p><i>Response wrt follow-up 1:</i></p> <p>The notes and the proposal have been made available.</p> <p>The DIA was approved on April 29th, 2011. This has been corrected in the new version of the PDD.</p>	and 10. It has been clarified that the date of the DIA was a typo made by the PP and the correct date has been included in the final PDD.
<p><u>Corrective Action Request No.11</u></p> <p>PP shall clarify why other plausible and credible alternatives to the project activity, i.e. other renewable energy like wind, hydro etc. has not been considered as an alternative.</p>	B.5.2.	<p>The new version of the PDD considers a new alternative that is that "Building a new power plant generating the same annual power generation from other renewable sources such as biomass power, wind power, hydro power and geothermal power".</p>	<p><input checked="" type="checkbox"/></p> <p>The PDD has been revised accordingly (IRL 68).</p>
<p><u>Corrective Action Request No.12</u></p> <ul style="list-style-type: none"> The PDD shall provide clear references to the source of the values (including their dates) used for the IRR calculation. In addition, a breakdown of the O&M costs shall be provided (i.e. what is included in these costs). In addition, PP shall clearly indicate the type of IRR, i.e. post-tax or pre-tax according to EB 62, annex 12, para 12. In case a post-tax benchmark is used, PP 	B.5.11.	<p>The new version of the excel sheet includes all the sources for the parameters involved in the calculations. Moreover, the documents have been made available both in the excel sheet and in pdf. format for further cross-check.</p> <p>A breakdown of O&M costs is calculated on a MW basis in a separate tab of the excel sheet. Additionally, the cost per MW is justified through a report produced by an independent technical advisor for a project in a very similar location. This report, which is confidential, was shown to TÜV SÜD in Tacna on the 23rd of August 2011.</p> <p>It has been clearly stated that the IRR is Post-Tax.</p> <p>A 20 year period has been considered for the fair value calculation. A terminal value of the assets have been considered at the</p>	<p><input checked="" type="checkbox"/></p> <p><i>Follow-up 1:</i></p> <p>PP shall indicate the date of the sources for the various input parameters. In addition, PP shall also clarify the requirement of EB62, Annex 5 : "Input values used in all investment analysis should be valid and applicable at the time of the investment decision taken by the project participant."</p>

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<p>shall ensure that actual interest payable is taken into account in the calculation of the income tax.</p> <ul style="list-style-type: none"> In addition, the IRR calculation is missing any fair value as per the latest investment guidance. Hence, PP shall address the fair value in the Excel cash flow file. <p>PP shall clarify the "indexation of the tariff (2%) and the "tariff update incremental trigger (5%) on the spot market tariff and the auction tariff, respectively.</p>		<p>end of year 20.</p> <p>The interest payable has been taken into account in the calculation of the income tax.</p> <p>The indexation of the tariff is determined according to the formula shown in Annexure 3 of the Bid Documents. The index is the WPUSOP3500 (Finished goods less food and energy) and the 2% hypothesis has been backed up in the excel sheet with the actual index evolution from 2001 to 2010. Annexure 3 of the Bid Documents state that the tariff is updated only when the accumulated variation (plus or minus) of the index is greater than 5%. This 5% only applies to auction tariff.</p> <p>Market tariff has been assumed to be incremented with inflation. The impact of the spot tariff is very low though (0.73% of the revenues-"Excess electricity sold at spot market price").</p> <p><i>Response wrt follow-up 1:</i></p> <p>All the dates of the sources have been specified in the PDD and the IRR calculations.</p> <p>Following guidance EB62 Annex 5, the inputs used in the calculations have been amended where applicable to reflect the values that were valid at the time of the investment decision taken by the project participant, including the first proposed start date of operations: June 2012 (which was amended to October 2012 in the PPA amendment signed on the 25th of May 2011)</p> <p>The copies of the PPA, its amendment and the bidding documents have been made available.</p> <p>Land lease cost estimate in January 2010 was based on the conversations held with the SBN (Superintendencia Nacional de Bienes Estatales) on November 17th 2009 regarding Govern-</p>	<p>PP shall provide a copy of the PPA, the bidding documents including all annexes as well as the reference document for the land lease and insurance.</p> <p>In addition, PP shall clarify how the sensitivity analysis is still robust to reasonable variation as per EB62, Annex 5: "As a general point of departure variations in the sensitivity analysis should at least cover a range of +10% and -10%, unless this is not deemed appropriate in the context of the specific project circumstances."</p> <p>PP shall also add the source and send evidences with respect to annual depreciation (20 years according to national legislation).</p> <p><i>Conclusion follow-up 1:</i></p> <p>The timeline and the availability of the input values at the time of the investment decision in January 2010 have been confirmed. For a detailed assessment please re-</p>

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		<p>ment owned land. Insurance indicative price was based on verbal conversations held with insurance companies in January 2010.</p> <p>The +/-10% analysis referred in EB62 Annex 5 has been included in the documents.</p> <p>The 20 years accounting depreciation has been properly sourced in the documents: " Article 22nd of Law of the Income Tax sets a maximum yearly depreciation rate of 10% for "Other Assets". The article is not in contradiction with the special right of renewable assets to depreciate their value in an accelerated way for fiscal purposes. The rate chosen by Solarpack for accounting purposes is 5%. (http://www.sunat.gob.pe/legislacion/renta/regla/cap6.htm)"</p>	<p>fer to the validation report above (section 3.6.3). In addition, the audit team confirms that the sensitivity analysis was performed as per the latest guidelines and that the analysis is robust to reasonable variations (i.e. IRR below the benchmark for +/- 10% variation in the major input parameters).</p>
<p><u>Corrective Action Request No.13</u></p> <p>As discussed on-site, PP shall discuss the barrier due to prevailing practice in the PDD (including references in the PDD).</p> <p>In addition, PP shall further substantiate the indicated barriers according to EB50, Annex 13 (i.e. investment barrier and barriers due to lack of reliable data).</p>	B.5.12.	<p>According to the request, a barrier analysis due to prevailing practice has been included in the new version of the PDD. At the moment there are no solar PV power plant operating in the SEIN which has been demonstrated with the Operating Statistics 2010 – COES.</p> <p>Moreover, the project participant has decided to remove the investment barrier and barriers due to lack of reliable data since with the barrier analysis due to prevailing practice and investment analysis, the project's additionality has been demonstrated.</p> <p><i>Response wrt follow-up 1:</i></p> <p>The project participant has chosen to apply for a for a 21 year renewal crediting period. Therefore, the barrier due to prevailing practice analysis has been removed in the new version of the PDD.</p>	<p><input checked="" type="checkbox"/></p> <p><i>Follow-up 1</i> PP shall clarify barrier due to prevailing practice analysis as per latest guidance EB 63, annex 11: "A proposed project activity is the first-of-its-kind in the applicable geographical area if : ... Project participants selected a crediting period for the project activity that is a maximum of 10 years with no option of renewal".</p> <p><i>Conclusion follow-up 1:</i> Ok, accepted.</p>

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<u>Corrective Action Request No.14</u> PP shall clearly identify the similar technology and the region for the common practice activity, as required by step 4 of the latest additionality tool.	B.5.15.	The Common Practice Analysis of the new version of the PDD has been improved. The following information has been described in the PDD: According to the Operating Statistics 2010 ("Estadísticas de Operaciones 2010 – COES"), http://www.coes.org.pe/wcoes/coes/estadistica/estadanual.aspx , there is no solar photovoltaic power project dispatching electricity to the SEIN. Therefore, the proposed project will be the first project in Peru.	<input checked="" type="checkbox"/> The PDD has been revised accordingly (IRL 68). For details on common practice assessment, please refer to the report (section 3.6.5).
<u>Corrective Action Request N°15</u> PP shall clearly justify every selection of options used in the EF calculation tool. In addition, regarding the calculation of the emission factor, the following issues have been identified: <ul style="list-style-type: none"> • BM calculation: linkage between two Excel spreadsheets - effective power – capacity is not clear. How are the numbers rounded? • EF-CO₂ values – indicate the source in the PDD (i.e. IPCC) • BM calculation: linkage between two Excel spreadsheets - effective power – capacity is not clear. How are the numbers rounded? 	B.6.1.2	The justification for each selected option has been included in the new version of the PDD Following, the questions related to the emission factor calculation will be answered: <ul style="list-style-type: none"> ▪ BM Calculation: <ul style="list-style-type: none"> - The BM and OM emission factor .have been gathered together in one spreadsheet delivered to the DOE. - The installed capacity values (source COES) have been linked together with the used values for the BM emission factor calculation "Table 1: Selection of the sample group".The names of the corrected plants are Roncador-G2", "Independencia", "Pisco-TG1", "Pisco-TG2", "Santa Cruz II – G1", "Santa Cruz II – G2", "Kallpa-TG3", "Santa Rosa-TG8", "Chilca –TG2", "Kallpa TG1", "Chilca TG1". - The annual electricity generation value of the SEIN has been updated "AEGtotal" to determine the AEGSET≥20%:" value subtracting the generation from the plants that operated in 2010 and have been registered as cdm projects"Santa Cruz II – G1", "Santa Cruz II – G2", "Poechos II", "El Platanal", "La 	<input checked="" type="checkbox"/> OM and BM calculation has been presented in one single excel file. The installed capacities have been correctly linked with the used values for the BM calculation and have been corrected. The respective sources have been added and the correct formulas are applied. SI units are correctly used throughout the sheets.

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<ul style="list-style-type: none"> EF-CO₂ values – indicate the source in the PDD (i.e. IPCC) Add the SI unit to any number presented in the Excel files (where this is missing) PP shall check the formulas of the OM calculation to be in line with the applicable formulas of the tool. The emission factor in the IRR xls file is not consistent with the emission factor in the PDD and OM/BM calculation files. PP shall correct this accordingly and use a consistent value. PP shall check the formulas of the OM calculation to be in line with the applicable formulas of the tool. <p>The emission factor in the IRR xls file is not consistent with the emission factor in the PDD and OM/BM calculation files. PP shall correct this accordingly and use a consistent value.</p>		<p>Joya”, “Santa Cruz I – G2”, “Santa Cruz II – G1”, “Caña Brava” y “Carhuaquero-G4”.</p> <p>SEIN Annual Generation = 32,426.83 GWh</p> <p>SEIN Annual Generation of hte power units registered as CDM project activities= 915.95 GWh</p> <p>AE_G_{total}: SEIN Annual Generation, excluding power units registered as CDM 31,510.87 GWh</p> <ul style="list-style-type: none"> - It is worth mentioning, that the above mentioned alteration did not modify the BM emission factor presented in the first version, since it is also needed the “TG1-Chilca” plant to achieve a 20% of electricity generation. - The generation of the hydropower El Roncador has been separated into units G1 and G2 to be able to use the each generation values for calculation - It has been added the spreadsheet “(BM-1) Total Generation SEIN” to include the annual generation of all energy generation plants from the SEIN, adding the monthly generation between the spreadsheets (OM-3_January) a (OM-14_December). Likewise, in the new spreadsheet it has been pointed out the electricity generation of the plants registered as CDM projects ▪ The EF-CO₂ source was included in the “EF 2010_Tacna Project - Version 2.exe” calculation sheet ▪ Source: 2006 IPCC Guidelines for National Greenhouse Gas Inventories, CHAPTER 1, Table 1.4 (lower limit of the 95% confidence intervals) ▪ The SI unit has been added where it corresponded; in the “EF 	

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		<p>2010_Tacna Project - Version 2.exe".calculation sheet</p> <ul style="list-style-type: none"> ▪ The project participant revised the application of the OM emission factor formulae. Additionally, the following changes have been made: <ul style="list-style-type: none"> - The formulae corresponding to a $EG_{PJ,h} \cdot EF_{EL,DD,h}$ of the DY column, was corrected because in the prior version the application of this formulae to the plants TG1 Chimbote, TG3 Chimbote y TG Piura was omitted. This was applied to the sheets (OM-3) till (OM-14). - It has been added the "(OM-15) OM Emission Factor" sheet where the emission factor is calculated <p>Additionally in the spreadsheet "EF 2010_Tacna Project - Version 2.exe", the following data has been included:</p> <ul style="list-style-type: none"> ▪ The addition of the sheet "(CM-1) CM Emission Factor" where the CM emission factor is calculated. ▪ The addition of the sheet "(CM-1) CM Emission Factor" where the emission reduction was determined. <p>Regarding the emission factor value in the IRR calculation; this corresponds to the average emission factor of the pre-registered project Santa Cruz Hydropower plant (registered on september 14th 2009) This value was a public value at the time when the project developer decided to invest (January 2010) Which is based on the paragraph 6 of the "Guidelines on the assessment of investment analysis v.3.0".</p>	

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<u>Corrective Action Request No.16</u> PP shall correct the parameter unit to be consistent with the requirement of the tool.	B.7.1.5.	The parameter unit " $EF_{CO_2,m,i,y}$ " was corrected on the new version of the PDD: tCO_2 / GJ .	<input checked="" type="checkbox"/> The necessary changes have been made in the latest PDD (IRL 68).
<u>Corrective Action Request No.17</u> PP shall clarify the monitoring frequency in order to be in line with the tool.	B.7.1.7.	The monitoring frequency has been included in the new version of the PDD (considering the parameter that require of it).	<input checked="" type="checkbox"/> The relevant frequencies are correctly added and are in line with the frequencies indicated in the tool.
<u>Corrective Action Request No.18</u> PP shall correct the parameter title for EGy to be consistent with the requirement of the ACM0002. In addition, the monitoring frequency shall be added as well as the applied standards for the monitoring equipment.	B.7.1.8.	In the new version of the PDD, the parameter " EG_y " was corrected to " $EG_{facility,y}$ " according to the indications on the Methodology ACM 0002. Likewise, the monitoring frequency was included "Continuous measurement".	<input checked="" type="checkbox"/> The necessary change has been made in the latest PDD (IRL 68).
<u>Corrective Action Request No.19</u> Please clarify why the monitoring frequency is annually, although the tool suggests monitoring it "once for the crediting period"?	B.7.1.9.	The monitoring frequency of the " $\eta_{m,y}$ " parameter was corrected as indicated on "once for the crediting period" tool.	<input checked="" type="checkbox"/> The necessary change has been made in the latest PDD (IRL 68).
<u>Corrective Action Request No.20</u> PP shall put the relevant information related to the description of the monitoring plan under section B.7.2. ra-	B.7.2.	Description of monitoring plan has been improved in the new version of the PDD. Information of the Annex 4 has been moved to section B.7.2. The procedures moved from annex 4 are:	<input checked="" type="checkbox"/> <i>Follow-up 1</i> PP shall include the number of meters (main and back-up

Validation Protocol

Project Title: TACNA SOLAR 20 TS: 20 MW Solar Photovoltaic Power Plant

Date of Completion: 24/01/2012

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Clarifications and corrective action requests by validation team	Ref. to table 1	Summary of project owner response	Validation team conclusion
ther than in Annex 4. In addition, this section shall include a description on the meter location, calibrations, and potential back-up meters as per the latest PDD guidelines.		<ul style="list-style-type: none"> • Management of Project Registration, Monitoring, Measurement and Reporting • Training of Monitoring Personnel • Calibration of Monitoring Equipment • Monitoring Data Adjustment Procedures • Emission Reductions • Updating the Baseline Emission Factor • Data and Reports Review Procedures <p>Additionally, it has been included the following information: Management Structure of Monitoring which describes the organizational structure and responsibilities of each member. Monitoring Equipment and Installation which describes the number and location of meters. Regarding the back-up meters, there will be two back-up meters on total. Information indicating where the meters will be located has been included in the PDD.</p> <p><i>Response wrt follow-up 1:</i> Further explanations have been included in the PDD.</p>	<p>meters). PP shall also clearly indicate which meter will be used for CER calculation.</p> <p><i>Conclusion follow-up 1:</i> The revised PDD (IRL 68) includes a clear description of the meter set-up including main and back-up meter. For a detailed validation of the monitoring plan, please refer to respective section of the validation report.</p>
<p><u>Corrective Action Request No.21</u></p> <p>Please provide contact information of the person(s)/entity(ies) responsible for the application of the baseline and monitoring methodology to the project activity.</p>	B.8.4.	Information of the entity responsible for the application of the baseline and monitoring methodology to the project activity has been included in the new version of the PDD.	<input checked="" type="checkbox"/> <p>The contact information has been included in the latest PDD (IRL 68).</p>
<p><u>Corrective Action Request No.22</u></p>	C.1.1.	The date format as been changed in the new version of the PDD	<input checked="" type="checkbox"/>

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Clarifications and corrective action requests by validation team	Ref. to table 1	Summary of project owner response	Validation team conclusion
The section C.1 of the PDD shall include to which activity the starting date of the project activity is related (earliest date of construction, implementation or real action).		<p>according the format request.</p> <p>The starting date of the project activity and its justification has been included in the new version of the PDD.</p> <p>The information included is:</p> <p>The starting date of the CDM project activity is 31/03/2010 when the contract for the renewable power supply to the National Interconnected Electric System was signed with the Ministry of Energy and Mines and Tacna Solar S.A.C. This date is recognised as the start date of the project, because of the contract signature, the company Tacna Solar S.A.C presented a guarantee of faithful work execution fulfillment valued in two million dollars (hundred thousand dollars per MW installed), which according to the "guidelines on the Demonstration and Assessment of Prior Consideration of the CDM" version 4, considers like a earliest real action of project implementation.</p> <p>It should be noted, that in addition, the company had to demonstrate a minimum capital of two million dollars (hundred thousand dollars per MW installed).</p>	The requested information has been correctly included in the latest PDD and can be accepted by the assessment team (IRL 68).
<p><u>Corrective Action Request No.23</u></p> <p>The participant list has been attached to the PDD in annex 5, however according to the CDM-PDD-Guidelines, the CDM templates shall not be altered. Hence please remove this Annex from the PDD.</p>	E.1.1.	Annex 5 has been removed from PDD.	<p><input checked="" type="checkbox"/></p> <p>Annex 5 has been removed from the latest PDD (IRL 68).</p>
Clarification Requests			
<p><u>Clarification Request No. 1</u></p> <p>Please shall clarify why the report published by the World Bank in 2008 with the title "Economic and Tech-</p>	B.5.9.	While the study analyses the feasibility for hydroelectric power projects, it also confirms the 12% benchmark rate within the electrical sector. For this reason the project participant has considered this study as a valid source to confirm the use of the	<p><input checked="" type="checkbox"/></p> <p>Ok, accepted as an additional reference by the audit team. For a detailed discussion on</p>

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Clarifications and corrective action requests by validation team	Ref. to table 1	Summary of project owner response	Validation team conclusion
nical feasibility of Hydropower in Peru" is also applicable to solar projects since it only provides information on hydro projects.		12% rate as the benchmark.	the benchmark please refer to the report section 3.6.3 above.
<u>Clarification Request No. 2</u> Please clarify the difference between these two parameters and the monitored parameter EG _{facility} (i.e. the first parameter mentioned in B.7.1 of the PDD). In addition, please indicate whether this parameter is measured hourly or yearly (as per the tool).	B.7.1.8.	The difference between the parameters "EGPJ,h" y "EGPJ,y" was explained in the new version of the PDD "EGPJ,h": This value is not measured twice. It will correspond the value hour of "EG _{facility,y} " (Quantity of net electricity supplied by the project plant/unit to the grid in year y). "EGPJ,y": This value is not measured twice. It will correspond the value "EG _{facility,y} " (Quantity of net electricity supplied by the project plant/unit to the grid in year y).	<input checked="" type="checkbox"/> The parameter has been fixed in the OM calculation as well as the latest PDD and can be considered as correct.

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Table 3 Unresolved Corrective Action and Clarification Requests (in case of denials)


Clarifications and / or corrective action requests by validation team	Id. of CAR/CR	Explanation of Conclusion for Denial
-	-	-




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Annex 2


Information Reference List

Annex 2	24/01/2012	Validation of the CDM Project TACNA SOLAR 20 TS: 20 MW Solar Photovoltaic Power Plant Information Reference List	Page 1 of 10	 Industrie Service
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Ref. No.	Author/Editor / Issuer	Title/Type of Document. Publication place	Issuance and/or submission date	Additional Information (Relevance in CDM Context)
1.	TÜV SÜD	<p>Onsite interviews carried out by TÜV SÜD:</p> <p>Validation Team:</p> <p>Katrin Hartmann GHG Auditor TÜV SÜD Industrie Service Karin Wagner GHG Auditor TÜV SÜD Industrie Service Luis Miguel Aparicio Alcázar Country Expert; Cooperation partner of TÜV SÜD Industrie Service</p> <p>Interviewed Persons:</p> <p>Margoth Espinoza Deuman Gianina Ibarra Deuman Ignacio Careaga Tacna Solar SAC Luis Velasco Redesur Javier Arellano Solarpack Alex Cruz Tacna Regional Government David Chambi Tacna Regional Government Pedro Saiz Centro Cristo Rey del Nino y el Adolescente Liz Herrera Centro Cristo Rey del Nino y el Adolescente Fiorella Acero Centro Cristo Rey del Nino y el Adolescente Martin Paz Moquegua Provincial Municipality Alfredo Gamio Centro Cristo Rey del Nino y el Adolescente</p>	19-23/08/2011	
2.	IPCC	Guidelines for National Greenhouse Gas Inventories.	2006	
3.	UNFCCC	Approved methodology ACM0002 v.12.2 (EB 65) "Consolidated baseline methodology for grid-connected electricity generation from renewable sources"	25/11/2011	
4.	UNEP Risoe	CDM Pipeline	November 2011	

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Ref. No.	Author/Editor / Issuer	Title/Type of Document. Publication place	Issuance and/or submission date	Additional Information (Relevance in CDM Context)
5.	UNFCCC	"Tool to calculate the emission factor for an electricity system", v.02.2.1	29/09/2011	
6.	UNFCCC	"Tool for the demonstration and assessment of additionality" v.05.2.1	11/08/2011	
7.	OSINERGMIN (The Energy and Mining Investment Supervisory Body)	Terms Of Supply Of Electricity With Renewable Energy Resources (Bases para la subasta de suministro de electricidad con recursos energéticos renovables); http://www.gacetajuridica.com.pe/servicios/normaspdf_2009/Diciembre/12-12-2009.pdf	August 2009	
8.	DEUMAN	PDD "TACNA SOLAR 20 TS: 20 MW Solar Photovoltaic Power Plant"	30/05/2011	GSP PDD
9.	OSINERGMIN	Certificate of Awarding of the Bid of Supply of Electricity with Renewable Energy Resources (Acta notarial de adjudicacion de la subasta de suministro de electricidad con recursos energeticos renovables)	12/02/2010	(individual notary testimony)
10.	Solarpack	Presentation of Technical-Economic Proposal (considering CDM revenue)	18/01/2010	
11.	DEUMAN	Submission of the CDM Consideration form to the DNA with the intention of Tacna Solar SAC of submitting the project to the CDM	13/09/2010	
12.	DEUMAN	IRR Calculation Excel Spreadsheet	10/12/2010	
13.	ENRIQUE CROUSILLAT, BANCO MUNDIAL	"Economic and Technical feasibility of Hydropower in Peru"; http://siteresources.worldbank.org/INTPERU/SPANISH/Resources/EnriqueCrousillat_Sesion2.pdf	29/10/2008	Benchmark
14.	MEM (Ministry of Energy and Mines)	Electricity plan reference 2008-2017 (Plan Referencial de Electricidad 2008-2017)	2008	Tariff

Annex 2	24/01/2012	Validation of the CDM Project TACNA SOLAR 20 TS: 20 MW Solar Photovoltaic Power Plant Information Reference List	Page 3 of 10	 Industrie Service
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Ref. No.	Author/Editor / Issuer	Title/Type of Document. Publication place	Issuance and/or submission date	Additional Information (Relevance in CDM Context)
15.	MEM	Supreme Decree N°50-2008-EM “Generation of Electricity with Renewable Energies”	02/10/2008	Rules the Law of renewable energies
16.	OSINERGMIN	Terms of the Public Contest N°0059-2008-OSINERGMIN “Contratación para desarrollar el procedimiento y cálculo de los precios de electricidad basados en energías renovables” http://docs.seace.gob.pe/mon/docs/procesos/2008/001921/003610_CP-59-2008-OSINERGMIN-BASES%20INTEGRADAS.pdf	29/01/2008	
17.	MEM	R.M. N° 113-2009/MEM/VME “Consolidated Terms of the Bid”; http://www.gacetajuridica.com.pe/servicios/normaspdf_2009/Diciembre/12-12-2009.pdf	11/12/2009	
18.	SENAMHI, MINEM	National Solar Atlas (Atlas Nacional Solar)	June 2003	
19.	TACNA SOLAR S.A.C	CDM Public Consultation Invitation	February 2011	
20.	TACNA SOLAR S.A.C	Press note in newspaper “Correo”	06/02/2011	
21.	TACNA SOLAR S.A.C	CDM Public Consult Invitations Delivery Record	08/02/2011	
22.	TACNA SOLAR S.A.C	CDM Public Consultation Attendance List	08/02/2011	
23.	Solarpack	CDM Web page presenting the project: http://www.solarpack.es/cas/bonos_peru.aspx	05/02/2011	
24.	TACNA SOLAR S.A.C	CDM public consult report and comments	02/2011	Summary of public

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Ref. No.	Author/Editor / Issuer	Title/Type of Document. Publication place	Issuance and/or submission date	Additional Information (Relevance in CDM Context)
				consultation
25.	MEM	Legislative Decree No 1002 (LD 1002)14 and its regulatory Supreme Decree N° 050-2008-EM; http://www.minem.gob.pe/archivos/dge/publicaciones/compendio/DLEG-1002-2008.pdf	2008	
26.	Tacna Regional Government	Report 410-2011-ORABI-GRT Use of Land Request from TACNA SOLAR SAC	15-06-2011	
27.	Tacna Regional Government	Authorization of use of land Request	22/06/2011	
28.	DEUMAN	Excel Calculation File: Emission Factor (BM (EF2010))	2010	Excel files
29.	DEUMAN	Excel Calculation File: Emission Factor (OM-DD_Emission Factor 2010 for Tacna Project)	2010	Excel files
30.	UNFCCC	Guidelines on the Assessment of Investment Analysis, EB 62, annex 5	2011	
31.	NREL, UNEP	South America CSR Cell Numbers Region 18	n.a.	
32.	DEUMAN/PP	IRR excel calculation (final version)	15/11/2011	
33.	TACNA SOLAR 20TS CONSORCE	Economical Proposal	18/01/2010	
34.	OSINERGMIN	Public Tender Results: http://www2.osinerg.gob.pe/EnergiasRenovables/contenido/Resultado1raSubasta.html	Accessed on the internet during the audit 19/08/2011	Capacity, Tariff, Power generation

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Ref. No.	Author/Editor / Issuer	Title/Type of Document. Publication place	Issuance and/or submission date	Additional Information (Relevance in CDM Context)
35.	MEM (Ministry of Energy and Mines) and TACNA SOLAR S.A.C	Contract for the renewable power supply to the National Interconnected Electric System	31/03/2010	Project Starting Date
36.	SUNARP (Superintendencia Nacional de Registros Públicos)	Energy Supply Concession: Inscripción de concesiones para explotar servicios públicos; Partida N° 12529001	11/08/2010	Energy supply concession
37.	SUNARP	Energy Supply Concession: Anotación de inscripción. Título N° 2010-00338459 (Concesion de Suministro de Electricidad)	10/05/2010	Energy supply concession
38.	Ministerio de Energía y Minas	DIA Approval (revised): Resolución Directoral N° 119-2011-MEM/AAE	03/05/2011	Environmental impacts
39.	Ministerio de Energía y Minas	DIA Approval: Resolución Directoral N° 118-2011-MEM/AAE	29/04/2011	Environmental impacts
40.	SUNAT	Tax register: Ficha RUC Tacna Solar SAC 20535630829	30/03/2010	
41.	Gobierno Regional de Tacna	Interim Report on Land Granting: Informe N° 410-2011-ORABI/GOB.REG.TACNA	15/06/2011	
42.	Eduardo Laos de Lama -	Shareholders register (Libro de acciones). Libro N° 038501-10	05/03/2010	

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Ref. No.	Author/Editor / Issuer	Title/Type of Document. Publication place	Issuance and/or submission date	Additional Information (Relevance in CDM Context)
	Notarium			
43.	Tacna Solar S.A.C.	Prior Consideration (CDM): http://cdm.unfccc.int/Projects/PriorCDM/notifications/index_html	09/09/2010	Prior consideration by UNFCCC
44.	MEM	Regulatory conditions for electric concessions: Supreme Decree (Decreto Supremo) 009-93 Reglamento de la Ley de concesiones electricas	19/02/93	
45.	OSINERGMIN	Terms of the public tender: http://www2.osinerg.gob.pe/EnergiasRenovables.01042011/subasta/Bases_Consolidadas.pdf		
46.	Notaria Laos de Lama	Shareholders register showing Solarpack as one of the original associates from 2010: Certified Copy CC-103518	09/03/2011	
47.	COES - SINAC	Conformity with the pre-operational study for the connection to SEIN: Letter COES/D/DP-151-2010	24/06/2011	Grid-connection
48.	SUNARP (Public Registry)	Inscription of the company in the registry (Tacna Solar SAC): Inscripción de Sociedades Anónimas	20/08/2010	
49.	COES	Electricity production - Annual statistics (no solar energy production in 2010) http://www.coes.org.pe/test/coes/estadistica/estadanual.aspx	2010 (also available for other years)	Common Practice
50.	MINAM	Rules of the Environmental Impact Assessment System (SEIA) Supreme Decree 019-2009-MINAM: http://minam.gob.pe/index.php?option=com_content&view=article&id=245&Itemid=136		Environmental Impacts
51.	Peru DNA	Letter of Approval (LoA)	31/08/2011	

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Ref. No.	Author/Editor / Issuer	Title/Type of Document. Publication place	Issuance and/or submission date	Additional Information (Relevance in CDM Context)
52.	Tacna Solar S.A.C.	Modalities of Communication	27/12/2011	
53.	Solarpack	Grid Connection Sketches (PPT and AutoCAD)	2011	
54.	ERM	Evaluacion Preliminar del Proyecto de Planta Solar Fotovoltaica Tacna Solar 20T (DIA – Declaracion Impacto Ambiental = Environmental Impact Declaration)	March 2011	Environmental impacts
55.	Solarpack	Meeting Minutes of Board of Directors in January 2010, where the final investment decision was taken for the proposed project activity.	15/01/2010	Early CDM consideration
56.	COES	Energy capacity and generation data	2010	Emission Factor
57.	Enertis Solar	Independent assessment of similar project (confidential, only seen during on-site visit, no copy available): 4,000,000 US\$ for 1 MW nominal power in Chile; 3.62 US\$/Wp (no substation, no transformation to higher voltage)	10/06/2011	Investment costs (cross-check)
58.	Enertis Solar	O&M costs: 15,000 US\$ / 1 MW;	13/04/2011	O&M costs (cross-check)
59.	Ministry of Economy and Finance	Decree 015-2007 “Terms of reference for feasibility studies for rural electrification in Peru”	2007	Benchmark
60.	MINEM	“Technical report 085-2005-EF/68.1”	27/05/2005	Benchmark
61.	MINEM	MINEM for every energy-related project assessment. Article 79 Electricity Concessions Law (Decree Law 25844)	11/06/1992	Benchmark
62.	FAO	Bioenergía y seguridad alimentaria “BEFS”; El análisis de BEFS para el Perú (Bioenergy and Food Security)	2010	Baseline – Biomass elimination
63.	MINEM	Atlas del potencial hidroelectrico del Peru (Atlas of Peru’s hydroelectrical potential); N°	28/04/2011	Baseline –

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Ref. No.	Author/Editor / Issuer	Title/Type of Document. Publication place	Issuance and/or submission date	Additional Information (Relevance in CDM Context)
		017-2011-MEM-AAE/HJCLL		hydropower elimination
64.	MINEM	Wind Atlas: http://dger.minem.gob.pe/atlaseolico/PeruViento.html	n.a.	Baseline – windpower elimination
65.	United States Department of Labor	2001-2010 CAGR for WPUSOP3500; http://www.bls.gov/xg_shells/ro4xgppihi.htm	2001-2010	Indexation of tariff (2%)
66.	MINEM	Supreme Decree No. 136-2002-PCM Article http://www.osinerg.gob.pe/newweb/uploads/JARU/CD/008fiscalizacion/ds136-2002-pcm.pdf	22/12/2002	Financial Analysis
67.	Peruvian Government	Chapter VII, Article 55 of the Unique Ordered text of the Law of the Income tax. http://www.sunat.gob.pe/legislacion/renta/ley/capvii.htm	31/12/2010	30% income tax
68.	DEUMAN	PDD "TACNA SOLAR 20 TS: 20 MW Solar Photovoltaic Power Plant"; Version 02	14/10/2011	
69.	TACNA SOLAR S.A.C and MINEM	PPA Tacna Solar	31/03/2010	Operational period of 21 years
70.	Solarpack; OSINERGMIN	Bid offer documents (including feasibility study)	18/01/2010	
71.	Southern Copper, Southern Peru	Estudio tecnico economic para fijacion de peajes des sistema de transmission de Southern Peru (Study on tolls for transmission systems in Southern Peru)	August 2008	Toll for connection

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Ref. No.	Author/Editor / Issuer	Title/Type of Document. Publication place	Issuance and/or submission date	Additional Information (Relevance in CDM Context)
72.	MINEM	Geothermal availabilities: http://intranet2.minem.gob.pe/web/archivos/dge/publicaciones/taller_geotermia/3.pdf		Baseline – geothermal elimination
73.	MINAM	Email: CDM project confirmation of TACNA SOLAR 20 TS: 20 MW Solar Photovoltaic Power Plant	17/11/2011	
74.	MINEM	Article 1 of the Legislative Decree N° 1058 http://intranet2.minem.gob.pe/web/archivos/dge/publicaciones/compendio/dl1058.pdf and http://www.sunat.gob.pe/legislacion/renta/regla/cap6.htm	n.a.	Depreciation
75.	TACNA SOLAR S.A.C and Superintendencia Nacional del Bienes Estatales (SBN)	Usufruct right contract	10/11/2011	30 years and land lease price
76.	OSINERGMIN	Resolución Sistema Liquidación Prima.2010.01.14.pdf, Article 4.2 refers to article 79 in the LCE (Ley de Concesiones Electricas)	14/01/2010	Benchmark
77.	TACNA SOLAR S.A.C and MINEM	PPA Tacna Solar Amendment	18/05/2011	Modification of the start date of operation to 31/10/2012
78.	TACNA	EEPP Modificación del contrato de concesión-Tacna Solar; PPA Amendment	25/05/2011	Cross-check

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Ref. No.	Author/Editor / Issuer	Title/Type of Document. Publication place	Issuance and/or submission date	Additional Information (Relevance in CDM Context)
	SOLAR S.A.C and MINEM			Investment cost
79.	Solarpack	Visita al Perú, Noviembre 2009: internal report, which was produced by Solarpack and shows that they had conversations with banks. The 7% interest rate for modelling purposes was indicated to them verbally by one of the banks they talked to.	16/11/2009	Financial Analysis
80.	Solarpack/ DEUMAN	EF 2010 Tacna Project – version 2 (including ER calculation)	November 2011	
81.	DEUMAN	PDD "TACNA SOLAR 20 TS: 20 MW Solar Photovoltaic Power Plant"; Version 05	18/01/2012	Final version
82.	Solarpack	258 Estudio de prefactibilidad TACNA SOLAR 20TS.pdf" including email communication	15/01/2010	
83.	TACNA SOLAR S.A.C	Definitive generation concession: Resolution No. 299- 2011-MEM-DM	04/07/2011	



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Annex 3

Appointment Certificates



Industrie Service

CERTIFICATE OF APPOINTMENT

Ms Hartmann, Katrin, fulfills the requirements of the Certification Body "climate and energy" of TÜV SÜD Industrie Service GmbH to participate in audits.

Qualification applicable to						
Standard	CDM	JI	GS	VCS	VER	Other
Date	23.03.11					

Qualification as						
Status	Trainee	Validator	Verifier	Team Leader	Technical Reviewer	Technical Expert
Date		23.03.11	23.03.11	23.03.11		

Other qualification					
Country Expertise					
Region	1	2	3	4	5
Date	23.03.11				
Financial Expertise					
Date	23.03.11				

Qualification in technical areas	
Technical Area	Date
1.2_Energy generation from renewable energy source	07.04.11

This appointment is valid for 1 year from its date of signature below and is bound by internal requirements of the Management System of the Certification Body "climate and energy" of TÜV SÜD Industrie Service GmbH.

In case of loss of validity of this certificate as per result of an assessment according internal procedures or due to any other reason, it will be properly communicated to you.

Your Certificate has the internal reference No. CMS-Z-0013/00.

Date	Signature
07.04.11	



Industrie Service

CERTIFICATE OF APPOINTMENT

Ms Wagner, Karin, fulfills the requirements of the Certification Body "climate and energy" of TÜV SÜD Industrie Service GmbH to participate in audits.

Qualification applicable to						
Standard	CDM	JI	GS	VCS	VER	Other
Date	23.03.11					

Qualification as						
Status	Trainee	Validator	Verifier	Team Leader	Technical Reviewer	Technical Expert
Date		23.03.11	23.03.11	23.03.11	23.03.11	

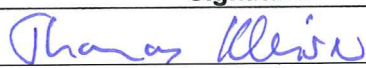
Other qualification					
Country Expertise					
Region	1	2	3	4	5
Date	23.03.11				
Financial Expertise					
Date	23.03.11				

Qualification in technical areas	
Technical Area	Date
1.2_Energy generation from renewable energy source	23.03.11

This appointment is valid for 1 year from its date of signature below and is bound by internal requirements of the Management System of the Certification Body "climate and energy" of TÜV SÜD Industrie Service GmbH.

In case of loss of validity of this certificate as per result of an assessment according internal procedures or due to any other reason, it will be properly communicated to you.

Your Certificate has the internal reference No. CMS-Z-0015/00.

Date	Signature
23.03.11	



Industrie Service

CERTIFICATE OF APPOINTMENT

Mr Luis Miguel Aparicio Alcázar, fulfills the requirements of the Certification Body "climate and energy" of TÜV SÜD Industrie Service GmbH to participate in audits.

Qualification applicable to						
Standard	CDM	JI	GS	VCS	VER	Other
Date	08.08.11					

Qualification as						
Status	Trainee	Validator	Verifier	Team Leader	Technical Reviewer	Technical Expert
Date	24.11.11					24.11.11

Other qualification					
Country Expertise					
Region	1	2	3	4	5
Date		08.08.11			
Further countries					
Financial Expertise					
Date					

Qualification in technical areas	
Technical Area	Date
14.1_Forestry	24.11.11

This appointment is valid for 1 year from its date of signature below and is bound by internal requirements of the Management System of the Certification Body "climate and energy" of TÜV SÜD Industrie Service GmbH.

In case of loss of validity of this certificate as per result of an assessment according internal procedures or due to any other reason, it will be properly communicated to you.

Your Certificate has the internal reference No. CMS-Z-0066/02.

Date	Signature
08.08.11	<i>Thomas Reile</i>
24.11.11	<i>Thomas Reile</i>



Industrie Service

CERTIFICATE OF APPOINTMENT

Ms Wu, Caiyang (Cathy), fulfills the requirements of the Certification Body "climate and energy" of TÜV SÜD Industrie Service GmbH to participate in audits.

Qualification applicable to						
Standard	CDM	JI	GS	VCS	VER	Other
Date	23.03.11					

Qualification as						
Status	Trainee	Validator	Verifier	Team Leader	Technical Reviewer	Technical Expert
Date		23.03.11	23.03.11	23.03.11	23.03.11	

Other qualification					
Country Expertise					
Region	1	2	3	4	5
Date	23.03.11				23.03.11
Financial Expertise					
Date	23.03.11				

Qualification in technical areas	
Technical Area	Date
1.2_Energy generation from renewable energy source	23.03.11
2.2_Heat distribution	23.03.11
3.1_Energy demand	23.03.11
13.1_Waste handling and disposal	23.03.11

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In case of loss of validity of this certificate as per result of an assessment according internal procedures or due to any other reason, it will be properly communicated to you.

Your Certificate has the internal reference No. CMS-Z-0016/02.

Date	Signature
23.03.11	<i>Thomas Kleiser</i>
14.09.11	<i>Thomas Kleiser</i>