



---

# VALIDATION OPINION - CREDITING PERIOD RENEWAL

---

“SANTA ROSA” IN PERU

(UNFCCC Registration Ref. No. 0088)

REPORT No. 2011-0737

REVISION No. 01

DET NORSKE VERITAS



## VALIDATION OPINION - CREDITING PERIOD RENEWAL

Date of first issue: 2011-06-01	ConCert Project No.: PRJC-300606-2011-CCS-NOR
Approved by: Edwin Aalders	Organisational unit: DNV Climate Change & Environmental Services
Client: The World Bank	Client ref.: Claudia Croce

DNV CLIMATE CHANGE  
SERVICES AS

Veritasveien 1,  
1322 HØVIK, Norway  
Tel: +47 67 57 99 00  
Fax: +47 67 57 99 11  
http://www.dnv.com  
Org. No: NO 994 774 352 MVA

## Summary:

**Project Name:** "Santa Rosa"

**Registration Ref. No.:** 0088

**Country:** Peru

**Methodology:** AMS-I.D

**Version:** 17

**Sectoral scope:** 01

**GHG reducing Measure/Technology:** Grid connected renewable electricity generation

**ER estimate:** 13 512 tCO<sub>2</sub>e per year (average)

## Size

☐ Large Scale

☒ Small Scale

## Validation Phases:

☒ Desk Review

☒ Follow up interviews

☒ Resolution of outstanding issues

## Validation Status

☐ Corrective Actions Requested

☐ Clarifications Requested

☒ Full Approval and request for renewal

☐ Rejected

In summary, it is DNV's opinion that the project activity "Santa Rosa" in Peru, as described in the PDD, version 6 of 22 December 2011, meets all relevant UNFCCC requirements for the renewal of the crediting period. Hence DNV requests the renewal of the crediting period of the project.

Report No.: 2011-0737	Subject Group: Environment
Report title: "Santa Rosa" in Peru	
Work carried out by: Felipe Lacerda Antunes	
Work verified by: Agnes Dudek	
Date of this revision: 2012-01-27	Rev. No.: 01
Number of pages: 10	

## Indexing terms

## Key words

Climate Change

Kyoto Protocol

Validation

Clean Development Mechanism

- ☒ No distribution without permission from the client or responsible organisational unit
- ☐ free distribution within DNV after 3 years
- ☐ Strictly confidential
- ☐ Unrestricted distribution

© 2009 Det Norske Veritas AS

All rights reserved. This publication or parts thereof may not be reproduced or transmitted in any form or by any means, including photocopying or recording, without the prior written consent of Det Norske Veritas AS.



<i><b>Table of Content</b></i>	<i><b>Page</b></i>
1 EXECUTIVE SUMMARY – VALIDATION OPINION.....	1
2 INTRODUCTION.....	2
3 METHODOLOGY.....	2
3.1 Desk review of the project design documentation	2
3.2 Follow-up interviews with project stakeholders	3
3.3 Resolution of outstanding issues	4
3.4 Internal quality control	5
3.5 Validation team	5
4 VALIDATION FINDINGS.....	6
4.1 Validity of selected baseline and monitoring methodology	6
4.2 Applicability of selected baseline and monitoring methodology	6
4.3 Validity of baseline	7
4.4 Validity of monitoring plan	8
4.5 Estimation of GHG emissions	9
Appendix A Validation Protocol	
Appendix B Curricula vitae of the validation team members	



## Abbreviations

CAR	Corrective Action Request
CDCF	Community Development Carbon Fund
CDM	Clean Development Mechanism
CEF	Carbon Emission Factor
CER	Certified Emission Reduction(s)
COES	Committee of Economical Operation of the <i>SEIN</i> ( <i>SEIN</i> Dispatch Center)
CO <sub>2</sub>	Carbon dioxide
CO <sub>2</sub> e	Carbon dioxide equivalent
DDA-OM	Dispatch Data Analysis Operating Margin Emission Factor
DNA	Designated National Authority
DNV	DNV Climate Change Services AS
EDELNOR	Empresa de Distribución Eléctrica de Lima Norte (North Lima Electric Distribution Company)
FAR	Forward Action Request
GHG	Greenhouse gas(es)
IPCC	Intergovernmental Panel on Climate Change
MP	Monitoring Plan
NEC	Net Efficiency Conversion
PDD	Project Design Document
SEIN	Sistema Eléctrico Interconectado Nacional / National Interconnected Electric System
SENAMHI	Servicio Nacional de Meteorología y Hidrología del Perú / Peru's National Meteorological and Hydrological Service
SINERSA	Sindicato Energético S.A.
UNFCCC	United Nations Framework Convention for Climate Change



## 1 EXECUTIVE SUMMARY – VALIDATION OPINION

DNV Climate Change Services AS (DNV) has performed an assessment of the request by The World Bank to renew the crediting period of CDM project activity 0088 “Santa Rosa” in Peru. The assessment was performed in accordance with the procedures for renewal of the crediting period of a registered CDM project activity (version 06.0) and included an assessment of:

- (a) An impact of new relevant national and/or sectoral policies and circumstances on the baseline taking into account relevant EB guidance with regard to renewal of the crediting period at the time of requesting renewal of crediting period;
- (b) The correctness of the application of an approved baseline methodology for the determination of the continued validity of the baseline or its update, and the estimation of emission reductions for the applicable crediting period.

The review of the project design documentation and the subsequent follow-up interviews have provided DNV with sufficient evidence to determine the validity of the original baseline scenario. The project correctly applies the baseline and monitoring methodology AMS-I.D, version 17 “Grid connected renewable electricity generation”.

The total emission reductions from the project are estimated to be on the average 13 512 tCO<sub>2e</sub> per year over the selected 2<sup>nd</sup> 7 year renewable crediting period. The emission reduction forecast has been checked and it is deemed likely that the stated amount is achieved given that the underlying assumptions do not change.

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

In summary, it is DNV’s opinion that the CDM project activity 0088 “Santa Rosa” in Peru meets all relevant UNFCCC requirements for the renewal of the crediting period. Hence DNV requests the renewal of the crediting period of the project.

Rio de Janeiro and Oslo, 2012-01-27

Felipe Lacerda Antunes  
CDM Validator  
DNV Rio de Janeiro, Brazil

Edwin Aalders  
Approver  
DNV Climate Change Services AS



## 2 INTRODUCTION

DNV Climate Change Services AS (DNV) was commissioned by The World Bank to perform an assessment of the request by The World Bank to renew the crediting period of CDM project activity 0088 “Santa Rosa” in Peru.

The assessment was performed in accordance with the Procedures for renewal of the crediting period of a registered CDM project activity (version 06.0) /7/ and included an assessment of:

- (a) An impact of new relevant national and/or sectoral policies and circumstances on the baseline taking into account relevant EB guidance with regard to renewal of the crediting period at the time of requesting renewal of crediting period;
- (b) The correctness of the application of an approved baseline methodology for the determination of the continued validity of the baseline or its update, and the estimation of emission reductions for the applicable crediting period.

## 3 METHODOLOGY

The validation consisted of the following three phases:

- I a desk review of the project design documents
- II follow-up interviews with project stakeholders
- III the resolution of outstanding issues and the issuance of the final validation report and opinion.

The following sections outline each step in more detail.

### 3.1 Desk review of the project design documentation

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

#### 3.1.1 Documentation provided by the project participants

- /1/ The World Bank: Project Design Document for the “Santa Rosa” in Peru Version 3 of 31 January 2011 and final version 6 of 22 December 2011.
- /2/ CDMF: Project Design Document registered version 02 dated 25 February 2010.  
web link: <http://cdm.unfccc.int/Projects/DB/SGS-UKL1125047848.33/view>
- /3/ The World Bank: emission reduction and grid emission factor calculation spreadsheet: “PDD\_SANTA\_ROSA\_PERU\_OCT\_2011\_FINAL\_Jan 2012.xlsx”.
- /4/ Electrica Santa Rosa SAC: Monthly generation report from August 2004 to August 2011.
- /5/ The World Bank: E-mail message to UNFCCC Secretariat about the intention to renew the project activity crediting period on 31 January 2011.
- /6/ GCZ Ingenieros SAC: Technical report of Santa Rosa Hydroelectric Project dated November 2002



### 3.1.2 Methodologies, tools and other guidance by the CDM Executive Board

- /7/ CDM Executive Board: *Procedures for renewal of the crediting period of a registered CDM project activity*. Version 06.0.
- /8/ CDM Executive Board: *Validation and Verification Manual*. Version 01.2.
- /9/ CDM Executive Board: AMS-I.D – “Grid connected renewable electricity generation”. Version 17.
- /10/ IPCC: *Revised 2006 IPCC Guidelines for National Greenhouse Gas Inventories*. <http://www.ipcc.ch/>
- /11/ CDM-Executive Board: *Methodological Tool “Tool to calculate the emission factor for an electricity system”*, version 02.2.1
- /12/ CDM Executive Board: “Tool to assess the validity of the original/current baseline and to update the baseline at the renewal of a crediting period”. Version 02.0.0
- /13/ CDM Executive Board: “Guidelines for completing the Project Design Document (CDM-PDD) and the proposed new baseline and monitoring methodologies (CDM-NM)” Version 07
- /14/ CDM Executive Board: “Project 0088 : Santa Rosa” – project webpage <http://cdm.unfccc.int/Projects/DB/SGS-UKL1125047848.33/view>

### 3.1.3 Documentation used by DNV to validate / cross-check the information provided by the project participants

- /15/ National Standard NTP 111.002:2003 available in <http://www.indecopi.gob.pe/0/home.aspx?PFL=0&ARE=0>, last accessed on 23 December 2011
- /16/ COES-SINAC: 2008 Annual Operation Reports. Included in the “Statistical Report 2008” from February 2009.
- /17/ COES-SINAC: 2009 Annual Operation Reports. Included in the “Statistical Report 2009” from February 2010.
- /18/ COES-SINAC: 2010 Annual Operation Reports. Included in the “Statistical Report 2010” from February 2011.
- /19/ Ministry of Energy and Mines: Electric Concession Law (Law 25844), released in 1992

### 3.2 Follow-up interviews with project stakeholders

During the period 1 June 2011 to 30 November 2011 Felipe Lacerda Antunes from DNV performed interviews with project stakeholders. DNV considered that a site visit was not necessary, since on 4 and 5 June 2009 DNV performed the site visit for the 3<sup>rd</sup> verification of Santa Rosa project, and during this site visit it was confirmed that the project implementation was not in line with the description on the original PDD, which led to a PDD revision that was submitted to the EB and accepted accordingly /2/. Considering that the PDD submitted for the renewal of crediting period did not present project design changes, DNV considered that a new site visit was not necessary.

	Date	Name	Organization	Topic
/20/	2010-05-12	Claudia Croce	The World Bank	➤ Management System



/21/	2010-05-12	Lorenzo Eguren	ENDESA Carbono	<ul style="list-style-type: none"><li>➤ Environmental Licenses</li><li>➤ Baseline scenario and emission calculations</li><li>➤ Emission factor calculation</li><li>➤ Monitoring plan</li></ul>
------	------------	----------------	-------------------	--

### 3.3 Resolution of outstanding issues

The objective of this phase of the assessment was to resolve any outstanding issues which needed be clarified prior to DNV's positive conclusion on the project design.

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

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

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

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





### 3.4 Internal quality control

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

### 3.5 Validation team

<i><b>Role</b></i>	<i><b>Last Name</b></i>	<i><b>First Name</b></i>	<i><b>Country</b></i>	<i><b>Type of involvement</b></i>					
				Desk review	Site visit / Interviews	Reporting	Supervision of work	Technical review	TA 1.2 competence
Team leader (Validator)	Antunes	Felipe	Brazil	✓	✓	✓	✓		✓
Technical reviewer	Dudek	Agnes	Norway					✓	✓

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



## 4 VALIDATION FINDINGS

The findings of the validation are stated in the following sections. The final validation findings relate to the project design as documented and described in the PDD, version 6 dated 22 December 2011 /1/.

### 4.1 Validity of selected baseline and monitoring methodology

The project was originally registered based on version 05 of AMS-I.D – “Renewable electricity generation for a grid”. The revised CDM-PDD (version 6 dated 22 December 2011) applies version 17 of AMS-I.D – “Grid connected renewable electricity generation” /9/. This is appropriate as version 17 is the latest version of the applied methodology AMS-I.D. Besides, on E-mail 31 January 2011 the project proponent sent a message to UNFCCC Secretariat about the intention to renew the project activity crediting period /5/.

### 4.2 Applicability of selected baseline and monitoring methodology

The “Santa Rosa” in Peru is a bundle of three small run-of-river hydropower plants located in Lima-Peru in the Sayán District, totalizing 4.218 MW of installed capacity. Santa Rosa I has an installed capacity of 1.063 MW while Santa Rosa II has an installed capacity of 1.655 MW and Santa Rosa III, which has not started operation yet, will have an installed capacity of 1.5 MW. Generated electricity is supplied to the SEIN through the EDELNOR distributor /1/. The project is operated by Electrica Santa Rosa.

The objective of the project is to generate renewable energy and sell it to the National Interconnected Electric System (SEIN – Sistema Eléctrico Interconectado Nacional), thus, reducing greenhouse gas (GHG) emissions produced by thermal power plants using fossil fuels for electricity generation in Peru.

The project applies the approved baseline methodology AMS-I.D - “Grid connected renewable electricity generation”, Version 17 /9/. Applicability criteria from AMS-I.D were included in the revised PDD /1/.

AMS-I.D is applicable to the “Santa Rosa” in Peru as the project consists of three renewable energy generation units totalizing 4.218 MW capacity connected to the Peruvian grid. During the site visit done for the 3rd verification period DNV could confirm the installed capacity (Units I and II), and also confirm that the project activity consists of a run-of-river power plant without a reservoir.

The estimated amount of GHG emission reductions from the project is 94 584 tCO<sub>2e</sub> during the second crediting period (7 years) from 1 August 2011 to 31 July 2018, resulting in estimated average annual emission reductions of 13 512 tCO<sub>2e</sub>. For an assessment of the *ex-ante* emission reductions estimates, please refer to chapter 4.6 of this report.

### 4.3 Validity of baseline

DNV confirms that there have been no changes in the relevant national and/or sectoral regulations since the previous crediting period that could have affected the baseline scenario. In line with AMS-I.D requirements, the original baseline scenario /2/ remains valid as the “Electricity delivered to the grid by the project activity would have otherwise been generated



by the operation of grid-connected power plants and by the addition of new generation sources, as reflected in the combined margin (CM) calculations as described in the “Tool to calculate the emission factor for an electricity system” version 02.2.1 /11/.

The following steps from the “Tool to assess the validity of the original/current baseline and to update the baseline at the renewal of a crediting period” version 02.0.0 /12/ were applied:

### **Step 1: Assess the validity of the current baseline for the next crediting period**

The “Tool to assess the validity of the original/current baseline and to update the baseline at the renewal of a crediting period” /12/ approved by the CDM Executive Board requires assessing the impact of new relevant national and/or sectoral policies and circumstances on the baseline. The validity of the current baseline is assessed using the following Sub-steps:

#### **Step 1.1: Assess compliance of the current baseline with relevant mandatory national and/or sectoral policies**

During the first crediting period, some articles from the Electric Concession Law (Law 25844) /19/ were revised. However, after reviewing the Electric Concession Law /19/, DNV confirms that these revised articles do not affect the baseline.

#### **Step 1.2: Assess the impact of circumstances**

There are no new national/sectoral policies/legislation/circumstances that could affect the baseline scenario during the renewal of the crediting period. Most of the additions to the Peruvian SEIN grid is natural gas based thermal plants /18/.

#### **Step 1.3: Assess whether the continuation of the use of current baseline equipment(s) is technically possible**

Not applicable, since the baseline is not the continuation of current practice.

#### **Step 1.4: Assessment of the validity of the data and parameters**

The combined margin emission factor that was fixed *ex-ante* during the first crediting period, now was updated to get fixed *ex-ante* for the second crediting period, in line with the “Tool to calculate the emission factor for an electricity system” /11/. This parameter is properly described in the following section 4.5.1.

### **Conclusion on step 1**

The current baseline is still valid for the subsequent crediting period; data and parameters needed to be updated considering the latest versions of AMS-I.D /9/ and IPCC Guidelines /10/.

### **Step 2: Update the current baseline and the data and parameters**

#### **Step 2.1: Update the current baseline**

Not applicable, since the original baseline scenario remains valid.

#### **Step 2.2: Update the data and parameters**

The Peruvian SEIN grid emission factor was updated to be fixed *ex-ante* for the second crediting period, as described in chapter 4.6 of this report.



#### 4.4 Validity of monitoring plan

The project applies the approved monitoring methodology AMS-I.D (Version 17) - “Grid connected renewable electricity generation” /9/. The monitoring plan is in accordance with the monitoring methodology. The monitoring plan will give opportunity for real measurements of achieved emission reductions.

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

##### 4.4.1 Parameters determined ex-ante

The following parameters were determined *ex-ante* and will be kept fixed during the crediting period:

- $EF_{CO_2,grid,y}$ : Combined Margin  $CO_2$  emission factor, as described in the following section 4.6.

##### 4.4.2 Parameters monitored ex-post

The monitoring plan allows for collection and archiving of the following key parameters related to the determination of emission reductions resulting from the project activity:

- $EG_{BL,y}$ : Quantity of net electricity generation supplied to the grid as a result of the implementation of the CDM project activity in year y – recorded monthly;

Details of data to be collected, frequency of data recording and data recording format are described in the PDD.

All data will be kept for two years after the end of the last crediting period.

##### 4.4.3 Management system and quality assurance

Details of data to be collected, frequency of data recording and data recording format are described in the PDD and are in line with AMS-I.D requirements.

The electricity meters have an accuracy of 0.2%, and they will be calibrated once every three years.

All data will be kept for two years after the end of the last crediting period.

Detailed monitoring procedures, including responsibilities for project management, procedures for QA/QC of monitoring reports and calibration, have been developed in the PDD.

The monitoring plan contains all necessary parameters described in accordance with the monitoring methodology. The monitoring plan, including data management and QA/QC procedures, will give opportunity for real measurements of achieved emission reductions, which can hence be reported *ex post* and verified. The application of the monitoring methodology is transparent and DNV considers the project participants able to implement the monitoring plan.

#### 4.5 Estimation of GHG emissions

The various algorithm/formulae for calculating baseline and project emissions have been transparently documented /3/ in line with the requirements of AMS-I.D Version 17 and the “Tool to calculate the emission factor of an electricity system” (version 02.2.1) /11/.



Emission reductions are calculated as the product between the net electricity supplied to the Peruvian grid and the Peruvian grid emission factor, which is fixed *ex-ante*. For the *ex-ante* estimation of emission reductions, the net electricity generated by Santa Rosa is expected to be 30.1 GWh, which corresponds to a plant load factor of 81.5% from the original PDD for the first crediting period /2/, as confirmed from the project technical report /6/. Historical data on electricity generation from Santa Rosa I and Santa Rosa II from August 2004 to August 2011 /4/ presents an average plant load factor of 73.5%, so the estimate presented in the PDD is conservative.

For the grid emission factor calculation, Data vintage from 2008 – 2010 were considered, which corresponds to the most recent years at the time of the PDD submission for the renewal of the crediting period. The combined margin emission factor was calculated as a combination (25:75) of the operating margin (OM) and build margin (BM) emission factors. The emission factor has been calculated as follows:

- (i) The operating margin (OM) is calculated using the “average OM” method. Information was obtained from official national public sources such as the COES /16//17//18/, and from the IPCC 2006 Guidelines for National Greenhouse Inventories (considering the 95% lower confidence interval) /10/. The OM is evaluated to be 0.2145 tCO<sub>2</sub>/MWh.
- (ii) The “build margin” is calculated as the weighted average emissions (in tCO<sub>2</sub>e/kWh) of recent capacity additions to the system, where capacity additions are defined as the greater (in MWh) of most recent 20% of existing plants or the 5 most recent plants. For the build margin, the 20% most recently installed plants have correctly been chosen in terms of electricity generation. Information was obtained from official national public sources such as the COES /16//17//18/, and from the IPCC 2006 Guidelines for National Greenhouse Inventories (considering the 95% lower confidence interval) /10/. The BM emission factor accounts to 0.5271 tCO<sub>2</sub>/MWh.
- (iii) The grid emission factor is calculated to be 0.4489 tCO<sub>2</sub>/MWh.

Project emissions are not considered since the project activity is a run-of-river power plant.

As per AMS-I.D requirements leakage does not need to be considered because the project equipment is not transferred from another activity.

The estimated amount of GHG emission reductions from the project is calculated to be 94 584 tCO<sub>2</sub>e over a 7 years crediting period, resulting in estimated average annual emission reductions of 13 512 tCO<sub>2</sub>e.

The emission reduction calculation were provided in a spreadsheet /3/, and it can be replicated using the data and parameter values provided in the PDD and supporting files submitted for registration. The data sources mentioned have been verified by DNV.

In summary, the GHG calculations are complete and transparent, and their accuracy has been verified. No other project emission or leakage sources contributing more than 1% and not mentioned by the methodology have been found.

**APPENDIX A**

---

**CORRECTIVE ACTION REQUESTS, CLARIFICATION REQUESTS  
AND FORWARD ACTION REQUESTS**

**Table 1 Resolution of corrective action requests and clarification requests**

Corrective action and/ or clarification requests	Response by project participants	Validation conclusion
<b>CAR 1</b> The PDD submitted for the renewal of crediting period presents some installed capacity data that do not match with the latest PDD changes. Evidences: section A.2 (“The design of the project provides for a power house for each turbine (1.1MW, 1.5MW and 1.5MW)”, section A.4.2, table with project turnkey costs (\$/MW).	The PDD has been adjusted according to the latest version of the registered PDD (February 25th, 2010).	The revised PDD /1/ presents the installed capacity data in line with the latest version of the registered PDD for the first crediting period /2/.  Therefore this CAR is closed.
<b>CAR 2</b> Regarding the project participants: i) it was observed that the project participant IBRD as Trustee of the Community Development Carbon Fund (“The CDCF”), from Parties Italy and Denmark, was not a project participant in the first crediting period; therefore, DNV requires the correspondent Letter of Approvals from both Italy and Denmark authorizing its participation;  ii) the project participant from the State of the Netherlands in the first crediting period was the Ministry of Infrastructure and Environment; DNV requests a confirmation that this was changed to the Ministry of Housing, Spatial Planning and Environment	The PDD has been updated.          The PDD has been updated accordingly.	The revised PDD /1/ presents all project participants in line with the registered project activity /14/.  Therefore this CAR is closed.

Corrective action and/ or clarification requests	Response by project participants	Validation conclusion
<p>and, if positive, an updated Letter of Approval;</p> <p>iii) parties Japan, Norway, Sweden, Finland, Switzerland and Germany are indirectly involved in the project activity. Therefore, table A.3 must be updated accordingly by indicating that these parties are not considered as project participants;</p> <p>iv) the project proponent is requested to update table A.3 by indicating if Italy is considered as project participant.</p>	<p>The PDD has been updated accordingly.</p> <p>The PDD has been updated accordingly.</p>	
<p><b>CAR 3</b></p> <p>The project proponent is requested to correct or clarify the following regarding the grid emission factor calculation:</p> <p>i) for the determination of <math>EF_{EL,m,y}</math>, it was observed that in Peru data on fuel consumption and electricity generation is available for all power plants, option A1 should be selected. This is correctly reflected in the emission reduction calculation spreadsheet, but the PDD states incorrectly that option A2 is used.</p> <p>ii) The “Tool to calculate the emission factor for an electricity system”, version 02.1.0, determines that power plants registered as CDM project activities should be excluded from the</p>	<p>i) The PDD has been updated as option A1 was used.</p> <p>ii) CDM project activities have been excluded from the BM calculation.</p>	<p>The revised PDD /1/ and grid emission factor calculation /3/ correctly consider option A1 for the determination of <math>EF_{EL,m,y}</math>. Data vintage for 2010 is correctly applied, since it is the latest data available at the time of the PDD submission for the crediting period renewal.</p> <p>According to the “Tool to calculate the emission factor for an electricity system”, CDM project activities were excluded from the revised BM emission factor calculation /3/.</p> <p>Diesel NCV was sourced from National Standard NTP 111.002:2003/15/.</p> <p>Therefore this CAR is closed.</p>



Corrective action and/ or clarification requests	Response by project participants	Validation conclusion
<p>group of power units to be included in the build margin; however, the plants La Joya, Santa Cruz and Caña Brava were included;</p> <p>iii) DNV requires an evidence of the natural gas NCV of 0.0039 GJ/m<sup>3</sup>;</p> <p>DNV requests a confirmation that when the PDD was submitted for the crediting period renewal (29 March 2011) there was no data published yet on 2010 grid statistics. In case there was, data vintage selected for OM and BM calculation should be revised accordingly.</p>	<p>iii) Evidence has been provided “Norma tecnica de Peru” Natural gas NCV of 0.354 GJ/m<sup>3</sup>.</p> <p>Official data were available starting by the end of February 2011. The PDD, OM and BM calculation have been updated accordingly.</p>	
<p><b>CL 1</b></p> <p>The PDD submitted for the renewal of crediting period is not in line with the latest “Guidelines for completing the simplified Project Design Document” in the following points:</p> <p>i) header is missing in all pages;</p> <p>ii) section A.4.2 presents some repeated and contradictory information;</p> <p>iii) emission reduction tables under sections A.4.3 and B.6.4 are not in line with the template;</p> <p>iv) section B.6.1 should present clearly the calculation methodological choices and the formulas applied, which are wrongly described in section B.6.3;</p> <p>v) section B.6.3 should present the ex-</p>	<p>i) Header has been inserted in all pages</p> <p>ii) Section A.4.2 has been corrected</p> <p>iii) Emission reduction tables have been corrected according to the template</p> <p>iv) Section B.6.1 presents clearly the calculation methodological choices and the equations used in calculating emission reductions.</p> <p>v) Section B.6.3 presents the ex-ante calculation, enabling the calculation to be reproduced.</p> <p>vi) The version 02 of the Tool to</p>	<p>The revised PDD /1/ is in line with the latest “Guidelines for completing the simplified Project Design Document” /13/.</p> <p>Therefore this CL is closed.</p>

Corrective action and/ or clarification requests	Response by project participants	Validation conclusion
<p>ante calculation, enabling the calculation to be reproduced;</p> <p>vi) the version applied of the “Tool to calculate project or leakage CO<sub>2</sub> emissions from fossil fuel combustion” should be clearly stated;</p> <p>vii) the template does not have an annex for “abbreviations”, and “baseline information should be under Annex 3, and “monitoring information should be under Annex 4.</p>	<p>calculate project or leakage CO<sub>2</sub> emissions from fossil fuel combustion has been stated.</p> <p>vii) The template has been corrected, the abbreviations have been deleted, and the baseline info is now under Annex 3 and monitoring information under Annex 4.</p>	
<p><b>CL 2</b></p> <p>DNV requests an evidence of the estimated annual electricity generation of 30.1 GWh, as well as historical annual electricity generation for the first crediting period.</p>	<p>The estimated annual electricity generation 30.1 GWh comes from the latest PDD registered (February 25<sup>th</sup>, 2010), and from the project technical report (provided to the DOE). The historical annual electricity generation for the first crediting period comes from the Monitoring Reports and file “Generacion de Energia SRI y SRII Ago05-Ago11” provided to the DOE.</p>	<p>The registered PDD for the first crediting period /2/ estimates the annual electricity generation as 30.1 GWh, which corresponds to a plant load factor of 81.5%, as confirmed from the project technical report /6/. Historical data on electricity generation from Santa Rosa I and Santa Rosa II from August 2004 to August 2011 /4/ presents an average plant load factor of 73.5%, so the estimate presented in the PDD is conservative.</p> <p>Therefore this CL is closed.</p>
<p><b>CL 3</b></p> <p>The project proponent is requested to include the geographical coordinates under PDD section A.4.1.4.</p>	<p>Geographical coordinates have been included as required.</p>	<p>The revised PDD /1/ correctly presents the geographical coordinates.</p> <p>Therefore this CL is closed.</p>
<p><b>CL 4</b></p>		<p>Applicability criteria from AMS-I.D were</p>

Corrective action and/ or clarification requests	Response by project participants	Validation conclusion
<p>The project proponent is requested to describe in the PDD section B.2 how the project activity meets all applicability criteria from AMS-I.D version 16, as well as provide related evidence.</p>	<p>This has been provided in section B.2.</p>	<p>included in the revised PDD /1/. AMS-I.D is applicable to the “Santa Rosa” in Peru as the project consists of three renewable energy generation units totalizing 4.218 MW capacity connected to the Peruvian grid. During the site visit done for the 3<sup>rd</sup> verification period DNV could confirm the installed capacity (Units I and II), and also confirm that the project activity consists of a run-of-river power plant without a reservoir.</p> <p>Therefore this CL is closed.</p>
<p><b>CL 5</b> The project proponent is requested to confirm and provide evidence if the CDM secretariat was notified of their intention to request a renewal of a crediting period of the registered CDM project activity by submitting an updated CDM-PDD and informing of their selection of a DOE within nine to six months prior to the date of expiration of the current crediting period, as requested by the “Procedures for renewal of the crediting period of a registered CDM project activity”, version 05.</p>	<p>The email to the UNFCCC has been forwarded to the DOE.</p>	<p>On 31 January 2011 the project proponent sent a message to UNFCCC Secretariat about the intention to renew the project activity crediting period /5/.</p> <p>Therefore this CL is closed.</p>
<p><b>CL 6</b> According to the PDD, there is an emergency diesel generation at the plant. DNV requests more detailed data on the generator specification, as well as evidence of the historical diesel</p>	<p>There is no emergency generator at the plant.</p>	<p>During the site visit done for the 3<sup>rd</sup> verification period DNV could confirm that there is no emergency diesel generation at the plant. The revised PDD /1/ was corrected accordingly.</p>



Corrective action and/ or clarification requests	Response by project participants	Validation conclusion
consumption and the generator's hours of use in the first crediting period.		Therefore this CL is closed.
<b>CL 7</b> The project proponent is requested to specify the calibration frequency of the energy meters.	The PDD has been updated with the requested information.	The revised PDD /1/ presents the calibration frequency of the energy meters.  Therefore this CL is closed.

**Table 3 Forward action requests**

Forward action request	Response by project participants
<i>No FAR was issued.</i>	

- o0o -

## **APPENDIX B**

---

### **CURRICULA VITAE OF THE VALIDATION TEAM MEMBERS**

## ***Felipe Lacerda Antunes***

**Felipe Lacerda Antunes** holds a Master's Degree in Production Engineering (Quality) and a Post Graduate Diploma in Environmental Management and Industrial Waste Management and Treatment. Possesses an International experience of more than 10 years in the field of quality and environmental auditing, working two years as the responsible of the QMS of Rede Metrológica RS and since 1999 as a QMS and EMS auditor in DNV.

He has experience of more than 4 years in validation and verification of numerous CDM projects in DNV, both in South America and abroad. He has also been actively involved in Management System Audits such as ISO 9001, ISO 140001 and OHSAS 18001 standards in various industrial sectors for more than 10 years in DNV.

His qualification and experience in CDM demonstrate him sufficient sectoral competence in energy generation from renewable energy sources, waste handling and disposal, and animal waste management.

## ***Agnes Dudek***

**Agnes Dudek** holds a PhD Degree in applied physics. Having an overall experience of around 11 years. Prior to joining DNV having 7 years experience in scientific research covering satellite remote sensing, mesoscale weather forecast modelling and air pollution dispersion modelling and monitoring.

She has experience of around 4 years in validation and verification of numerous CDM projects.

Her qualification, research experience and experience in CDM demonstrate her sufficient sectoral competence in energy generation from renewable energy sources.