



VERIFICATION/CERTIFICATION REPORT

Final


“Bundled wind power project Cape Verde”
in
Cape Verde

Monitoring period: 01/04/2013 to 31/12/2014

Report N°2015-BQ-08-MD

Revision N°1.3Aa

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Project Title: Bundled wind power project Cape Verde	Country: Cape Verde	Estimated CERs (tCO₂e): 67,444 annual average
CDM Registration Reference N°: 9570	Monitoring period: 01/04/2013 to 31/12/2014	Certified CERs (tCO₂e): 92,313
Client: Cabeólica S.A.	Client contact: Ms. Ana Monteiro	
Report No.: 2015-BQ-08-MD	Revision: 1.3Aa	Date of this report: 17/06/2015
Approved by (Final Report – Authorized officer signing for the DOE):  Laura Severino		Date of approval: 18/06/2015

Methodology

Number: ACM0002	Version: 13 of 11/05/2012	Title: Consolidated baseline methodology for grid-connected electricity generation from renewable sources	Scale Large	SS(s): 1
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RINA Services S.p.A. (RINA), commissioned by Cabeólica S.A., has verified the greenhouse gas emission reductions reported for the project activity “Bundled wind power project Cape Verde” in Cape Verde, CDM Registration Reference N° 9570, for the period 01/04/2013 to 31/12/2014, with regard to the relevant requirements for CDM activities. The verification shall ensure that reported emission reductions are complete and accurate in accordance with applicable CDM requirements in order to be certified.

The project was validated by TÜV NORD CERT GmbH (validation report N° 8753 – 12/141 issued on 31/01/2013) and it was registered on 31/01/2013 (Date of registration action 04/10/2013) under the CDM registration reference N°9570.

The GHG emission reductions were calculated on the basis of the approved methodology ACM0002, Consolidated baseline methodology for grid-connected electricity generation from renewable sources, version 13 of 11/05/2012 and the monitoring plan included in the registered Project Design Document, version 6 of 25/01/2013 and revised PDD version 7 of 16/06/2015.

In conclusion, it is RINA’s opinion that the project activity “Bundled wind power project Cape Verde”, in “Cape Verde”, as described in the Monitoring Report version 2 of 19/05/2015, meets all relevant requirements for CDM activities and all relevant host Party criteria and correctly applies the baseline and monitoring methodology ACM0002, Consolidated baseline methodology for grid-connected electricity generation from renewable sources, version 13 of 11/05/2012. Hence RINA is able to certify that the emission reductions from the project during the monitoring period 01/04/2013 to 31/12/2014 amount to 92,313 tCO₂e.

Work carried out by:

Thaís de Lima Carvalho



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Strictly confidential



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Work verified by (Final Report)

Rita Valoroso



Keywords:

Climate Change, Kyoto Protocol, Clean Development Mechanism, Verification

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Abbreviations

BE	Baseline Emissions
CAR	Corrective Action Request
CDM	Clean Development Mechanism
CDM M&P	Modalities and Procedures CDM
CER(s)	Certified Emission Reduction(s)
CH ₄	Methane
CL	Clarification Request
CO ₂	Carbon dioxide
CO ₂ e	Carbon dioxide equivalent
CRT	Coordination and Technical Control Staff
DCI	Certification Division of RINA Services Spa
DNA	Designated National Authority
DOE	Designated Operational Entity
EB	Executive Board
ER	Emission Reductions
FAR	Forward Action Request
GHG(s)	Greenhouse gas(es)
GWP	Global Warming Potential
IPCC	Intergovernmental Panel on Climate Change
LoA	Letter of Approval
MoV	Means of Verification
MR	Monitoring Report
NGO	Non-governmental Organization
ODA	Official Development Assistance
PDD	Project Design Document
PE	Project Emission
PP(s)	Project Participant(s)
Ref.	Document Reference
RINA	RINA Services Spa
SS(s)	Sectoral Scope(s)
TA(s)	Technical Area(s)
UNFCCC	United Nations Framework Convention on Climate Change
VVS	Validation and Verification Standard

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Appendix A: Verification Protocol

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1 INTRODUCTION

Cabeólica S.A. has commissioned RINA to carry out the verification and certification of emission reductions reported for the registered Bundled wind power project Cape Verde” project in Cape Verde, CDM Registration Reference N°9570, for the period 01/04/2013 to 31/12/2014.

This report summarizes the findings of the verification of the project, performed on the basis of UNFCCC criteria for CDM, as well as criteria given to provide for consistent project operations, monitoring and reporting.

1.1 Objective

The objective of the verification is to have an independent review ex post determination by a Designated Operational Entity (DOE) of the monitored reductions in GHG emissions that have occurred as a result of the registered CDM project activity during a defined monitoring period. Certification is the written assurance by the DOE that, during a specific time period, a proposed CDM project activity achieved the reductions in anthropogenic emissions by sources of GHGs as verified.

1.2 Scope

The verification scope is:

- to verify that actual monitoring systems and procedures are in compliance with the monitoring systems and procedures described in the monitoring plan;
- to evaluate the GHG emission reduction data and express a conclusion with a reasonable level of assurance about whether the reported GHG emission reduction data is free from material misstatement;
- to verify that reported GHG emission data is sufficiently supported by evidence.

Verification shall ensure that reported emission reductions are complete and accurate in accordance with applicable UNFCCC criteria for CDM in order to be certified.

UNFCCC criteria for CDM refer to Article 12 of the Kyoto Protocol, the CDM modalities and procedures, and the subsequent decisions by the CDM Executive Board.

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

2 METHODOLOGY

Verification was conducted using RINA procedures in line with the requirements specified in the CDM M&P, the latest version of the CDM Validation and Verification Standard, and relevant decisions of the COP/MOP and the CDM EB and applying standard auditing techniques.

The verification consisted of the following three phases:

- Desk review;
- On-site assessment;
- The resolution of outstanding issues and the issuance of the final verification report and certification.

The following sections outline each step in more detail.

2.1 Desk Review

The monitoring report, version 2 of 19/05/2015 and previous version 01 of 25/03/2015 /02/, the emission reduction calculations provided in the form of a spreadsheet, “Cape

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Verde_MonitoringReport_v2.xlsx" version 2 of 28/04/2015 and previous version /08/, were assessed as part of the verification. In addition the Project Design Document (PDD) /01/ in particular the baseline estimations and the monitoring plan, and the validation report number 8753 – 12/141, revision 0 of 31/01/2013 /07/ for the project were reviewed.

The monitoring report version 01 of 25/03/2015 /02/ was made publicly available on the CDM UNFCCC website on 27/03/2015.

The following table lists the documentation that was reviewed during the verification.

/01/	GSS Consultoria Sustentável Ltda.: CDM-PDD for project activity "Bundled wind power project Cape Verde" in Cape Verde, version 6 of 25/01/2013 GSS Consultoria Sustentável Ltda.: revised CDM-PDD for project activity "Bundled wind power project Cape Verde" in Cape Verde, version 7 of 16/06/2015
/02/	GSS Sustentabilidade: Monitoring report for project activity "Bundled wind power project Cape Verde" in Cape Verde, version 2 of 19/05/2015 version 01 of 25/03/2015 related to the monitoring period 01/04/2013 to 31/12/2014.
/03/	CDM Executive Board: Clean Development Mechanism Project Cycle Procedure, version 7 of 01/06/2014
/04/	CDM Executive Board: Clean Development Mechanism Project Standard, version 7 of 01/06/2014
/05/	CDM Executive Board: Clean Development Mechanism Validation and Verification Standard, version 7 of 01/06/2014
/06/	CDM Executive Board: Baseline and monitoring methodology ACM0002, Consolidated baseline methodology for grid-connected electricity generation from renewable sources, version 13 of 11/05/2012
/07/	TÜV NORD CERT GmbH Validation report number 8753 – 12/141 for the project Bundled wind power project Cape Verde, version 0 dated 31/01/2013
/08/	GSS Sustentabilidade and Cabeólica S.A. CERs spreadsheet "Cape Verde_MonitoringReport_v2.xlsx" version 2 of 28/04/2015 "Cape Verde_MonitoringReport_v1.xlsx" version 1 of 25/03/2015
/09/	CDM Executive Board: CDM-MR-FORM, version 05.1, and its Attachment "Instructions for filling out the monitoring report form" version 04.0, and its Attachment "Instructions for filling out the monitoring report form"
/10/	Landis Gyr calibration certificate dated 13/06/2011, reference nº VEZQ1118.xls.5 for the meter serial number 97736766 (97736766-Santiago.PDF)
/11/	Landis Gyr calibration certificate dated 24/05/2011, reference nº VEZQ1115.xls.14 for the meter serial number 97703467 (97703467-Sal.PDF)
/12/	Landis Gyr calibration certificate dated 24/05/2011, reference nº VEZQ1115.xls.13 for the meter serial number 97703466 (97703466-SaL.PDF)
/13/	Landis Gyr calibration certificate dated 13/06/2011, reference nº VEZQ1118.xls.7 for the meter serial number 97736768 (97736768-S.Vicente.PDF)
/14/	Landis Gyr calibration certificate dated 13/06/2011, reference nº VEZQ1118.xls.6 for the meter serial number 97736767 (97736767-S.Vicente.PDF)
/15/	Landis Gyr calibration certificate dated 24/05/2011, reference nº VEZQ1115.xls.15 for the meter serial number 97703468 (97703468-Boa Vista.PDF)
/16/	Monthly register of the energy delivered to the grid and energy consumed from the grid for each wind farm, signed by Cabeolica and Electra
/17/	Monthly invoices for the net energy delivered to the grid for each wind farm, signed by Cabeolica and Electra
/18/	Vestas take over certificate (all stages test have been successfully completed): -Santiago wind farm, signed on 23/12/2011

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	-Sal wind farm, signed on 17/02/2012 -São Vicente wind farm, signed on 23/11/2011 -Boa vista wind farm, signed on 18/07/2012
/19/	Cabeólica S.A. flow chart on energy measurements, no date available (Meter Reading_test_calibration flowchart_v3.pdf)
/20/	* Ministério do Ambiente, Desenvolvimento Rural e Recursos Marinhos (General Environmental Direction) EIA homologation approval for the Boa Vista wind farm, dated 13/04/2009. (Boa Vista_Approval.pdf) * Ministério do Ambiente, Desenvolvimento Rural e Recursos Marinhos (General Environmental Direction) EIA homologation approval for the São Vicente wind farm, dated 13/04/2009. (S.Vicente_Approval.pdf) * Ministério do Ambiente, Desenvolvimento Rural e Recursos Marinhos (General Environmental Direction) EIA homologation approval for the Sal wind farm, dated 13/04/2009. (Sal_Approval.pdf) * Ministério do Ambiente, Desenvolvimento Rural e Recursos Marinhos (General Environmental Direction) EIA homologation approval for the Santiago wind farm, dated 13/04/2009. (Santiago_Approval.pdf) * Ministério do Turismo, Indústria e Energia- DGE- Direcção General de Energia (Energy Ministry General Direction) license for Cabeólica S.A. as an energy producer, dated 12/04/2014 (Cabeólica_Power_Producer_License.pdf)
/21/	Landis+Gyr AG - User Manual ZMQ202 / ZFQ202 version h of 31/01/2005 (Manual Landis + Gyr.pdf)
/22/	Instituto de <i>Gestão da Qualidade e da Propriedade Intelectual de Cabo Verde</i> – IGQPI (The Cape Verdean Institute of Quality Management and Intellectual Property) declaration dated 16/04/2015 (Declaration.pdf)
/23/	Tool to calculate the emission factor for an electricity system, 02.2.1 of 29/09/2011

2.2 On-site assessment

On 13/04/2015 RINA visited Boa Vista Island (Boa Vista wind farm), on 14/04/2015 RINA visited Sal Island (Sal wind farm), on 15/04/2015 RINA visited São Vicente Island (São Vicente wind farm) and on 16/04/2015 RINA visited Santiago Island (Santiago wind farm). During the on-site assessment of the project RINA assessed the implementation and operation of the proposed project activity, reviewed the information flows for generating, aggregating and reporting the monitoring parameters, interviewed key personnel of the plant to confirm the operational and data collection procedures, cross-checked between information provided in the monitoring report and data plant, checked the monitoring equipment including calibration performance, reviewed calculations and assumptions made in determining the GHG data and emission reductions, checked the quality control and quality assurance procedures in place to prevent or identify and correct any errors or omissions in the reported monitoring parameters. All equipments were in place and accessible.

The key personnel interviewed and the main topics of the interviews are summarized in the table below.

	Date	Name and Role	Organization	Topic
/a/	13-16/04/2015	Ms. Ana Monteiro-HESA	Cabeólica S.A.	Implementation status of the project Monitoring equipment and operation Monitoring plan

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				Monitoring methodology Monitoring data Calibration requirements Environmental aspects
/b/	13/04/2015	Mr. Jamirson Soares- Boa Vista site representative	Cabeólica S.A.	Equiments and monitoring at Boa Vista wind farm
/c/	14/04/2015	Mr. Decio Lopes- Sal site representative	Cabeólica S.A.	Equiments and monitoring at Sal wind farm
/d/	15/04/2015	Mr. Edmar Coronel- São Vicente site representative	Cabeólica S.A.	Equiments and monitoring at São Vicente wind farm
/e/	16/04/2015	Mr. Valdemar Lopes-Santiago site representative	Cabeólica S.A.	Equiments and monitoring at Santiago wind farm
/f/	16/04/2015	Mr. Antão Fortes- CEO	Cabeólica S.A.	Implementation status of the project
/g/	16/04/2015	Mr. Bruno Lopes- CFO	Cabeólica S.A.	Monitoring equipment and operation
/h/	16/04/2015	Mr. Helder Andrade- Project Manager	Cabeólica S.A.	Monitoring plan Monitoring methodology Monitoring data Calibration requirements

2.3 Resolution of outstanding issues

The objective of this phase of the verification is to resolve any outstanding issues which need to be clarified for RINA's positive conclusion on the monitoring report and emission reductions.

To guarantee transparency a verification protocol has been customized for the project. The protocol shows in a transparent manner the requirements, means of verification and the results from verifying the identified criteria.

The verification protocol consists of three tables; the different columns in these tables are described in the figure below (see Figure 1). The completed verification protocol is enclosed in Appendix A to this report.

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

- Non-conformities with the monitoring plan or methodology are found in monitoring and reporting, or if the evidence provided to prove conformity is insufficient;
- Mistakes have been made in applying assumptions, data or calculations of emission reductions that will impair the estimate of emission reductions;
- Issues identified in a FAR during validation to be verified during verification have not been resolved by the project participants.

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 verification for actions if the monitoring and reporting require attention and/or adjustment for the next monitoring period.

CARs, CLs and FARs identified are included in the verification protocol in Appendix A of this report.

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Figure 1 Verification protocol tables

Verification Protocol, Table 1 - Requirement checklist				
Checklist Question	Ref.	MoV	Comments	Conclusion
The checklist is organized in four different sections.	Makes reference to documents where the answer to the checklist question or item is found.	Explain how conformance with the checklist question is investigated. Examples are document review (DR), interview or any other follow-up actions (I), cross checking (CC) with available information relating to projects, (N/A) means not applicable.	The discussion on how the conclusion is arrived at and the conclusion on the compliance with checklist question so far.	For CAR, CL and FAR see the definitions above. OK is used if the information and evidence provided is adequate to demonstrate compliance with CDM requirements.

Verification Protocol, Table 2 - Resolution of Corrective Action Requests and Clarification			
Corrective action requests and/or clarification requests	Reference to Table 1	Response by project participants	Verification conclusion
The CAR and/or CLs raised in table 1 are repeated here.	Reference to the checklist question number in Table 1 where the CAR or CL is explained.	The responses given by the project participants to address the CARs and/or CLs.	The verification team's assessment and final conclusion of the CARs and/or CLs.

Verification Protocol, Table 3 - Forward Action Requests (if no FAR table 3 is deleted)		
Forward action request	Reference to Table 1	Response by project participants Verification conclusion
The FAR raised in table 1 is repeated here.	Reference to the checklist question number in Table 1 where the FAR is explained.	Response by the project participants on how forward action request will be addressed.

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2.4 Internal quality control

All the revisions of the verification report before being submitted to the client were subjected to an independent internal technical review to confirm that all verification activities had been completed according to the pertinent RINA instructions.

The technical review was performed by a technical reviewer(s) qualified in accordance with RINA's qualification scheme for CDM validation and verification.

2.5 Verification team and the technical reviewer(s)

The verification team and the independent technical reviewer team have the collective competence necessary to perform the verification.

The verification team fulfills the following requirements:

- qualification for all technical area/s (TAs) related to the activity;
- technical experts who provides specific technical, methodological and sectoral knowledge and/or expertise and qualification for TAs can be involved;
- it includes one Team Leader that takes the responsibility to lead the team;
- it includes a Verifier;
- at least one member who performs the on-site visit is qualified for all TAs related to the activity;
- at least one member who performs the on-site visit is qualified as Team Leader, even if he/she does not cover this role for the specific activity;
- the same person can cover more than one roles.

The independent technical reviewer team fulfills the following requirements:

- qualification for the CDM scheme and attendance to specific training related to the independent technical reviewer activity;
- qualification for all technical area/s (TAs) related to the activity in case of Final Report;

The verification team members and the technical reviewers consist of the following personnel (refer to the relevant attachments to see the pertinent qualification certificates):

Role	Last Name	First Name	Site Visit (Yes/No)	Country
Team Leader/ verifier/ technical expert	Carvalho	Thaís	Yes	Brazil
Technical Reviewer	Valoroso	Rita	No	Italy

3 VERIFICATION FINDINGS

The findings of the verification related to the monitoring period from 01/04/2013 to 31/12/2014 as documented and described in the monitoring report version 2 of 19/05/2015 and previous version 01 of 25/03/2015 /02/ are stated in the following sections.

The verification requirements, the means of verification and the results from verifying the identified criteria are documented in more detail in the verification protocol in Appendix A.

3.1 Description of the project activity

The main information of the project is summarized in the table below.

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Project Participant(s)	Cabeólica S.A. Swedish Energy Agency		
Project Title	Bundled wind power project Cape Verde		
Location of the project	Cape Verde, in the islands of Santiago, Sal, São Vicente and Boa Vista		
Methodology(ies)	ACM0002, Consolidated baseline methodology for grid-connected electricity generation from renewable sources, version 13 of 11/05/2012 /06/		
Sectoral Scope(s)	1	RINA's Technical Area(s)	1.2
Registered PDD	version 6 of 25/01/2013		
Date of registration	31/01/2013 (Date of registration action 04/10/2013)	CDM Registration Reference N°	9570
Starting date of the crediting period	01/04/2013		
Project's crediting period	01/04/2013 to 31/03/2020 (Renewable)		
Monitoring period	01/04/2013 to 31/12/2014		
Project documentation link	https://cdm.unfccc.int/Projects/DB/RWTUV1359635253.96/view		
Purpose of the project activity	<p>The project activity is a group of four wind farms (total of 25.5 MW), which contribute to the reduction of fossil fuel dependence and consequently help to decrease the GHG emissions to the atmosphere by introducing an amount of electrical energy that is from a renewable source: wind power. Using the high wind potential of Cape Verde, this wind power plant aims to generate electrical power to supply Cape Verde and provide an alternative source of electricity generation, which fulfils the necessary requirements of the project activity.</p> <p>The project activity contains the following four wind farms:</p> <ul style="list-style-type: none"> - Santiago with 9.35 MW of nominal capacity; - Sal with 7.65 MW of nominal capacity; - São Vicente with 5.95 MW of nominal capacity; - Boa Vista with 2.55 MW of nominal capacity. <p>The purpose of the proposed project is to generate renewable electricity to the grid. Each plant provides electricity to the system of the island where the plant is located. Thus the four plants generate electricity for four different systems.</p>		

3.2 Remaining issues (FARs) from previous validation or verification

Based on the review of validation report and previous verification report, no FAR was raised during the validation.

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3.3 Monitoring Report

The Monitoring Report for the project activity “Bundled wind power project Cape Verde”, in “Cape Verde”, version 2 of 19/05/2015 and previous version 01 of 25/03/2015 submitted by the Cabeólica S.A. been the basis for the verification process.

RINA confirms that the above MR is based on the currently valid MR template /09/ and is completed in accordance with the applicable guidance document /09/.

The main changes between the MR version 01 of 25/03/2015 published in the UNFCCC website on 27/03/2015 and the MR version 2 of 19/05/2015 submitted for registration are the following:

Section of the MR	Description and reason for changing the information in that section
All sections	Updated the MR template
Section B.2.3	Included permanent change description
Section C and D.2	Included meters description and calibration certificate
Section D.1	Included parameters available at validation, as described in the PDD
Section E.1	Revised values of the net energy delivered to the grid

3.4 Project implementation

Actual implementation of the registered project activity

Yes. Verified during the on site visit that the following equipment's are installed:

Boa Vista:

3 wind turbines V52-850 kW each, total installed capacity equal to 2.55 MW

Sal:

9 wind turbines V52-850 kW each, total installed capacity equal to 7.65 MW

São Vicente:

7 wind turbines V52-850 kW each, total installed capacity equal to 5.95 MW

Santiago:

11 wind turbines V52-850 kW each, total installed capacity equal to 9.35 MW.

The project was implemented and is operational in accordance with the revised registered PDD.

Post registration changes

PP is requesting a post registration change in the registered monitoring plan regarding the calibration periodicity. The registered monitoring plan describes “The frequency of calibration of the meters is in accordance with Electra and Cabeólica, where the frequency for preventive maintenance and calibration of meters is annually. Calibration should be performed in the field or in the laboratory with proven traceability”. PP is requesting to change the calibration periodicity to 8 years in accordance with the manufacturer specifications.

The post registration change is in accordance with the provisions of appendix 1 of the Project standard, version 7, paragraph 5 Changes to the monitoring of the registered CDM project activity of a type listed below do not require prior approval by the Board item (a) Change of calibration frequency or practice for monitoring equipment not within the control of project participants.

RINA verified that the PP request is in accordance with the CDM Project Standard, version 07, paragraph 64, item (f):

“Specifications of the calibration frequency for the measuring equipments. In cases where neither the selected methodology and, where applicable, the selected standardized baseline, nor the Board's guidance specify any requirements for calibration frequency for measuring equipments, project participants shall ensure that the equipments are calibrated either in accordance with the local/national standards, or as per the manufacturer's specifications. If local/national standards or the manufacturer's specifications are not available, international standards may be used.”

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PP has provided a declaration from Instituto de *Gestão da Qualidade e da Propriedade Intelectual de Cabo Verde* – IGQPI (The Cape Verdean Institute of Quality Management and Intellectual Property) stating that the conditions have not been created in the Republic of Cape Verde to allow the calibration of high precision electricity metering system using methodologies in accordance with international standards, and therefore expected to follow relevant specifications set by the equipment manufactures /22/. Moreover it was verified in the manufacturer's manual that the calibrations or accuracy check need to be conducted following 8 years of use /21/.

During the on site visit RINA verified that in each substation there is a SCADA (Supervisory Control and Data Acquisition) readings that can be used as backup in the case of malfunction of the energy meters.

As the meters are high precision and the new frequency is in accordance with the manufacturer specification and PP has also a cross check of the information (SCADA) it is RINA's opinion that the permanent changes are not likely to lead to a reduction in the accuracy of the calculation of emission reductions.

Revised PDD, version 7 of 16/06/2015, was correctly revised and describes the calibration frequency in accordance with the manufacturer's specification.

3.5 Methodology for determining Emission Reductions.

According to the applied methodology ACM0002, Consolidated baseline methodology for grid-connected electricity generation from renewable sources, version 13 of 11/05/2012 /06/, the emission reductions have been calculated base on the following formula:

$$ER_y = BE_y - PE_y$$

Where,

ER_y = Emission reductions in year y (tCO₂e/yr)

BE_y = Baseline emissions in year y (tCO₂/yr)

PE_y = Project emissions in year y (tCO₂e/yr)

In accordance with the registered PDD and applied methodology, project emissions (PE_y) and leakage (LE_y) is zero

Baseline emissions (BE_y) are calculated as follow:

$$BE_y = EF_{grid,CM,y} \times EG_{pj,y}$$

Where,

BE_y = Baseline emissions, in tCO₂/yr;

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

$EF_{grid,CM,y}$ = Combined margin CO₂ emission factor for grid connected power generation in year y calculated using the latest version of the "Tool to calculate the emission factor for an electricity system" (tCO₂/MWh)

The Combined margin CO₂ emission factor was calculated ex-ante in the registered PDD:

System	$EF_{grid,CM}(tCO_2/MWh)$
São Vicente	0.7381
Sal	0.6746
Santiago	0.6655
Boa Vista	0.6464

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The Quantity of net electricity generation that is produced and fed into the grid is monitored during the monitoring period.

3.5.1 Compliance of the monitoring plan with the monitoring methodology and applicable methodological tools

The project applies the Baseline and monitoring methodology ACM0002, Consolidated baseline methodology for grid-connected electricity generation from renewable sources, version 13 of 11/05/2012 /06/. The monitoring plan in the registered PDD /01/ is in accordance with the monitoring methodology /06/.

3.5.2 Compliance of monitoring with monitoring plan

The following parameters have been monitored in accordance with the monitoring plan in the registered PDD /01/ and the monitoring report /02/.

3.5.2.1 Data and parameters fixed ex-ante or at renewal crediting period

DATA/PARAMETER Unit	Source of data	Reported value for the project period	Assessment/Observation						
EF_{grid} , CM,y (tCO _{2e} /MWh): Combined margin CO ₂ emission factor of the grid	Value calculated ex ante in the registered PDD /1/	Santiago: 0.6655 Sal: 0.6746 São Vicente: 0.7381 Boa Vista: 0.6464	The parameter was used to calculate ex ante the emission factor of the grid considering the years 2008, 2009 and 2010 /1/. Value applied for the CERs calculation is in accordance with data calculated in the registered PDD.						
EF_{grid} , OM,y (tCO _{2e} /MWh): CO ₂ Operating Margin emission factor of the grid.	Value calculated ex ante in the registered PDD /1/	Santiago: 0.6665 Sal: 0.6742 São Vicente: 0.7496 Boa Vista: 0.6505	The parameter was used to calculate ex ante the emission factor of the grid considering the years 2008, 2009 and 2010 /1/. Value applied for the CERs calculation is in accordance with data calculated in the registered PDD.						
EF_{grid} , BM,y (tCO _{2e} /MWh): CO ₂ Build Margin emission factor of the grid.	Value calculated ex ante in the registered PDD /1/	Santiago: 0.6622 Sal: 0.6755 São Vicente: 0.7036 Boa Vista: 0.6340	The parameter was used to calculate ex ante the emission factor of the grid data from 2010 /1/. Value applied for the CERs calculation is in accordance with data calculated in the registered PDD.						
FC_{i,y} (liters): Amount of fossil fuel type i	Registered PDD /01/,	<table><tr><td>Santiago</td><td>diesel</td><td>Fuel oil</td></tr><tr><td>2008</td><td>4.665.294</td><td>25.662.633</td></tr></table>	Santiago	diesel	Fuel oil	2008	4.665.294	25.662.633	The parameter was used to calculate ex ante the
Santiago	diesel	Fuel oil							
2008	4.665.294	25.662.633							

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consumed in the project electricity system per year y.	describes data data is from official publications – Electra Reports /1/	<table><tr><td>2009</td><td>1,445,548</td><td>29,357,880</td></tr><tr><td>2010</td><td>5,568,602</td><td>28,972,204</td></tr></table>	2009	1,445,548	29,357,880	2010	5,568,602	28,972,204	emission factor, in accordance with the Tool to calculate the emission factor for an electricity system, version 02.2.1 of 29/09/2011 /23/						
		2009	1,445,548	29,357,880											
		2010	5,568,602	28,972,204											
		<table><tr><td>Sal</td><td>diesel</td><td>Fuel oil</td></tr><tr><td>2008</td><td>272,654</td><td>8,549,010</td></tr><tr><td>2009</td><td>421,047</td><td>7,976,353</td></tr><tr><td>2010</td><td>472,292</td><td>7,702,079</td></tr></table>	Sal	diesel	Fuel oil	2008	272,654	8,549,010		2009	421,047	7,976,353	2010	472,292	7,702,079
		Sal	diesel	Fuel oil											
		2008	272,654	8,549,010											
		2009	421,047	7,976,353											
		2010	472,292	7,702,079											
		<table><tr><td>São Vicente</td><td>diesel</td><td>Fuel oil</td></tr><tr><td>2008</td><td>888,688</td><td>12,302,082</td></tr><tr><td>2009</td><td>996,033</td><td>12,784,248</td></tr><tr><td>2010</td><td>1,507,881</td><td>13,639,341</td></tr></table>	São Vicente	diesel	Fuel oil	2008	888,688	12,302,082		2009	996,033	12,784,248	2010	1,507,881	13,639,341
		São Vicente	diesel	Fuel oil											
2008	888,688	12,302,082													
2009	996,033	12,784,248													
2010	1,507,881	13,639,341													
<table><tr><td>Boa Vista</td><td>diesel</td><td>Fuel oil</td></tr><tr><td>2008</td><td>1,629,403</td><td>0</td></tr><tr><td>2009</td><td>1,666,734</td><td>0</td></tr><tr><td>2010</td><td>1,651,230.48</td><td>0</td></tr></table>	Boa Vista	diesel	Fuel oil	2008	1,629,403	0	2009	1,666,734	0	2010	1,651,230.48	0			
Boa Vista	diesel	Fuel oil													
2008	1,629,403	0													
2009	1,666,734	0													
2010	1,651,230.48	0													
Diesel Oil: 41.4 Fuel Oil: 39.8															
The parameter was used to calculate ex ante the emission factor, in accordance with the Tool to calculate the emission factor for an electricity system, version 02.2.1 of 29/09/2011 /23/															
The parameter was used to calculate ex ante the emission factor, in accordance with the Tool to calculate the emission factor for an electricity system, version 02.2.1 of 29/09/2011 /23/															
EF _{CO₂,i,y} (kg _{CO₂} /TJ) CO ₂ emission factor of fossil fuel type i consumed in the project electricity system per year y.	Registered PDD /01/, describes that data is from IPCC.	Diesel Oil: 72,600 Fuel Oil: 75,500	The parameter was used to calculate ex ante the emission factor, in accordance with the Tool to calculate the emission factor for an electricity system, version 02.2.1 of 29/09/2011 /23/												

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3.5.2.2 Data and parameters monitored ex-post

Data/Parameter	EG _y					
Data Unit	MWh					
Description	Electricity supplied to the grid by the project					
Source of data to be used	Energy meters and electricity bills.					
Value of monitored parameter for the monitoring period		Boa Vista	Sal	Santiago	São Vicente	Cross check
	April	431.38	1,355.23	3,121.39	1,921.63	/16/ /17/
	May	488.58	1,547.83	4,075.35	2,280.44	/16/ /17/
	June	471.13	1,428.59	2,614.70	2,353.44	/16/ /17/
	July	310.90	1,150.65	1,177.49	1,506.14	/16/ /17/
	August	206.57	758.17	752.01	856.12	/16/ /17/
	September	289.19	1,125.58	1,450.76	1,326.10	/16/ /17/
	October	448.02	1,481.22	2,148.60	1,996.37	/16/ /17/
	November	448.19	1,659.62	2,855.25	1,746.11	/16/ /17/
	December	771.66	1,637.17	3,742.11	1,785.19	/16/ /17/
	Sub Total 2013	3,865.62	12,144.06	21,937.66	15,771.54	
	January	865.25	1,942.34	4,341.42	2,137.20	/16/ /17/
	February	924.84	1,787.45	4,942.93	2,252.27	/16/ /17/
	March	837.87	1,537.68	3,928.58	2,176.66	/16/ /17/
	April	776.52	1,673.24	3,314.52	1,967.48	/16/ /17/
	May	806.68	1,531.24	3,478.13	2,029.58	/16/ /17/
	June	884.08	1,047.77	3,432.08	2,219.79	/16/ /17/
	July	491.61	1,099.02	1,559.99	1,718.28	/16/ /17/
	August	295.79	753.02	661.44	1,233.22	/16/ /17/
	September	411.75	938.09	1,299.04	1,271.31	/16/ /17/
	October	502.73	1,335.37	1,650.06	1,874.51	/16/ /17/
	November	623.00	1,392.03	2,299.61	1,788.21	/16/ /17/
	December	704.88	1,589.04	2,945.48	1,528.99	/16/ /17/
	Sub Total 2014	8,125.00	16,626.29	33,853.28	22,197.50	
	Total Monitoring period	11,990.62	28,770.35	55,790.94	37,969.04	
Monitoring equipment	<p>Santiago wind farm Meter Landis Gyr Model: ZMQ202CTSAT Serial number: 97736766</p> <hr/> <p>Sal wind farm Meter Landis Gyr Model: ZMQ202CTSAT Serial number: 97703467 and 97703466 (connected to the transmission line backup, not used in the monitoring period)</p> <hr/> <p>São Vicente wind farm Meter Landis Gyr Model: ZMQ202CTSAT</p>					

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	<p>Serial number: 97736768 and 97736767 (connected to the transmission line backup, not used in the monitoring period)</p> <hr/> <p>Boa Vista wind farm Meter Landys Gyr Model: ZMQ202CTSAT Serial number: 97703468</p> <hr/> <p>Verified during the on site visit that the energy meters are bi-directional and located in the substation of each wind farm. All meters are sealed</p>
Accuracy of the monitoring equipment	Accuracy class: Active energy: 0.2S; Reactive Energy: 0.5S (verified during the on site visit in the equipment's' plate)
Measuring/Reading/Recording frequency	Continuous measurement and at least monthly recording
Calculation method (if applicable)	Not applicable.
Calibration	
Calibration frequency/interval Is the calibration interval in line with the monitoring plan of the PDD?	<p>Please, also refer to the section 3.4- section Post Registration changes of this report.</p> <p>In accordance with the meter's manual the calibration frequency is 8 years.</p>
Does the calibration cover the monitoring period? Has the calibration frequency been respected?	<p>Please, also refer to the section 3.4- section Post Registration changes of this report.</p> <p>In accordance with the meter's manual the calibration frequency is 8 years. PP has presented the factory calibration certificates that cover the monitoring period.</p>
Calibration certificates	<p>Verified the following calibration certificates applicable to the monitoring period:</p> <p>Santiago wind farm Factory calibration certificate dated 13/06/2011, reference n° VEZQ1118.xls.5, serial number: 97736766 /10/</p> <p>Sal wind farm Factory calibration certificate dated 24/05/2011, reference n° VEZQ1115.xls.14, serial number 97703467 /11/ and n° VEZQ1115.xls.13, serial number 97703466 /12/</p> <p>São Vicente wind farm Factory calibration certificate dated 13/06/2011, reference n° VEZQ1118.xls.7, serial number 97736768 /13/ and n° VEZQ1118.xls.6, serial number 97736767 /14/</p> <p>Boa Vista wind farm Factory calibration certificate dated 24/05/2011, reference n° VEZQ1115.xls.15, serial number 97703468 /15/</p>
Does the calibration of meters have been done by an accredited person or institution?	Yes, verified that the calibrations certificates are issued by Landis & Gyr S.A.U, factory calibration

VERIFICATION/CERTIFICATION REPORT

3.5.3 Assessment of data and calculation of emission reductions

Availability of the data

The monitoring is based only on data measured.

The CERs calculation /8/ is based only in data obtained through the monitoring.

The energy delivered to the grid and energy consumed from the grid are continuously monitored by the energy meter located in the substation of each plant. Every month, the reading of the meter is registered in a form, in the presence of Cabeolica and Electra (the form is signed by both companies team) /16/. The net energy is used to elaborate the energy invoice, also signed by Cabeolica and Electra /17/.

Verified during the site visit that each substation also has a SCADA (Supervisory Control and Data Acquisition) readings that can be used as backup in the case of malfunction of the energy meters. Registered PDD describes that archived data kept during the crediting period and two years after.

Cross-check reported data

Rina has cross check the form signed by Cabeólica and Electra with the month reading of the meter /16/ and the energy invoice, also signed by Cabeolica and Electra with the net energy values /17/. No errors were found.

3.5.4 Accuracy of emission reduction calculations

The emission reduction calculations provided in the spreadsheet/08/ have been verified to be correct and in line with the registered PDD /01/.

The emission reductions from the project for the monitoring period as reported in the monitoring report version 2 of 19/05/2015 /02/ is equivalent to 92,313 tCO_{2e}. The reported emission reductions are 21.9 % lower than the estimated emission reduction of 118,258 tCO_{2e} for the period as per the registered PDD/01/.

The data presented in the monitoring report /02/ were assessed by reviewing in detail project documentation, collection of monitored data, observation of established monitoring and reporting practices and assessment of the reliability of monitoring equipment. Sufficient evidence was presented and verified by RINA for the reported emission reductions as listed in the above Section 3.5.3.

For the calculation of emissions reductions, PP has used appropriated methods and formulae's in accordance with the applied methodology /06/. The assumptions, emission factors and default values that were applied in the calculation have been justified in accordance with the registered PDD /01/ and applied methodology /06/.

3.5.5 Management system and quality control

An on-site inspection has been performed in each wind farm from 13/04/2015 to 16/04/2015 and it is confirmed that the monitoring arrangements in the monitoring plan are feasible within the project design.

During the on site visit verified that Vestas, is responsible for the maintenance of the wind farm.

Verified on site that training registers are kept in the office of Cabeólica. Personnel responsible for the monitoring were interviewed during site visit and showed a good knowledge of their tasks and responsibilities.

Data for the monitoring period are from energy meter cross checked with the invoices (both registers are signed by Cabeolica and Electra).

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4 VERIFICATION AND CERTIFICATION OPINION

RINA Service Spa (RINA) has performed verification of the emission reductions reported for the project activity “Bundled wind power project Cape Verde” in Cape Verde, CDM Registration Reference N° 9570, for the period 01/04/2013 to 31/12/2014, with regard to the relevant requirements for CDM activities.

The project participants of the “Bundled wind power project Cape Verde” project are responsible for:

- the preparation of greenhouses gas emissions data and the reported greenhouse gas emission reductions from the project on the basis set out in the monitoring plan contained in the registered project design document version 6 of 25/01/2013 and revised PDD version 7 of 16/06/2015
- the development and maintenance of records and reporting procedures in accordance with that plan, including the calculation and determination of greenhouse gas emission reductions of the project

It is the responsibility of RINA to express an independent verification opinion about the project's conformity with the requirements of paragraph 62 of the CDM modalities and procedures and on the reported greenhouse gas emission reductions from the project.

Based on documented evidence and corroborated by an on-site assessment RINA can confirm that:

- the project has been implemented and operated as per the registered PDD and revised PDD version 7 of 16/06/2015;
- the monitoring report and other supporting documents provided are complete and verifiable and in accordance with the applicable CDM requirements;
- the monitoring is in place as per the applied baseline and monitoring methodology;
- the monitoring complies with the monitoring plan in the registered PDD and revised PDD version 7 of 16/06/2015;
- the monitoring plan in the registered PDD and revised PDD version 7 of 16/06/2015 is as per the applied baseline and monitoring methodology.

It is RINA's opinion that the GHG emission reduction stated in the monitoring report version 2 of 19/05/2015 for the “Bundled wind power project Cape Verde” project in Cape Verde for the period 01/04/2013 to 31/12/2014 are fairly stated. The GHG emission reductions were calculated correctly on the basis of the approved monitoring methodology ACM0002, Consolidated baseline methodology for grid-connected electricity generation from renewable sources, version 13 of 11/05/2012 and the monitoring plan contained in the registered PDD and revised PDD version 7 of 16/06/2015.

Hence RINA is able to certify that the emission reductions from the project during the monitoring period 01/04/2013 to 31/12/2014 amount to 92,313 tCO_{2e}.

APPENDIX A

VERIFICATION PROTOCOL

TABLE 1 REQUIREMENTS CHECK LIST

Checklist Question		Reference	MoV ¹	Comments	Conclusion
A Monitoring Report					
A.1	Does the used project title clearly enable the reader to identify the unique CDM activity? Is there an indication of a revision number, the date of the revision and the monitoring period?	/01/ /02/	DR	The title of the project activity is Bundled wind power project Cape Verde, as per the registered PDD version 6 of 25/01/2013. The Monitoring Report, version 01 of 25/03/2015, was made publicly available on the CDM UNFCCC website on 27/03/2015.	OK
A.2	Does the project comply with the applicable requirements for completing the Monitoring Reports (latest version available)?	/02/ /09/	DR	Corrections need to be done. Please refer to the sections below	CAR-3 OK
A.3	Does the MR comply with the template available (latest version)?	/02/ /09/	DR	Yes, the MR complies with the F-CDM-MR, version 04.0	OK
B Description of Project Activity					
B.1	Is the actual implementation and operation of the proposed project activity in accordance with the project activity in the registered PDD?	/01/ /02/ /20/	DR/CC /I	Yes. Verified during the on site visit that the following equipment's are installed: <u>Boa Vista</u> : 3 wind turbines V52-850 kW each, total installed capacity equal to 2.55 MW <u>Sal</u> : 9 wind turbines V52-850 kW each, total installed capacity equal to 7.65 MW <u>São Vicente</u> : 7 wind turbines V52-850 kW each, total installed capacity equal to 5.95 MW <u>Santiago</u> : 11 wind turbines V52-850 kW each, total installed capacity equal to 9.35 MW	OK

¹ MoV: DR document review, I interview, CC cross checking

Checklist Question		Reference	MoV ¹	Comments	Conclusion
				Verified applicable licenses for the project activity /20/: * Ministério do Ambiente, Desenvolvimento Rural e Recursos Marinhos (General Environmental Direction) EIA homologation approval for the Boa Vista wind farm, dated 13/04/2009. * Ministério do Ambiente, Desenvolvimento Rural e Recursos Marinhos (General Environmental Direction) EIA homologation approval for the São Vicente wind farm, dated 13/04/2009. * Ministério do Ambiente, Desenvolvimento Rural e Recursos Marinhos (General Environmental Direction) EIA homologation approval for the Sal wind farm, dated 13/04/2009. * Ministério do Ambiente, Desenvolvimento Rural e Recursos Marinhos (General Environmental Direction) EIA homologation approval for the Santiago wind farm, dated 13/04/2009. * Ministério do Turismo, Indústria e Energia- DGE- Direcção General de Energia (Energy Ministry General Direction) license for Cabeólia S.A. as an energy producer, dated 12/04/2014	
B.2	In case of deviation between the registered project and the actual implementation/operation, do they comply with the requirements of the Project Standards?	/01/ /02/	DR/CC /I	Please, refer to the section C.4, regarding the meters calibration.	CAR-3 CAR-4 OK
B.3	For project activity that consist of more than one site: - describe the status of the implementation and starting date of opearation of each site; For project activity with phased implementation: - describe the progress of the proposed project activity achieved in each phase number; - if the phased implementaion is delayed, described the reasons and the expected impenetation dates.	/01/ /02/ /18/	DR/CC /I	During the on site visit verified that all the wind farms included in the project activity are operational. PP has provided the Vestas take over certificate (all stages test have been successfully completed) /18/: -Santiago wind farm, signed on 23/12/2011 -Sal wind farm, signed on 17/02/2012 -São Vicente wind farm, signed on 23/11/2011 -Boa vista wind farm, signed on 18/07/2012	OK

Checklist Question		Reference	MoV ¹	Comments	Conclusion
B.4	Methodology and methodological tool applied for the registered project activity	/1/ /2/ /6/	DR/CC	The project applies the Baseline and monitoring methodology ACM0002, Consolidated baseline methodology for grid-connected electricity generation from renewable sources, version 13 of 11/05/2012	OK
C Compliance of the monitoring activities with the registered monitoring plan / Compliance of the monitoring plan with the monitoring methodology and methodological tool					
C.1 Monitoring plan					
C.1.1	Does the monitoring plan included in the registered CDM project activity comply with the applied methodology?	/1/ /2/ /6/	DR/CC	Yes, the monitoring plan in the revised registered PDD is in accordance with the monitoring methodology.	OK
C.1.2	Does the monitoring comply with the monitoring plan in the registered PDD?	/1/ /6/	DR/CC	Yes, monitoring is in accordance with the registered PDD	OK
C.2 Data and parameters fixed ex-ante or at renewal crediting period					
C.2.1	Which parameters were available at validation and how were they verified?	/01/ /02/	DR/CC	MR published describes the following parameter available at validation in accordance with the registered PDD: EF_{grid, CM,y} (tCO _{2e} /MWh): Combined margin CO ₂ emission factor of the grid. Value described: Santiago: 0.6655 Sal: 0.6746 São Vicente: 0.7381 Boa Vista: 0.6464 RINA verified that the values were calculated ex ante and are presented in accordance with the registered PDD /01/. Published MR does not present the parameters available ex ante in accordance with the registered PDD (FC _{i,y} ; NCV _{i,y} ; EF _{CO2,i,y}).	OK CAR-1
C.2.2	What default data were selected and applied?	/01/ /02/	DR/CC	Please, see section C.2.1	OK CAR-1

[illegible]

Checklist Question	Reference	MoV ¹	Comments	Conclusion
			<p>Meter Landis Gyr Model: ZMQ202CTSAT Accuracy class: Active energy: 0.2S Reactive Energy: 0.5S Serial number: 97703467 and 97703466 (connected to the transmission line backup, not used in the monitoring period) Factory calibration certificate dated 24/05/2011, reference n° VEZQ1115.xls.14 /11/ and n° VEZQ1115.xls.13 /12/</p> <hr/> <p>São Vicente wind farm Meter Landis Gyr Model: ZMQ202CTSAT Accuracy class: Active energy: 0.2S Reactive Energy: 0.5S Serial number: 97736768 and 97736767 (connected to the transmission line backup, not used in the monitoring period) Factory calibration certificate dated 13/06/2011, reference n° VEZQ1118.xls.7 /13/ and n° VEZQ1118.xls.6 /14/</p> <hr/> <p>Boa Vista wind farm Meter Landis Gyr Model: ZMQ202CTSAT Accuracy class: Active energy: 0.2S Reactive Energy: 0.5S Serial number: 97703468 Factory calibration certificate dated 24/05/2011, reference n° VEZQ1115.xls.15 /15/</p> <p>Verified during the on site visit that energy meters are bi-directional and located in the substation of each wind farm. All meters are sealed.</p>	
C.3.3 Is the measuring/reading/recording frequency adequate	/01/ /02/	DR/CC	Yes, continuous measurement and at least monthly	OK

Checklist Question	Reference	MoV ¹	Comments	Conclusion
for all monitoring parameters? Is it in line with the registered monitoring plan?	/16/	/I	recording	
C.4 Calibration requirements				
C.4.1 Are the requirements for maintenance and calibration of measurement equipment described and deemed appropriate?	/10/ /11/ /12/ /13/ /14/ /15/	DR/CC	Published monitoring report does not describe the calibration of the energy meters, nor the meters specification requirement and/or national requirements for calibration and actions in accordance VVS, v.7 para 285	OK CAR-4
C.4.2 Does the calibration cover the monitoring period?	/10/ /11/ /12/ /13/ /14/ /15/	DR/CC	Please, refer to the section C.4.1 above.	OK CAR-4
C.4.3 Has the calibration frequency been respected?	/10/ /11/ /12/ /13/ /14/ /15/	DR/CC	Please, refer to the section C.4.1 above.	OK CAR-4
C.4.4 Does the calibration of meters have to be done by an accredited person or institution?	/10/ /11/ /12/ /13/ /14/ /15/	DR/CC	Yes, the initial meters calibrations certificates were provided by the meter's manufacturer. Please, see section C.3.2 above	OK
C.4.5 In case of delay, describe the applied maximum permissible error	/10/ /11/ /12/ /13/ /14/ /15/	DR/CC	Please, refer to the section C.4.1 above.	OK CAR-4
C.5 Monitoring of the sustainable indicators				
C.5.1 Is the monitoring of sustainable development indicators/ environmental impacts warranted by legislation in the host Country?	/01/ /02/	DR/CC	Not applicable	OK
C.6 Management system and quality control				
C.6.1 How has it been assessed that the monitoring arrangements described in the monitoring plan are feasible within the project design?	/01/ /02/	DR/CC /I	An on site inspection has been performed in each wind farm from 13/04/2015 to 16/04/2015 and it is confirmed that the monitoring arrangements in the monitoring plan are feasible within the project design.	OK
C.6.2 Are procedures identified for day-to-day record handling (including what records to keep, storage area of records and how to process performance documentation)? Will all monitored data required for verification and issuance be kept for two years after the end of the crediting period or the last issuance of CERs, for this project activity, whichever occurs later?	/1/ /2/ /8/ /16/ /17/	DR/CC /I	The monitoring is based only on data measured. The CERs calculation /08/ is based only in data obtained through the monitoring. The energy delivered to the grid and energy consumed from the grid are continuously monitored	OK

Checklist Question		Reference	MoV ¹	Comments	Conclusion
				<p>by the energy meter located in the substation of each plant. Every month, the reading of the meter is registered in a form, in the presence of Cabeolica and Electra (the form is signed by both companies team) /16/. The net energy is used to elaborate the energy invoice, also signed by Cabeolica and Electra /17/.</p> <p>Verified during the site visit that each substation also has a SCADA (Supervisory Control and Data Acquisition) readings that can be used as backup in the case of malfunction of the energy meters.</p> <p>Registered PDD describes that archived data kept during the crediting period and two years after.</p>	
C.6.3	Are the data management and quality assurance and quality control procedures sufficient to ensure that the emission reductions achieved by/resulting from the project can be reported ex post and verified?	/1/ /2/ /8/	DR/CC /I	<p>During the on site visit verified that Vestas, is responsible for the maintenance of the wind farm. Verified on site that training registers are kept in the office of Cabeolica. Personnel responsible for the monitoring were interviewed during site visit and showed a good knowledge of their tasks and responsibilities.</p> <p>Data for the monitoring period are from energy meter cross checked with the invoices (both registers are signed by Cabeolica and Electra).</p>	OK
C.6.4	Are the responsibilities and authorities for monitoring and reporting in accordance with the responsibilities and authorities stated in the monitoring plan?	/1/ /2/ /8/	DR/CC /I	Yes, please, see section C.6.3 above	OK
C.6.5	Does data management (from monitoring equipment to emission reduction calculation) ensure correct transfer of data and reporting of emission reductions?	/1/ /2/ /16/ /17/	DR/CC /i	Please, refer to CAR 2	OK CAR 2
D.1 Assessment of data and calculation of emission reductions/Accuracy of emission reduction calculations					
C.1.2	How were the values in the monitoring report verified and cross-checked?	/1/ /2/ /8/ /16/	DR/CC /I	The energy delivered to the grid and energy consumed from the grid are continuously monitored by the energy meter located in the substation of each plant. Every month, the reading of the meter	OK CAR-2

Checklist Question		Reference	MoV ¹	Comments	Conclusion
		/17/		is registered in a form, in the presence of Cabeolica and Electra (the form is signed by both companies team) /16/. The net energy is used to elaborate the energy invoice, also signed by Cabeolica and Electra /17/.	
				Please, refer to CAR 2	
D.1.3	If only partial data are available because activity levels or non-activity parameters have not been monitored in accordance with the registered monitoring plan, has the most conservative assumption theoretically possible been applied or has a request for deviation been approved?	/1/ /2/ /8/ /16/ /17/	DR/CC /1	Not applicable. CERs is based only in monitored data	OK
D.1.4	Emission reductions reported	/1/ /2/ /8/ /16/ /17/	DR/CC /1	Emission reductions need to be updated. Please, see CAR-2	OK CAR-2
D.1.5	Difference between the emission reductions estimated in the registered PDD and the emission reductions reported for the monitoring period.	/1/ /2/ /8/ /16/ /17/	DR/CC /1	Emission reductions need to be updated. Please, see CAR-2	OK CAR-2

TABLE 2 RESOLUTION OF CORRECTIVE ACTION REQUESTS AND CLARIFICATION REQUESTS

Corrective action and/ or clarification requests	Reference to Table 2	Response by project participants	Verification Conclusion
CAR-1 Published MR does not present the parameters available ex ante in accordance with the registered PDD ($FC_{i,y}$; $NCV_{i,y}$; $EF_{CO2,l,y}$).	C.2.1	All the parameters required were included in accordance with the registered PDD.	The monitoring report version 2 presents all parameters in accordance with the registered PDD. This CAR is closed.
CAR-2 RINA verified that the values described in the published MR for the energy delivered to the grid by the four wind farms included in the project activity are not in accordance with the measurements and invoices for the net energy delivered to the grid.	C.3.1	The values have been updated in accordance with the measurements and invoices for the net energy delivered to the grid.	The values were revised in the monitoring report version 2 and CERs spreadsheet, in accordance with the energy measurements evidences. This CAR is closed.
CAR-3 In accordance with the instruction for filling out the monitoring report form, in the row "monitoring equipment" it is requested to provide information on type, accuracy class, serial number, calibration frequency, date of the last calibration and validity.	C.3.2	All information required (type, accuracy class, serial number, calibration frequency, date of the last calibration and validity) were included in the row "monitoring equipment).	All the information required by the instruction was included in the Monitoring report version 2. This CAR is closed
CAR-4 Published monitoring report does not describe the calibration of the energy meters, nor the meters specification requirement and/or national requirements for calibration and actions in accordance VVS, v.7 para 285	C.4.1	All the information regarding the energy meters calibrations were included and described in monitoring report. It is also included a request for a permanent change from registered monitoring plan. The project participant requested the change of the calibration frequency from annually to eight years following installation, as specified by the manufacturer. This request is based on the information stated in the CDM Project Standard, version 07, paragraph 64, item (f). The calibration realized before the installation were presented to the DOE in	The monitoring report was revised and the information regarding the calibration is described. Moreover RINA verified that in accordance with the meters specification the calibration is required every 8 years. This CAR is closed

Corrective action and/ or clarification requests	Reference to Table 2	Response by project participants	Verification Conclusion
		the site visit. As per the manufacturers' manual (available to DOE), for the type of meters installed, the calibrations need to be conducted following 8 years of use. All calibrations are valid for this monitoring period.	

TABLE 3 FORWARD ACTION REQUEST

Forward action request	Reference to Table 2	Response by project participants	Verification Conclusion
FAR 1			



RINA

**CERTIFICATO DI QUALIFICA
QUALIFICATION CERTIFICATE**

Si attesta che il sig./sig.ra:
We declare that Mr/Mrs/Ms:

Thais De Lima Carvalho

è qualificato come¹:
is qualified as:

CDM -TEC, -VAL, -VER, -TL

per le seguenti aree tecniche:
for the following technical areas:

1.1, 1.2, 2.1, 13.1

AREE TECNICHE TECHNICAL AREAS	DESCRIZIONE DELL'AREA TECNICA TECHNICAL AREA DESCRIPTION	SCOPO SETTORIALE SECTORAL SCOPE
1.1	Thermal energy generation	1
1.2	Renewables	1
2.1	Electricity distribution	2
13.1	Solid waste and wastewater	13

in accordo alle istruzioni della Divisione Certificazione.
in accordance with the instructions of the Certification Division.

REVISIONE REVISION	DATA DATE	MOTIVAZIONI PER LA REVISIONE REASON FOR THE REVISION
0	19-08-2009	-
12	15-01-2015	Added TA 2.1

Il Resp. QPT
Head of QPT

¹ Legend:

VAL: Validator
VER: Verifier
TEC: Technical Expert
TL: Team Leader
FIN-EXP: Financial Expert
DET: Determiner

CDM: Clean Development Mechanism
VCS : Verified Carbon Standard:
GS: Gold Standard
SCS: SocialCarbon Standard
JI: Joint Implementation

RINA Services S.p.A. è accreditato da UNFCCC, quale Entità Operativa Designata (DOE), per condurre la Validazione e la Verifica di Progetti CDM, da VCSA per condurre la Validazione e la Verifica di Progetti VCS, da GS Foundation, per condurre la Validazione e la Verifica di Progetti GS, da Ecologica Institute per condurre la Validazione e la Verifica di rapporti SCS

RINA Services S.p.A. is accredited by the UNFCCC, as Designated Operational Entity (DOE), to carry out Validation and Verification of CDM Projects, by the VCSA, to carry out Validation and Verification of VCS Projects, by the GS Foundation, to carry out Validation and Verification of GS Projects and by the Ecologica Institute, to carry out Validation and Verification of SCS Reports



RINA

**CERTIFICATO DI QUALIFICA
QUALIFICATION CERTIFICATE**

Si attesta che il sig./sig.ra:
We declare that Mr/Mrs/Ms:

Rita Valoroso

è qualificato come1:
is qualified as:

**CDM -TEC, -VAL, -VER, -TL
TECHNICAL REVIEWER**

per le seguenti aree tecniche:
for the following technical areas:

1.2, 13.1

AREE TECNICHE TECHNICAL AREAS	DESCRIZIONE DELL'AREA TECNICA TECHNICAL AREA DESCRIPTION	SCOPO SETTORIALE SECTORAL SCOPE
1.2	Renewables	1
13.1	Solid Waste and waste water	13

in accordo alle istruzioni della Divisione Certificazione.
in accordance with the instructions of the Certification Division.

REVISIONE REVISION	DATA DATE	MOTIVAZIONI PER LA REVISIONE REASON FOR THE REVISION
0	18-01-10	-
9	22-12-2014	Update qualification according to AS ver.6.0

Il Resp. QPT
Head of QPT

¹ Legend:

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VER: Verifier
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