

# VALIDATION REPORT

AM EOLICA ALTO LOA SPA

CKANI WIND FARM PROJECT

**Report No: 8000404467 – 12/034**

**Date: 2012-08-14**

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	Ckani Wind Farm Project	2012-01-06	2012-05-23	
<b>Client:</b>	AM Eolica Alto Loa SpA	<b>Client ref:</b>	Mr. Jose Escobar	
<b>Project Participant(s):</b>	<b>Host Party:</b>	<b>Other involved parties:</b>		
	Chile	n.a.		
<b>Applied methodology/ies:</b>	<b>Title:</b>	<b>No.:</b>	<b>Scope / TA:</b>	
	Consolidated baseline methodology for grid-connected electricity generation from renewable sources, Ver. 12.2.0	ACM0002	1 / 1.2	
<b>Validation team / Technical Review and Final Approval</b>	<b>Validation Team:</b>	<b>Technical review:</b>	<b>Final approval:</b>	
	Raul G. Mitre (TL)      Abraham Garza Alvarez (TM)	Emilio Martin	Alexandra Nebel	
<b>Expected Emission reductions: [t CO<sub>2e</sub>]</b>	<b>Expected emission reductions over the first crediting period:</b>	<b>(Expected) project starting date:</b>		
	2,864,892 t CO <sub>2e</sub>	2012-01-17		
<b>Confidential content:</b>	<input type="checkbox"/> Yes		<input checked="" type="checkbox"/> No	
<b>Summary of Validation Opinion:</b>	<input checked="" type="checkbox"/> Positive validation opinion		<input type="checkbox"/> Negative validation opinion	
	<p>The validation opinion will be issued in the course of the final validation report.</p> <p>In detail the conclusions can be summarised as follows:</p> <ul style="list-style-type: none"> <li><input checked="" type="checkbox"/> The project is in line with all relevant host country criteria (Chile) and all relevant UNFCCC requirements for CDM. Project activity approval have been obtained from DNA of Chile vide the Letter of Approval (LoA) dated 2012/08/01.</li> <li><input checked="" type="checkbox"/> The project additionality is sufficiently justified in the PDD.</li> <li><input checked="" type="checkbox"/> The monitoring plan is transparent and adequate.</li> <li><input checked="" type="checkbox"/> The calculation of the project emission reductions is carried out in a transparent and conservative manner, so that the calculated emission reductions of 2,864,892 tCO<sub>2e</sub> are most likely to be achieved within the (1<sup>st</sup> renewable) crediting period.</li> <li><input checked="" type="checkbox"/> The conclusions of this report show, that the project, as it was described in the project documentation, is in line with all criteria applicable for the validation.</li> </ul>			
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## Abbreviations

<b>BAU</b>	Business as usual
<b>CA</b>	Corrective Action / Clarification Action
<b>CAR</b>	Corrective Action Request
<b>CDM</b>	Clean Development Mechanism
<b>CDEC</b>	Dispatch Economic Center of the Central Interconnected System of Chile – “ <i>Centro de Despacho Económico de Carga</i> ”
<b>CER</b>	Certified Emission Reduction
<b>CL</b>	Clarification Request
<b>CNE</b>	National Commission of Energy – “ <i>Comisión Nacional de Energía</i> ”
<b>CO<sub>2</sub></b>	Carbon dioxide
<b>CO<sub>2e</sub></b>	Carbon dioxide equivalent
<b>CP</b>	Certification Program
<b>DIA</b>	Environmental Impact Declaration
<b>DNA</b>	Designated National Authority
<b>EB</b>	CDM Executive Board
<b>EF</b>	Emission Factor
<b>EIA</b>	Environmental Impact Assessment
<b>FAR</b>	Forward Action Request
<b>GHG</b>	Greenhouse gas(es)
<b>GSC</b>	Global Stakeholders Consultation
<b>IPCC</b>	Intergovernmental Panel on Climate Change
<b>LoA</b>	Letter of Approval
<b>MMA</b>	Ministry of Environment of Chile
<b>n.a.</b>	Not applicable
<b>O&amp;M</b>	Operation & Maintenance
<b>PDD</b>	Project Design Document
<b>PLF</b>	Plant Load Factor
<b>QC/QA</b>	Quality control/Quality assurance
<b>RCA</b>	Environmental Qualification/Approval Resolution
<b>SEA</b>	Environmental Assessment Service of Chile
<b>SING</b>	Norte Grande Interconnected System
<b>TSA</b>	Turbine Supply Agreement
<b>UNFCCC</b>	United Nations Framework Convention on Climate Change
<b>VVM</b>	Validation and Verification Manual

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## 1 OBJECTIVE / SCOPE

The purpose of a validation is to have an independent third party assess the project design. In particular the project's baseline, the monitoring plan (MP), and the project's compliance with

- the requirements of Article 12 of the Kyoto Protocol;
- the CDM modalities and procedures as agreed in the Marrakech Accords under decision 3/CMP.1
- the annex to the decision;
- subsequent decisions made by COP/MOP & CDM Executive Board and
- other relevant rules, including the host country legislation and sustainability criteria

are validated in order to confirm that the project design as documented is sound and reasonable and meets the stated requirements and identified criteria. Validation is seen as necessary to provide assurance to stakeholders on the quality of the project and its intended generation of certified emission reductions (CERs).

The validation scope is given as a thorough independent and objective assessment of the project design including especially: the correct application of the methodology, the project's baseline study, additionality justification, local stakeholder commenting process, environmental impacts and monitoring plan, which are included in the PDD and other relevant supporting documents, to ensure that the proposed CDM project activity meets all relevant and applicable CDM criteria.

The information included in the PDD and the supporting documents were reviewed against the requirements as set out by the UNFCCC. The validation team has, based on the requirements in the Validation and Verification Manual<sup>VVM</sup>, carried out a full assessment of all evidences to assess the compliance of the project with the key areas as outlined in section V.E. and V.F. of the VVM (version 01.2, EB 55).

The validation is based on the information made available to TÜV NORD JI/CDM CP and on the contract conditions.

The validation is not meant to provide any consulting to the project participants. However, stated requests for clarifications and/or corrective actions may provide input for improvement of the project design.

## 2 GHG PROJECT DESCRIPTION

### 2.1 Project Characteristics

Essential data of the project is presented in the following Table 2-1.

**Table 2-1:** Project Characteristics

Item	Data
Project title	Ckani Wind Farm Project
Project size	<input checked="" type="checkbox"/> Large Scale <input type="checkbox"/> Small Scale
Project Scope (according to UNFCCC sectoral scope numbers for CDM)	<input checked="" type="checkbox"/> 1 Energy Industries (renewable- /non-renewable sources)
	<input type="checkbox"/> 2 Energy distribution
	<input type="checkbox"/> 3 Energy demand
	<input type="checkbox"/> 4 Manufacturing industries
	<input type="checkbox"/> 5 Chemical industry
	<input type="checkbox"/> 6 Construction
	<input type="checkbox"/> 7 Transport
	<input type="checkbox"/> 8 Mining/Mineral production
	<input type="checkbox"/> 9 Metal production
	<input type="checkbox"/> 10 Fugitive emissions from fuels (solid, oil and gas)
	<input type="checkbox"/> 11 Fugitive emissions from production and consumption of halocarbons and hexafluoride
	<input type="checkbox"/> 12 Solvents use
	<input type="checkbox"/> 13 Waste handling and disposal
	<input type="checkbox"/> 14 Afforestation and Reforestation
	<input type="checkbox"/> 15 Agriculture
Applied Methodology	ACM0002, Ver. 12.2.0
Technical Area(s)	1.2 Renewable Energies
Crediting period	<input checked="" type="checkbox"/> Renewable Crediting Period (7 y) <input type="checkbox"/> Fixed Crediting Period (10 y)
Start of crediting period	2013-01-01, or the date of registration, whichever is later.

### 2.2 Involved Parties and Project Participants

The following parties to the Kyoto Protocol and project participants are involved in this project activity (Table 2-2).

**Table 2-2:** Project Parties and project participants

Characteristic	Party	Project Participant
Host party	Chile	AM Eolica Alto Loa SpA

### 2.3 Project Location

The details of the project location are given in table 2-3 and 2-3.1:

**Table 2-3:** Project Location

No.	Project Location
Host Country	Chile
Region:	II Region of Antofagasta
Project location address:	Calama Commune, El Loa Province

**Table 2-3.1:** Project Location coordinates

Turbine	E	N	Turbine	E	N
1	543653.2	7566314.3	81	541426.2	7557445.0
2	544064.7	7566313.9	82	542283.8	7557288.2
3	544476.2	7566313.9	83	542695.3	7557288.2
4	542760.4	7565184.7	84	543119.1	7557259.9
5	543172.0	7565184.7	85	543525.9	7557287.8
6	543584.9	7565186.0	86	543930.0	7557287.8
7	543996.4	7565185.6	87	544341.5	7557287.9
8	544407.9	7565185.7	88	544753.1	7557287.9
9	544819.5	7565185.7	89	545164.6	7557287.9
10	545231.0	7565185.7	90	545576.2	7557287.9
11	542282.1	7564047.3	91	539663.3	7556277.1
12	542693.5	7564057.8	92	540070.9	7556261.1
13	543105.0	7564057.8	93	540486.4	7556277.1
14	543516.6	7564057.8	94	540898.0	7556277.2
15	543928.1	7564057.4	95	541309.5	7556277.2
16	544318.5	7564054.0	96	542215.5	7556159.7
17	544751.2	7564057.5	97	542627.0	7556159.7
18	545162.8	7564057.5	98	543043.8	7556141.4
19	545566.3	7564040.3	99	543450.1	7556159.4
20	542213.7	7562929.5	100	543861.6	7556159.4
21	542625.2	7562929.5	101	544273.3	7556159.6
22	543036.8	7562929.6	102	544684.7	7556163.4
23	543448.3	7562929.6	103	545507.9	7556159.5
24	543859.8	7562923.9	104	540175.5	7554980.2
25	544686.6	7562938.8	105	540751.0	7555077.9
26	545090.9	7562923.5	106	541147.5	7555044.4
27	545506.1	7562929.3	107	541574.4	7555108.9
28	541122.2	7562136.2	108	542147.2	7555031.5
29	541614.1	7562074.2	109	542561.2	7555038.7
30	542145.4	7561801.1	110	542970.3	7555031.5
31	542556.9	7561801.1	111	543381.8	7555031.2
32	542968.5	7561801.1	112	543793.4	7555031.2
33	543380.0	7561801.2	113	544204.9	7555031.2
34	543791.6	7561795.8	114	544616.5	7555031.2
35	544203.1	7561800.8	115	545028.1	7555031.3
36	544614.8	7561801.0	116	545429.0	7555023.3
37	545026.2	7561800.8	117	540240.7	7554052.5
38	545437.8	7561800.9	118	540683.0	7553894.8



<b>Turbine</b>	<b>E</b>	<b>N</b>	<b>Turbine</b>	<b>E</b>	<b>N</b>
39	545849.3	7561800.9	119	541100.7	7553914.3
40	540793.0	7560838.8	120	541548.1	7553900.4
41	541201.3	7560820.1	121	542079.0	7553903.2
42	541614.9	7560822.8	122	542899.7	7553903.2
43	542077.1	7560672.9	123	543313.6	7553902.8
44	542488.7	7560672.9	124	543725.1	7553902.8
45	543311.8	7560672.9	125	544136.7	7553902.9
46	543723.3	7560672.5	126	544548.2	7553902.9
47	544134.8	7560672.6	127	544959.8	7553902.9
48	544546.4	7560672.6	128	540573.0	7552701.1
49	544957.9	7560672.6	129	541084.3	7552740.8
50	545369.5	7560672.7	130	541530.8	7552771.3
51	545785.6	7560658.2	131	542010.7	7552774.9
52	540733.0	7559662.1	132	542832.0	7552775.9
53	541144.5	7559688.8	133	543245.3	7552774.6
54	541552.5	7559702.9	134	543656.9	7552774.6
55	542008.8	7559544.6	135	544068.4	7552774.6
56	542420.3	7559544.6	136	544480.0	7552774.7
57	542831.9	7559544.6	137	540590.5	7551695.1
58	543243.4	7559544.6	138	541051.3	7551647.9
59	543654.9	7559544.2	139	541480.3	7551639.0
60	544066.5	7559544.3	140	541942.4	7551646.7
61	544478.0	7559544.3	141	542354.0	7551646.7
62	544889.6	7559544.3	142	542765.6	7551646.8
63	545301.2	7559544.4	143	543177.1	7551646.4
64	545712.7	7559544.4	144	543588.6	7551646.4
65	540652.8	7558541.5	145	544000.2	7551646.4
66	541064.3	7558541.6	146	541003.9	7550495.5
67	541480.9	7558577.3	147	541470.3	7550486.2
68	541940.6	7558416.4	148	542285.7	7550518.3
69	542352.1	7558416.4	149	542697.2	7550518.3
70	542763.6	7558416.4	150	543108.7	7550517.9
71	543173.0	7558410.1	151	543520.3	7550518.0
72	543586.7	7558416.0	152	543932.0	7550518.1
73	543998.2	7558416.0	153	540976.2	7549342.2
74	544821.3	7558416.1	154	541399.4	7549348.2
75	545232.9	7558416.1	155	542217.4	7549390.1
76	545644.5	7558416.2	156	542629.0	7549390.1
77	539734.7	7557400.8	157	543040.5	7549389.7
78	540141.0	7557403.8	158	541476.5	7548137.0
79	540576.5	7557406.5	159	542070.1	7548132.7
80	540988.1	7557406.5	160	542482.1	7548141.1

## 2.4 Technical Project Description

The technical key data are provided in table 2-4 below

**Table 2-4:** Technical data of the project activity

Parameter	Unit	Value
Turbine Type	-	Goldwind GW87/1500
Installed capacity	MW	240
Plant Load yFactor	%	32.74
Number of turbines	-	160
Capacity per turbine	MW	1.5
Cut-in wind speed	m/s	3
Cut-put wind speed	m/s	22
Rotor diameter	m	87
Swept area	m <sup>2</sup>	5,890

### 3 METHODOLOGY AND VALIDATION SEQUENCE

#### 3.1 Validation Steps

The validation of the project consisted of the following steps:

- Contract review
- Appointment of team members and technical reviewers
- Publication of the project design document (PDD)
- Desk review of the PDD and supporting documents
- Validation planning
- On-Site assessment
- Background investigation and follow-up interviews with personnel of the project developer and its contractors
- Draft validation reporting
- Resolution of corrective actions (if any)
- Final validation reporting
- Technical review
- Final approval of the validation

The sequence of the validation is given in the table 3.1 below:

**Table 3.1:** Validation sequence

Topic	Time
Assignment of validation	2012/01/11
Submission of PDD for global stakeholder commenting process	2012/01/20
On-site visit date	2012/02/20-23
Draft reporting finalised	2012/02/23
Final reporting finalised	2012/04/02
Technical review and minor changes on final reporting finalised	2012/08/14

#### 3.2 Contract review

To assure that

- the project falls within the scopes for which accreditation is held,
- the necessary competences to carry out the validation can be provided,

- Impartiality issues are clear and in line with the CDM accreditation requirements

a contract review was carried out before the contract was signed.

### 3.3 Appointment of team members and technical reviewers

On the basis of a competence analysis and individual availabilities, a validation team, consisting of one team leader and 1 additional team members, as well as the Technical Review personnel were appointed.

The list of involved personnel, the tasks assigned and the qualification status are summarized in the table 3-2 below.

**Table 3-2:** Involved Personnel

	Name	Company	Function <sup>1)</sup>	Qualification Status <sup>2)</sup>	Scheme competence <sup>3)</sup>	Technical competence <sup>4)</sup>	Host country Competence	On-site visit
<input checked="" type="checkbox"/> Mr. <input type="checkbox"/> Ms.	Raul Gonzalez Mitre	BRTÜV	TL <sup>A)</sup>	LA	<input checked="" type="checkbox"/>	1.2	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<input checked="" type="checkbox"/> Mr. <input type="checkbox"/> Ms.	Abraham Garza Alvarez	BRTÜV	TM <sup>A)</sup>	A	<input type="checkbox"/>	1.2	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<input checked="" type="checkbox"/> Mr. <input type="checkbox"/> Ms.	Martin Emilio	TÜV NORD, Germany	TR <sup>B)</sup>	LA	<input checked="" type="checkbox"/>	1.2	<input type="checkbox"/>	-
<input type="checkbox"/> Mr. <input checked="" type="checkbox"/> Ms.	Alexandra Nebel	TÜV NORD, Germany	FA <sup>B)</sup>	SA	<input checked="" type="checkbox"/>		<input type="checkbox"/>	-

<sup>1)</sup> TL: Team Leader; TM: Team Member; TR: Technical review; OT: Observer-Team; OR: Observer-TR; FA: Final approval

<sup>2)</sup> GHG Auditor Status: A: Assessor; LA: Lead Assessor; SA: Senior Assessor; T: Trainee; TE: Technical Expert

<sup>3)</sup> GHG auditor status (at least Assessor)

<sup>4)</sup> As per S01-MU03 or S01-VA070-A2 (such as 1.1, 1.2, ...)

<sup>5)</sup> In case of verification projects

<sup>A)</sup> Team Member: GHG auditor (at least Assessor status), Technical Expert (incl. Host Country Expert or Verification Expert), not ETE

<sup>B)</sup> No team member

Technical Experts contributed to the assessment of special aspects of the project activity, e.g. technical or host country aspects.

In order to qualify further personnel the project team was accompanied by observers and/or trainees as indicated in the table above. They are usually not considered as team members.

Statements of competence for the above mentioned team members are enclosed in annex 6 of this report.

### **3.4 Consideration of Public Stakeholder Comments**

Acc. to the modalities and procedures the draft PDD, as received from the project participants, has been made publicly available on the dedicated UNFCCC CDM website prior to the validation activity commenced. Stakeholders have been invited to comment on the PDD within the 30 days public commenting period.

In case comments are received, they are taken into account during the validation process. The comments and the discussion of the same are documented in annex 5 of this report.

### **3.5 Validation Protocol**

In order to ensure consideration of all relevant assessment criteria, a validation protocol is used. The protocol shows, in a transparent manner, criteria and requirements, means of validation and the results from pre-validating the identified criteria. The validation protocol reflects the generic CDM requirements each CDM project has to meet as well as project specific issues as applicable. The validation protocol serves the following purposes:

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

The validation protocol is described in Figure 1.

<b>Validation Protocol Table A-1: Requirement checklist</b>				
<b>Checklist Item</b>	<b>Validation Team Comment</b>	<b>Reference</b>	<b>Draft Conclusion</b>	<b>Final Conclusion</b>
<i>The checklist items in Table A-1 are linked to the various requirements the project should meet. The checklist is organised in various sections. Each section is then further sub-divided as per the requirements of the topic and the individual project activity.</i>	<i>The section is used to elaborate and discuss the checklist item in detail. It includes the assessment of the validation team and how the assessment was carried out. The reporting requirements of the VVM shall be covered in this section.</i>	<i>Gives reference to the information source on which the assessment is based on</i>	<i>Assessment based on evidence provided if the criterion is fulfilled (OK), or a CAR, CL or FAR (see below) is raised. The assessment refers to the draft validation stage.</i>	<i>In case a corrective action or a clarification the final assessment at the final validation stage is given.</i>

**Figure 1:** Validation protocol table

The completed validation protocol is enclosed in Annex 1 to this report.

### 3.6 Review of Documents

The published PDD and supporting background documents related to the project design and baseline were reviewed.

Furthermore, the validation team used additional documentation by third parties like host party legislation, technical reports referring to the project design or to the basic conditions and technical data.

### 3.7 Site Visit and Follow-up Interviews

The validation team has carried out a site visit in order to assess the information included in the project documentation and to gain additional information regarding the compliance of the project with the relevant criteria applicable for CDM.

During validation the validation team has performed interviews to confirm selected information and to resolve issues identified in the document review. The main topics of the interviews are summarized in table 3-3.

**Table 3-3:** Interviewed persons and interview topics

<b>Interviewed Persons / Entities</b>	<b>Interview topics</b>
Project proponent representatives Project consultant	<ul style="list-style-type: none"> <li>- Chronological description of the project activity with documents of key steps of the implementation.</li> <li>- Current status of plant design</li> <li>- Technical details of the project realization, project</li> </ul>

Interviewed Persons / Entities	Interview topics
	feasibility, designing, operational life time, monitoring of the project - Host Government Approval - Approval procedures and status - Monitoring and measurement equipment and system. - Financial aspects - Crediting period - Project activity starting date - CER allocation / ownership - Baseline study assumptions - Additionality - Sustainable development issues - Monitoring - Analysis of local stakeholder consultation - Roles & responsibilities of the project participants w.r.t. project management, monitoring and reporting - National Legislation - Editorial issues of the PDD

A comprehensive list of all interviewed persons is part of section 7 'References'.

### 3.8 Project comparison

The validation team has compared the proposed CDM project activity with similar projects or technology that have similar or comparable characteristics and with similar projects in the host country in order to achieve additional information esp. regarding:

- Project technology
- Additionality issues
- Reasons for reviews, requests for reviews and rejections within the CDM registration process.

### 3.9 Resolution of Clarification and Corrective Action Requests

#### 3.9.1 Definition

A **Corrective Action Request (CAR)** will be established where:

- mistakes have been made in assumptions, application of the methodology or the project documentation which will have a direct influence the project results,

- the requirements deemed relevant for validation of the project with certain characteristics have not been met or
- there is a risk that the project would not be registered by the UNFCCC or that emission reductions would not be able to be verified and certified.

A **Clarification Request (CL)** will be issued where information is insufficient, unclear or not transparent enough to establish whether a requirement is met.

A **Forward Action Request (FAR)** will be issued when certain issues related to project implementation should be reviewed during the first verification.

### 3.9.2 Draft Validation

After reviewing all relevant documents and taken all other relevant information into account, the validation team issues all findings in the course of a draft validation report and hands this report over to the project proponent in order to respond on the issues raised and to revise the project documentation accordingly.

### 3.9.3 Final Validation

The final validation starts after issuance of the proposed corrective action (CA) of the CARs, CLs and FARs by the project proponent. The project proponent has to reply on those and the requests are “closed out” by the validation team in case the response is assessed as sufficient. In case of raised FARs the project proponent has to respond on this, identifying the necessary actions to ensure that the topics raised in this finding are likely to be resolved at the latest during the first verification. The validation team has to assess whether the proposed action is adequate or not.

In case the findings from CARs and CLs cannot be resolved by the project proponent or the proposed action related to the FARs raised cannot be assessed as adequate, no positive validation opinion can be issued by the validation team.

The CAR(s) / CL(s) / FAR(s) are documented in chapter 4.

## 3.10 Technical review

Before submission of the final validation report a technical review of the whole validation procedure is carried out. The technical reviewer is a competent GHG auditor being appointed for the scope this project falls under. The technical reviewer is not considered to be part of the validation team and thus not involved in the decision making process up to the technical review.

As a result of the technical review process the validation opinion and the topic specific assessments as prepared by the validation team leader may be confirmed or revised. Furthermore reporting improvements might be achieved.



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### **3.11 Final approval**

After successful technical review of the final report an overall (esp. procedural) assessment of the complete validation will be carried out by a senior assessor located in the accredited premises of TÜV NORD.

Only after this step the request for registration can be started (in case of a positive validation opinion).

## 4 VALIDATION FINDINGS

In the following table the findings from the desk review of the published PDD, visits, interviews and supporting documents are summarised:

**Table 4-1:** Summary of CARs, CLs and FARs issued

Validation topic <sup>1)</sup>	No. of CAR	No. of CL	No. of FAR
General description of project activity (A) - Project specification - Technical project description - Participation - Contribution to sustainable development - PDD editorial aspects - Technology to be employed	1	2	-
Project Baseline, Additionality and Monitoring Plan (B) - Application of the Methodology - Project Boundary - Baseline identification - Calculation of GHG emission reductions Project emissions Baseline emissions Leakage - Additionality determination - Monitoring Methodology - Monitoring Plan - Project management planning	9	7	-
Duration of the Project / Crediting Period (C)	1	1	-
Environmental impacts (D)	-	-	-
Stakeholder Comments (E)	-	-	-
<b>SUM</b>	<b>11</b>	<b>10</b>	<b>-</b>

<sup>1)</sup> The letters in brackets refer to the validation protocol

**Table 4-2:** PDD versions used for assessments

Version Nr.	Assessment Round
PDD v. 1 (Published)	On site visit assessment

Version Nr.	Assessment Round
PDD v. 2	DOE Assessment #1
PDD v. 3 (Final)	DOE Assessment #2

The following tables include all raised CARs, CLs and FARs. For an in depth evaluation of all validation items it should be referred to the validation protocols (see Annex 1).

Finding:	CAR A1		
<b>Classification</b>	<input checked="" type="checkbox"/> CAR	<input type="checkbox"/> CL	<input type="checkbox"/> FAR
<b>Description of finding</b> <i>Describe the finding in unambiguous style; address the context (e.g. section)</i>	At the time of validation the letter of approval is missing.		
<b>Corrective Action #1</b> <i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i>	Letter of Approval submitted.		
<b>DOE Assessment #1</b> <i>The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i>	<p>The PP has provided the LoA of the host country referring to the precise project title in the PDD submitted for registration "Ckani Wind Farm Project". As there is only one party involved, no other approvals are required for this project.</p> <p>The DNA listed in the UNFCCC web site is "<i>Ministerio de Ambiente Chile</i>" – Ministry of Environment of Chile - which has issued the LoA of the project activity.</p> <p>The LoA confirms that Chile is a Party to the Kyoto Protocol, the participation of <i>AM Eolica Alto Loa SpA</i> is voluntary and the project activity contributes to the sustainable development in the country.</p> <p>The validation team has checked the LoA of the project activity. No discrepancies were identified.</p> <p><b>CAR is closed.</b></p>		
<b>Conclusion</b> <i>Tick the appropriate checkbox</i>	<input type="checkbox"/> To be checked during the first periodic verification <input type="checkbox"/> Additional action should be taken (finding remains open) <input checked="" type="checkbox"/> The finding is closed		

Finding:	CL A2		
<b>Classification</b>	<input type="checkbox"/> CAR	<input checked="" type="checkbox"/> CL	<input type="checkbox"/> FAR

Finding:	CL A2
<p><b>Description of finding</b> <i>Describe the finding in unambiguous style; address the context (e.g. section)</i></p>	<p>According to the guidelines for completing the PDD the following information is missing:</p> <ul style="list-style-type: none"> <li>• <b>Section A.2:</b> the scenario existing prior to the start of the implementation of the project activity (Greenfield project) is missing. Furthermore description of the baseline scenario, as identified in section B.4 is also missing.</li> <li>• <b>Section A.4.3:</b> The scenario existing prior to the start of the implementation of the project activity. The monitoring equipments and their location in the systems. Moreover references for the information about the age and average lifetime of the equipments and the PLF are missing.</li> </ul>
<p><b>Corrective Action #1</b> <i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i></p>	<p>Section A.2: The PDD v2, indicates that the project is a Greenfield project and also includes a description of the baseline (scenario prior to the start of the implementation of the project activity)</p> <p>Section A.4.3: The PDD v2, includes a description of the scenario prior to the start of the implementation of the project, a brief description of the monitoring equipment and their location and also a reference about the project lifetime and plant load factor.</p>

Finding:	CL A2
<p><b>DOE Assessment #1</b></p> <p><i>The assessment shall encompass all open issues in annex A-2. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i></p>	<p>The PP has provided revised PDD which has been checked by the validation team as follows:</p> <ul style="list-style-type: none"> <li>Section A.2 has been updated and now the detail description of the baseline scenario and the scenario existing prior to the start of the implementation of the project activity has been included. The proposed project activity is a greenfield project consisting in a wind farm for the production of electricity. Therefore, both scenarios are the same and in the absence of the project activity the same power output would have been generated by the SING interconnected system.</li> </ul> <p>The validation team has checked the description and it has been found correct and in accordance with the real project situation and with the applicable methodology ACM0002 Version 12.2</p> <ul style="list-style-type: none"> <li>Section A.4.3 has been updated and now the detail description of the baseline scenario and the scenario existing prior to the start of the implementation of the project activity has been included. This description is consistent with the one stated in Section A.2 of the PDD</li> </ul> <p>In addition, further information about the power meter (Class 0.2 and bidirectional) so as the general monitoring system of the wind farm (SCADA) and the PLF has been included in Section A.4.3. Furthermore, information about the expected operational lifetime of the project activity (20 years) as per the Turbine Supply Agreement<sup>/PSD/</sup> has been included. The validation team has checked the description and it has been found correct and in accordance with the expected project situation and with the provided evidences<sup>/PSD/ &amp; /PLF/</sup>.</p> <p>Therefore, based on the above corrections, the validation team concludes that the PDD has been filled up based on the latest guidelines for completing the PDD.</p> <p>Nevertheless in section 4.1.4, the coordinates are given in UTM, but the description of the zone is no complete. Beside that: in the PDD there only 11 points representing the project layout instead of 22 for each turbine.</p> <p><b><u>CL remains open.</u></b></p>

Finding:	CL A2
<b>Corrective Action #2</b> <i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i>	<p>Effectively the zone description was not complete, the term “south” was included but the number of the zone is correct since in Chile there are two UTM zones:</p> <ul style="list-style-type: none"> <li>- North: Wich corresponds to the Zone 19, 69°W, and</li> <li>-South: Zone 18, 75°W</li> </ul> <p>(Explanation available at: <a href="http://sit.gore6.cl/sir6/glosario.html">http://sit.gore6.cl/sir6/glosario.html</a> section “PROYECCIÓN UTM”).</p> <p>According to this, the zone description should be “Zone 19 south”.</p> <p>The points represented in Table 2 (page 4 and 5) correspond to the points that delimit the project layout and where taken from the Environmental Impact Statement (DIA) page 8. Nevertheless we changed these coordinates for the ones indicating the location of the 160 turbines. These are stated in the Project Layout by SGA from June, 2011 (this document was presented to the DOE during Validation).</p>
<b>DOE Assessment #2</b> <i>The assessment shall encompass all open issues in annex A-2. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i>	<p>Section 4.1.4 was corrected and coordinates of all turbines were included. The Project Layout was checked. No discrepancies were identified.</p> <p><b><u>CL is closed.</u></b></p>
<b>Conclusion</b> <i>Tick the appropriate checkbox</i>	<p><input type="checkbox"/> To be checked during the first periodic verification</p> <p><input type="checkbox"/> Additional action should be taken (finding remains open)</p> <p><input checked="" type="checkbox"/> The finding is closed</p>

Finding:	CL A3
<b>Classification</b>	<input type="checkbox"/> CAR <input checked="" type="checkbox"/> CL <input type="checkbox"/> FAR
<b>Description of finding</b> <i>Describe the finding in unambiguous style; address the context (e.g. section)</i>	<p><b>Section A.4.3</b> it is not clarified how know-how and technology would be transferred to the host country.</p>
<b>Corrective Action #1</b> <i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i>	<p>The PDD v2, stated that the turbines is going to be designed, engineered and manufactured by Goldwind; and also that Goldwind is going to transfer to the Host Party its know-how by means of training the power plant staff during the construction, commissioning and operation of the project activity.</p>

Finding:	CL A3
<p><b>DOE Assessment #1</b></p> <p><i>The assessment shall encompass all open issues in annex A-2. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i></p>	<p>The validation team has checked the revised PDD provided by the PP and it has been identified that Section A.4.3 has been corrected. Further information about the project technology supplier has been included.</p> <p>The wind turbines will be provided by Goldwind which is a recognized Chinese company with large experience in the manufacturing of wind turbines. In addition, training will be provided to the project operators resulting in the transfer of know-how about the implementation of wind power projects. The Goldwind website<sup>/goldwind/</sup> has been checked so as the Turbine Supply Agreement<sup>/PSD/</sup>.</p> <p>Hence, it is concluded that the PDD has been filled up in accordance to the latest guidelines available. The PDD is assessed to be complete and correct.</p> <p>Section A.4.3. – CL A2 (PDD guidelines: “The monitoring equipments and their location in the system is of particular interest”) it is described that the meter is at the substation at the project site: where the meter will be installed, will it be before or after the trafo (on the 34 kV or the 220 kV side)?. On the other side, please clarify, how the transmission losses from substation to grid connection point will be considered, taking into account that there is a transmission line connecting the substation with the grid connection point</p> <p><b><u>CL remains open.</u></b></p>

Finding:	CL A3
<b>Corrective Action #2</b> <i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i>	<p>Before answering this CL it is important to clarify the electric connection of the project:</p> <p>The wind turbines of the project will have unit transformers that will elevate the energy generated from 690V to 34.5kV. The energy from the wind turbines will be conducted through an underground cable (34.5kV) and a ground transmission line (34.5kV) to the nearest project substation where the energy will be transformed from 34.5kV to 220kV.</p> <p>There are considered two project substations (34.5kV-220kV) one located at the south side of the project and the other at the north side. The south side substation will be connected to the the north side project substation where the meter will be located specifically at the exit side (220kV side). This is the conection point to the SING grid. From there will be a ground transmission line (220kV) that will connect the north substacioint of the project to the existing substation of El Abra.</p> <p>About the transmission loses, as it was mentioned above the point of injection to the SING grid is the 220 kV side of the north substation of the project, where the meter will be located. The energy measured at this point will be cross checked against the records for sold energy and if there is any difference and in a conservative way the lower value will be considered to calculate the emission reductions.</p>
<b>DOE Assessment #2</b> <i>The assessment shall encompass all open issues in annex A-2. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i>	<p>Clarification was provided regarding meter's location. The main meter will be located at the exit side (220kV side) in the project substation where the net energy generation will be injected in the grid. Therefore invoicing will be based on energy measured in this point. According to DOE expertise this is the common practice in wind power projects in Latin America. The PDD fulfils the requirements described in the PDD-Guidelines and the applied methodology.</p> <p><b><u>CL is closed.</u></b></p>
<b>Conclusion</b> <i>Tick the appropriate checkbox</i>	<input type="checkbox"/> To be checked during the first periodic verification <input type="checkbox"/> Additional action should be taken (finding remains open) <input checked="" type="checkbox"/> The finding is closed

Finding:	CL B1
<b>Classification</b>	<input type="checkbox"/> CAR <input checked="" type="checkbox"/> CL <input type="checkbox"/> FAR
<b>Description of finding</b> <i>Describe the finding in unambiguous style; address the context (e.g. section)</i>	<p><b>Section B.3</b> Table 5 and Figure 3 for the project boundary are not as per the applicable methodology ACM0002 Version 12.2.</p>



Finding:	CL B1
<b>Corrective Action #1</b> <i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i>	The table and figure were modified in the PDD v2 according the methodology.
<b>DOE Assessment #1</b> <i>The assessment shall encompass all open issues in annex A-2. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i>	<p>Section B.3 of the revised PDD has been checked by the validation team and it has been identified that Table 5 includes all emission sources considered by the applicable methodology ACM0002 Version 12.2. In addition, Figure 3, has been corrected and now it has also included all power plants connected to the SING grid system</p> <p>The validation team has checked the information of Section B.3 against the provisions from the applicable methodology ACM0002 Version 12.2 and all information was found correct and consistent with the applicable tool.</p> <p>Therefore, it is concluded that the project's spatial boundaries (geographical) are clearly defined and in accordance with the applicable methodology ACM0002 Version 12.2</p> <p>Nevertheless according to the PDD-Guidelines the following information is missing in the flow diagram: <i>all the equipments, systems and flows of mass and energy described in this section. <u>Particularly, represent in the diagram the emissions sources and gases included in the project boundary and the monitoring variables.</u></i></p> <p><b><u>CL remains open.</u></b></p>
<b>Corrective Action #2</b> <i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i>	In accordance to the clarification stated above, the PDD flow diagram was completed considering the the emissions source and the gases included in the project boundary and the monitoring variables.
<b>DOE Assessment #2</b> <i>The assessment shall encompass all open issues in annex A-2. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i>	Further information was included in the flow diagram detailing relevant equipment and <u>the emissions sources included in the project boundary and the monitoring variables</u> . The PDD fulfils the requirements described in the PDD-Guidelines and the applied methodology. <p><b><u>CL is closed.</u></b></p>
<b>Conclusion</b> <i>Tick the appropriate checkbox</i>	<input type="checkbox"/> To be checked during the first periodic verification <input type="checkbox"/> Additional action should be taken (finding remains open) <input checked="" type="checkbox"/> The finding is closed

Finding:	CAR B2		
<b>Classification</b>	<input checked="" type="checkbox"/> CAR	<input type="checkbox"/> CL	<input type="checkbox"/> FAR

Finding:	CAR B2
<b>Description of finding</b> <i>Describe the finding in unambiguous style; address the context (e.g. section)</i>	The project starting date has occurred prior to Global Stakeholders Consultation. Correction is necessary in section B.5
<b>Corrective Action #1</b> <i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i>	The publication date of the prior consideration form is indicated in the section B.5 of the PDD v2.
<b>DOE Assessment #1</b> <i>The assessment shall encompass all open issues in annex A-2. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i>	Section B.5 was corrected. The project start date is after 2 <sup>nd</sup> August 2008 and formal notifications using the appropriate CDM Form <sup>/PSD-3/</sup> were sent to host party DNA <sup>/PSD-4/</sup> and to the UNFCCC secretariat in December 2011, i.e. within 6 months of the project starting date.  <u><b>CAR is closed.</b></u>
<b>Conclusion</b> <i>Tick the appropriate checkbox</i>	<input type="checkbox"/> To be checked during the first periodic verification <input type="checkbox"/> Additional action should be taken (finding remains open) <input checked="" type="checkbox"/> The finding is closed

Finding	CL B3
<b>Classification</b>	<input type="checkbox"/> CAR <input checked="" type="checkbox"/> CL <input type="checkbox"/> FAR
<b>Description of finding</b> <i>Describe the finding in unambiguous style; address the context (e.g. section)</i>	In section B.5 of PDD, Sub-step 1a. Alternative b) “ <i>The implementation of a fossil fuel based thermoelectric power plant, with an installed capacity that will make it efficient and comparable with the installed power capacity of Ckani Wind Farm Project</i> ” is included as an alternative for the project activity. Nevertheless, it is not further assessed or evaluated in Section B.5 against the project activity scenario to determine if it is a plausible baseline scenario.
<b>Corrective Action #1</b> <i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i>	This scenario is not included in the PDD v2.

Finding	CL B3
<b>DOE Assessment #1</b> <i>The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i>	<p>The PP has provided a revised PDD in which alternative b) “<i>The implementation of a fossil fuel based thermoelectric power plant, with an installed capacity that will make it efficient and comparable with the installed power capacity of Ckani Wind Farm Project</i>” has been removed from Section B.5.</p> <p>The validation team has checked this change against the applicable methodology ACM0002 Version 12.2 and it has been considered correct as the methodology already defines the baseline scenario as “<i>Electricity delivered to the grid by the project activity would have otherwise been generated by the operation of grid-connected power plants and by the addition of new generation sources, as reflected in the combined margin (CM) calculations described in the “Tool to calculate the emission factor for an electricity system”.</i> Therefore, elimination of alternative b) is considered correct and now Section B.5 only considers in the list of alternatives the status-quo and the proposed project activity not undertaken as a CDM project</p> <p>It is concluded that the identification of alternative is in accordance with the applicable methodology ACM0002 Version 12.2 and with the real scenario of the PP as in the absence of the project activity no other type of power plant would be installed and therefore the power would be generated from the SING grid system.</p> <p><b><u>CL is closed.</u></b></p>
<b>Conclusion</b> <i>Tick the appropriate checkbox</i>	<input type="checkbox"/> To be checked during the first periodic verification <input type="checkbox"/> Additional action should be taken (finding remains open) <input checked="" type="checkbox"/> The finding is closed

Finding	CL B4
<b>Classification</b>	<input type="checkbox"/> CAR <input checked="" type="checkbox"/> CL <input type="checkbox"/> FAR
<b>Description of finding</b> <i>Describe the finding in unambiguous style; address the context (e.g. section)</i>	In section B.5 of PDD, Sub-step 2b it is not stated the selected IRR.
<b>Corrective Action #1</b> <i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i>	The financial calculation chosen by PP is carried out for project IRR considering 100% equity.
<b>DOE Assessment #1</b> <i>The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i>	<p>Correction was done in section B.5 of the PDD. The project was evaluated considering 100% equity because no debt was used in the investment; therefore no loan repayments and interests were included in the project IRR calculation. Therefore project IRR is the financial indicator chosen and considering 100% equity.</p> <p><b><u>CL is closed.</u></b></p>

Finding	CL B4
<b>Conclusion</b> <i>Tick the appropriate checkbox</i>	<input type="checkbox"/> To be checked during the first periodic verification <input type="checkbox"/> Additional action should be taken (finding remains open) <input checked="" type="checkbox"/> The finding is closed

Finding	CAR B5
<b>Classification</b>	<input checked="" type="checkbox"/> CAR <input type="checkbox"/> CL <input type="checkbox"/> FAR
<b>Description of finding</b> <i>Describe the finding in unambiguous style; address the context (e.g. section)</i>	<p>Some value of the total investment/costs were wrongly applied or no evidence were provided to crosscheck the value* applied:</p> <ul style="list-style-type: none"> <li>• Engineering</li> <li>• Site access roads</li> <li>• Public roads updates</li> <li>• Turbine Transport</li> <li>• Turbine Erection</li> <li>• 34.5 kV Collector Underground cable</li> <li>• 34.5 kV Collector single Circuit Overhead Line</li> <li>• 690-34.5 kV unit transformer</li> <li>• Turbines</li> <li>• Outage Temporary Generation *</li> <li>• Grid compliance equipment *</li> <li>• O&amp;M</li> <li>• Other costs</li> </ul>
<b>Corrective Action #1</b> <i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i>	<p>The values wrongly applied where changed and the items with no evidence were removed in PDD v2.</p>

Finding	CAR B5
<p><b>DOE Assessment #1</b></p> <p><i>The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i></p>	<p>All values where mistakes were identified were corrected by the PP. The validation team has checked all sources and were correctly justified by the PP. Where no evidence was presented during on site visit, traceable evidence were later provided and checked by the validation team. For further assessment on financial analysis, please refer to Annex 3.</p> <p>Nevertheless further clarification/correction is necessary:</p> <ul style="list-style-type: none"> <li>a) Clarification is required whether the cost of the met masts is a sunk cost or not. For this, please clarify whether the met masts are aimed to get weather data during the exploitation of the wind park or just during the exploration to determine the feasibility of its location.</li> <li>b) Clarification is required whether the cost of the substation is to be undertaken by the PP and not by the grid operator. Please provide evidence.</li> <li>c) Clarification is required whether the cost of the transmission line is to be undertaken by the PP and not by the net operator, especially considering that independently of the cost of the transmission line, transmission fees are charged?</li> <li>d) Tab "prices-cost" shows the price of the items others in € and \$. Please clarify what is the correct currency unit</li> <li>e) Clarification is required regarding the meaning of "firm capacity" and how it is determined. If it refers to the maximum power dispatched to the grid, clarify how it is possible that the PLF is much higher than the firm capacity?</li> <li>f) Clarification is required whether the depreciation of non-tangible assets is allowed, like for example: turbine fundamentals, roads, etc.</li> <li>g) Clarification is required whether the quantification of costs in US\$ for activities like: road construction, turbine fundamentals construction, and the maintenance, typically works done by local companies, is appropriate.</li> <li>h) Please clarify on the meaning of "other costs" as operational costs.</li> </ul> <p><b><u>CAR remains open.</u></b></p>

Finding	CAR B5
<p><b>Corrective Action #2</b></p> <p><i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i></p>	<p>a) Effectively the cost of the exploring met mast from which the data of wind measured was taken to perform Garrad Hassan's wind study is a sunken cost, therefore it was not considered in the financial evaluation of the project. At the moment of construction two exploitation met masts will be installed. These exploitation met mast will measure the wind power curve to compare it with the real energy production of the turbines in order to check that the guaranties of the supplier of the turbines are being met. Therefore, these exploitation met masts are the ones considered in the financial evaluation.</p> <p>b) and c) The investment associated to the 34.5kV ground transmission line, the two project substations (34.5kV/220kV), the 220kV ground transmission line (wich connects the north side project substation to "El Abra" substation) and the extension in El Abra's substation is going to be paid by the project participant. The investment prices associated to this items are stated in the study Wind Farm Connection Report by Reich Ingenieria" page 4 (this document was presented to the DOE during validation).</p> <p>In relation to the transmission fee, effectively the PP will have to pay an amount to the actual grid operator (E-CL), this transmission fee is associated to the investment in the improvements in the transmission line operated by E-CL (this is the line that connects the El Abra substation to Cruceros Substation) and to the operation and maintenance of it . The calculation of the transmission fee is regulated in the electricity Chilean law DFL-4/20018 <a href="http://www.cne.cl/archivos_bajar/DFL_N4.pdf">http://www.cne.cl/archivos_bajar/DFL_N4.pdf</a>. At the time of the investment decision the PP considered as a conservative approach that the transmission fee value will be at least 41,666 USD/month. This value corresponds to the transmission fee estimated for Cuel wind farm project. It is conservative to consider this value, since it is expected that the transmission fee for Ckani Wind farm project will be higher because it corresponds to a larger transmission line (101km considered for the energy transportation from El Abra's substation to the substation of "Crucero" vs 9.2 km considered for the energy transportation in the grid transmission line of Cuel's wind farm project) and due to a higer voltage in the transmited energy (220kV considered in Ckani wind farm project vs 154kV considered in Cuel wind farm project), which implies a much larger investment and O&amp;M costs, and therefore a higher transmission fee.</p> <p>At the present time there is still no technical proposal for a transmission fee payment signed between the project participant and the grid operator.</p>

Finding	CAR B5
	<p>It's important to note that according to the electricity Chilean law (DFL-4/20018;) the Chilean electricity system is subject to an open access regimen meaning that any generation company could invest in the extension to the electric system in order to connect the new project to the grid. And the transmission fee to be charged is also calculated according to the Chilean electricity law (this document is sent along with this report).</p> <p>d) Effectively the prices presented in the Tab "prices/cost" from the Financial evaluation spreadsheet are expressed in different currency in accordance to the value listed in the backup document from where the value was taken from. In the case of the the energy and firm capacity price, the original value is in USD\$ stated in the Report Node Price-"Informe precio Nudo". Frame N° 4. Page 11. In the case of the Operational Costs, the values of the items "transmission fee" and "O&amp;M Costs" are stated in USD\$ and the value from the item "Others" are stated in euros in the original documents. These values were transformed to USD\$ considering the exchange rate informed by the Central Bank of Chile on the 20<sup>th</sup> of December, 2011(values stated in the "Parameters-Factors" tab). It is important to clarify that all the values of the financial evaluation data (investment, costs, energy and power prices, etc.) are transformed and presented in million of USD\$ in the tab "summarize data".</p> <p>e) In the Article N°259 of the Supreme decree N°327 which corresponds to the "Regulation of the General Law of Electric Services" (this document is sent along with this report), it is defined the firm capacity as the <i>maximum power that a generator can inject and transmit to the transmission systems in the peak hours of the system, considering its probable unavailability</i> (this concept was added in the PDD). The calculation is established by the Economic Load Dispatch Center (CDEC) and it is described in the document "Calculation and determination of firm capacity by CDEC-SING" (handed to the DOE during validation). which is based in the preliminary firm capacity of the power plant adjusted by a unique factor defined as the quotient between the maximum demand of the system (which corresponds to the gross demand of the SING minus the own consumption of the power plants, registered during the peak period defined as the labour days of the year between 18:00 and 23:00 hrs during winter time and between 19:00 and 24:00 hrs during summer time) and the sumatory of the preliminary firm capacity of each power plant of the grid.</p>



Finding	CAR B5
	<p>Since the preliminary firm capacity of the project is not able to be determined until its starts operation, this value was estimated considering the highest firm capacity value of all grid connected wind power plants operating in Chile during the latest available years (2009, 2010 and 2011). In this case the maximum firm capacity recognized by the CDEC corresponds to 16% as it can be seen in "Firm C. Data" tab in the financial evaluation spreadsheet. As it can be seen in the documents "Definitive calculation of firm capacity year 2011 by CDEC-SIC" and also from the years 2010 and 2009 (all of them presented to the DOE during validation), the recognized firm capacity for wind farms is lower than others type of technologies since it depends on the wind source which is variable resource.</p> <p>It must be noted that the firm capacity and the plant load factor (PLF) are refered to different aspects, that is why values are not comparable.</p> <p>f) According to the "Fixed assets lifetime table" of the Internal Revenue Service of Chile (SII), the roads and turbine foundations are depreciable assets as it can be seen letters A.6) and E.18) respectively (information available at SII Web Page: <a href="http://www.sii.cl/pagina/valores/bienes/tabla_vida_enero.htm">http://www.sii.cl/pagina/valores/bienes/tabla_vida_enero.htm</a>.) In another hand, the Engineering and transport costs considered in the Investment costs of the project, are not considered as depreciable assets by the SII hence they where not depreciated in the financial evaluation. Therefore according to the Internal Revenue Service of Chile the depreciation of turbine fundaments and roads is allowed.</p> <p>g) Effectively the items of road construction and turbine foundations were taken from an international quote and is appropriate since the cost per this item depends mainly on the prices of concrete and steel, this prices in Chile are similar that the one considered at international level, in fact it is expected that the cost of investment per this item is the same as other countries or even higher due to the transportation cost to Chile. Furthermore, the cost of investment of this project (1,563 USD\$/kW) is in the lower range estimated by the Center of Renewable Energies of Chile (CER), a recognized national authority in this matter, for on-shore projects in Chile (1,206-2,438 USD\$/kW) as it can be seen in the public study "Wind Energy" (this study is sent along with this report and also can be checked at the CER Web page: <a href="http://cer.gob.cl/tecnologias/files/2011/12/libro_eolica.pdf">http://cer.gob.cl/tecnologias/files/2011/12/libro_eolica.pdf</a>.)</p> <p>In the case of Maintenance costs, this value is taken from the price stated by the turbine supplier, which is a specific quote for this project considering that it is going to be developed in Chile.</p>



Finding	CAR B5
	<p>h) The item of “other cost” was calculated considering the study named “The Economics of Wind Power, Part III” page 20. According to this study the “other cost” includes the sub-items of insurance, land rent, administration, power from the grid, service and spare parts and miscellaneous. To be conservative the value calculated for this item is based in the minimum range of the values stated in the mentioned study in page 19 (1.2-1.5c€/kW). Since the sub-item of “service and spare parts” (26% of the “other costs”) corresponds to the services of O&amp;M costs stated in the TSA of Goldwind, “other costs” was calculated only considering the 74% of the total value, i.e. 1.2c€x0.74.</p> <p>It is important to note that the total value considered for the Operational Costs (O&amp;M plus other costs) corresponds to 18.67 USD\$/kWh; wich is in accordance with the range of values estimated by the International Energy Agency, IEA(<a href="http://www.iea.org">http://www.iea.org</a>) for Operational costs for onshore wind projects (14-26 USD\$/MWh) which also includes the costs of insurance, regular maintenance, spare parts, repair and administration. This information is stated at the report “Renewable Energy Essentials: Wind” page 2, and is is sent along with this report).</p>

Finding	CAR B5
<p><b>DOE Assessment #2</b></p> <p><i>The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i></p>	<p>a) Clarification was provided regarding the cost of the met masts. According to the PP the met masts considered in the financial evaluation are exploitation met mast which will measure the wind power curve to compare it with the real energy production of the wind turbines. This will be performed in order to assure that the WTG supplier's guaranty is met. According to DOE expertise this kind of masts are normally installed. The Cost Model Budget Proposal by Mortenson Construction<sup>/FD-1/</sup> (Page 3) which is the data source was checked. Two met towers are considered in the construction proposal. Furthermore as it is a component of total investment, the cross-check of total investment cost per MW has been carried out to ensure that input data is conservative. A detailed assessment of all investment parameters was carried out in Table A-3 located in Annex 3. Therefore clarification provided by the PP is considered plausible.</p> <p>b) Clarification was provided regarding the cost of the substations and transmission lines. According to the PP the project substations and transmission lines have to be built and paid by the project activity. The values applied was evidenced through the Wind Farm Connection Report<sup>/FD-6/</sup> by Reich Ingenieria (page 4). This is a normal operation in Chile for projects that aim to connect to a grid. The cost of the substation has to be paid lonely by the project activity as no other projects are located surrounding the project activity.</p> <p>c) Normally the grid operators have to invest in the transmission system in order to be able to receive the energy generated from the new wind farms. This investment (including also the operation and maintenance) is considered in the transmission fee which is the normal practice in Chile and in several countries in Latin America.</p> <p>d) Clarification was provided regarding different currency stated in the investment calculation. The PP has included the original currency stated in the source or reference. In this cases an exchange rate to USD dollar was applied. Proper assessment of date and source of the exchange rate was assessed by the validation team for the parameters: energy price, price of firm capacity and other costs. A detailed assessment of all investment parameters was carried out in Table A-3 located in Annex 3.</p>

Finding	CAR B5
	<p>e) Clarification regarding the meaning of "firm capacity" was provided by the PP. Definition of firm capacity is provided from the Article N°259 of the Supreme decree N°327 which corresponds to the "Regulation of the General Law of Electric Services". CDEC is the entity who calculates the firm capacity recognized to a power plant based on the availability of the power plant at pick hours. Therefore this is calculated based on <u>historical</u> information of energy generation of each power plant. The PP has calculated the firm capacity of the project activity using the firm capacity recognized<sup>/FD-10, FD-11 FD-12, FD-15 &amp; FD-16/</sup> for all wind power plants connected to any Chilean grid during the last 3 years (2009-2011). As a result the PP has taken the higher firm capacity recognized to a wind power plant (16%). The average firm capacity recognized to all wind power plants in the last three years is 12.6%. Therefore the assumption taken by the PP is considered as conservative. The firm capacity represents 7% of the total incomes. Public and available information which is published by the energy authority was used as a source of firm capacity. Therefore, the validation team concludes that the firm capacity is conservative and appropriate</p> <p>f) Depreciation is determined based on the National Accounting Regulation. The validation team has checked the source and crosschecked every item for which depreciation has been applied. No discrepancies were identified. For turbines the depreciation is based on the technical life time defined at the Turbine Supply Agreement<sup>/PSD-2/</sup> as accounting regulation does not considers this item. Chile has signed the IFRS (International Financial Reporting Standards). Norm IFRS –IAS 16 stated that depreciation shall be based on useful lifetime of assets. PP considered conservatively 20 years for WTG. The validation team considers such estimates appropriate and conservative.</p> <p>g) Clarification was provided regarding quantification of costs in US\$ for activities typically done by local companies. Clarification given by the PP is considered appropriate. Furthermore as it is a component of total investment, the cross-check of total investment cost per MW has been carried out to ensure that input data is conservative. Please refer to Table A-3 located in Annex 3 of this document</p>

Finding	CAR B5
	<p>h) Proper clarification and references were provided regarding "other costs". This item considers: Insurance, Land rent, Administration, Power from the grid and Miscellaneous. According to the publication The Economics of Wind Power other costs are estimated to be around 1.2 to 1.5 Euros cents per kWh (considering O&amp;M). The PP has taken the most conservative value of 1.2 Euros cents per kWh and excluded the O&amp;M cost which represents 26% (this was already considered using most reliable evidence such as the Turbine Supply Agreement<sup>/PSD-2/</sup>). The resulting value is in Euros. Therefore an exchange rate (Euro/USD) was applied (1.30 USD/Euro). The exchange rate used is from 2011/12/20 which is prior to the project starting date.</p> <p>As the value considered for <i>other costs</i> were taken from public available sources the validation team considers it as reliable and plausible. Furthermore the source (The Economics publications of Wind Energy) used by the PP is issued by the European Wind Energy Association (EWEA). These reports are considered an appropriate source as the EWEA is the voice of the wind industry, actively promoting the utilization of wind power in Europe and worldwide. Therefore, information published by the EWEA is considered as a third party trustable data about the wind energy sector worldwide.</p> <p><b><u>CAR is closed.</u></b></p>
<b>Conclusion</b> <i>Tick the appropriate checkbox</i>	<input type="checkbox"/> To be checked during the first periodic verification <input type="checkbox"/> Additional action should be taken (finding remains open) <input checked="" type="checkbox"/> The finding is closed

Finding	CL B6
<b>Classification</b>	<input type="checkbox"/> CAR <input checked="" type="checkbox"/> CL <input type="checkbox"/> FAR
<b>Description of finding</b> <i>Describe the finding in unambiguous style; address the context (e.g. section)</i>	It is not clear that the applicable rate of depreciation for wind turbines is 20 years according to the Chilean accounting regulations (Resolution 43 of the Internal Revenue Service of Chile).
<b>Corrective Action #1</b> <i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i>	The depreciation rate of the wind turbines (20 years) was considered based on the International Financial Reporting Standards which states that the depreciation of an asset is the systematic allocation of the depreciable amount of an asset over its useful life. In this case the useful life is stated in the Turbine Supply Agreement and corresponds to 20 years.

Finding	CL B6
<b>DOE Assessment #1</b> <i>The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i>	<p>Clarification was given. For turbines the depreciation is based on the technical life time defined at the Turbine Supply Agreement<sup>1/PSD-2/</sup> (page 20) as accounting regulation does not considers this item.</p> <p>Chile has signed the IFRS (International Financial Reporting Standards). Norm IFRS –IAS 16 stated that depreciation shall be based on useful lifetime of assets. PP considered conservatively 20 years for WTG. The validation team considers such estimates appropriate and conservative.</p> <p><b><u>CL is closed.</u></b></p>
<b>Conclusion</b> <i>Tick the appropriate checkbox</i>	<input type="checkbox"/> To be checked during the first periodic verification <input type="checkbox"/> Additional action should be taken (finding remains open) <input checked="" type="checkbox"/> The finding is closed

Finding	CAR B7
<b>Classification</b>	<input checked="" type="checkbox"/> CAR <input type="checkbox"/> CL <input type="checkbox"/> FAR
<b>Description of finding</b> <i>Describe the finding in unambiguous style; address the context (e.g. section)</i>	Depreciation of turbines and turbines foundation was wrongly considered since year 0 where no income is considered.
<b>Corrective Action #1</b> <i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i>	The depreciation of turbines and turbines foundation where corrected and are currently considered from year 1 as it can be seen in the financial evaluation spreadsheet.
<b>DOE Assessment #1</b> <i>The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i>	<p>Financial analysis was corrected and depreciation of turbines and turbines foundation is now considered at the moment when the project receives incomes (year 1).</p> <p><b><u>CAR is closed.</u></b></p>
<b>Conclusion</b> <i>Tick the appropriate checkbox</i>	<input type="checkbox"/> To be checked during the first periodic verification <input type="checkbox"/> Additional action should be taken (finding remains open) <input checked="" type="checkbox"/> The finding is closed

Finding	CAR B8
<b>Classification</b>	<input checked="" type="checkbox"/> CAR <input type="checkbox"/> CL <input type="checkbox"/> FAR
<b>Description of finding</b> <i>Describe the finding in unambiguous style; address the context (e.g. section)</i>	Plant load factor determined for year 1 is not correct.
<b>Corrective Action #1</b> <i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i>	The plant load factor was corrected in PDD v2

Finding	CAR B8
<b>DOE Assessment #1</b> <i>The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i>	Plant load factor was corrected. Value was evidenced in Report from third party Garrad Hassan, which is a worldwide leading company in wind yield assessment and certification. Therefore determination of PLF is considered reliable and absolutely in line with EB48 Annex 11.  <u><b>CAR is closed.</b></u>
<b>Conclusion</b> <i>Tick the appropriate checkbox</i>	<input type="checkbox"/> To be checked during the first periodic verification <input type="checkbox"/> Additional action should be taken (finding remains open) <input checked="" type="checkbox"/> The finding is closed

Finding	CAR B9
<b>Classification</b>	<input checked="" type="checkbox"/> CAR <input type="checkbox"/> CL <input type="checkbox"/> FAR
<b>Description of finding</b> <i>Describe the finding in unambiguous style; address the context (e.g. section)</i>	Sensitivity Analysis for firm capacity (capacity & price) is missing.
<b>Corrective Action #1</b> <i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i>	Sensitivity analysis for firm capacity (capacity & price) was included in PDD v2
<b>DOE Assessment #1</b> <i>The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i>	Sensitivity Analysis for firm capacity (capacity & price) was included in the financial analysis. The resulting IRR applying a fluctuation of +10% is as follow:  - Firm Capacity (+10%): 6.59% - Firm Capacity Price (+10%): 6.59%  In all cases the IRR remains below the applied benchmark.  <u><b>CAR is closed.</b></u>
<b>Conclusion</b> <i>Tick the appropriate checkbox</i>	<input type="checkbox"/> To be checked during the first periodic verification <input type="checkbox"/> Additional action should be taken (finding remains open) <input checked="" type="checkbox"/> The finding is closed

Finding:	CL B10
<b>Classification</b>	<input type="checkbox"/> CAR <input checked="" type="checkbox"/> CL <input type="checkbox"/> FAR
<b>Description of finding</b> <i>Describe the finding in unambiguous style; address the context (e.g. section)</i>	In the common practice analysis indication of power plants considered is missing. Furthermore result of common practice calculation is incorrect.
<b>Corrective Action #1</b> <i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i>	The indication of the power plants considering in the analysis is now included in a table in the PDD v2. The result of the common practice analysis is the same that the one stated in the PDD v1.

Finding:	CL B10
<b>DOE Assessment #1</b> <i>The assessment shall encompass all open issues in annex A-2. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i>	<p>The validation team has checked the revised PDD and it has been identified that the common practice analysis of Section B.5 has been corrected.</p> <p>The new Common Practice Spreadsheet<sup>/COM/</sup> was checked by the validation team. It has been confirmed that all power plants from the four grid systems of Chile have been considered in the analysis. The common practice analysis was based on the project activity installed capacity (240 MW) and therefore only the power plants within an installed capacity of 120 MW and 360 MW have been included. The validation team has checked the list of power plants so as their installed capacity against the records from the CNE<sup>/cne/</sup> and all data and values were found correct. Furthermore, the UNFCCC website has been consulted to confirm the power plants that are being developed or have been registered as CDM project activities</p> <p>The PDD has been updated and detail information about the power plants and the common practice calculation and results has been included.</p> <p>The resulting data shows that the proposed project activity is not a common practice.</p> <p>Therefore, the validation team concludes that the common practice analysis is correct and has been performed in accordance with the steps and requirements defined in the “Tool for the demonstration and assessment of additionality” Ver. 6.0.</p> <p><b><u>CL is closed.</u></b></p>
<b>Conclusion</b> <i>Tick the appropriate checkbox</i>	<input type="checkbox"/> To be checked during the first periodic verification <input type="checkbox"/> Additional action should be taken (finding remains open) <input checked="" type="checkbox"/> The finding is closed

Finding:	CAR B11		
<b>Classification</b>	<input checked="" type="checkbox"/> CAR	<input type="checkbox"/> CL	<input type="checkbox"/> FAR



Finding:	CAR B11
<p><b>Description of finding</b> <i>Describe the finding in unambiguous style; address the context (e.g. section)</i></p>	<p>Mistakes were detected in the emission factor calculation spread sheet:</p> <p><u>Tab "Gross Gen":</u></p> <ol style="list-style-type: none"> <li>1. Installed capacity for power plants CAVA, ZOFRI_1-6 and ZOFRI_2-5 was not in accordance with the data included in the CDEC-SING statistics</li> <li>2. According to the CDEC-SING statistics the power generation value for CAVA power plant on November 2010 is zero (0). Nevertheless, the PP has applied a value of 1.16407 GWh, clarification is required.</li> </ol> <p><u>Tab "Elect cons":</u></p> <ol style="list-style-type: none"> <li>3. Power consumption from ANDINA and ENORCHILE in 2010 is specified as zero (0 GWh/year) in the CDEC-SING statistics. Nevertheless, the PP has applied a value of 1 GWh/year, clarification is required.</li> <li>4. Power consumption from E-CL in 2008 is specified as 230 GWh/year in the CDEC-SING statistics. Nevertheless, this value was not used in the emission factor calculation spreadsheet.</li> </ol> <p><u>Tab "Fuel cons"</u></p> <ol style="list-style-type: none"> <li>5. Diesel consumption for Tocopilla power plant on 2008 is specified as zero (0 tons) in the CDEC-SING statistics. Nevertheless, the PP has applied a value of 55,898.7 tons/year, clarification is required.</li> </ol> <p><u>Tab "OM"</u></p> <ol style="list-style-type: none"> <li>6. The OM factor has not been calculated as per the applicable "Tool to calculate the emission factor for an electricity system" Version 2.2.1 which states that for an ex-ante OM a 3 year generation weighted average shall be used.</li> </ol> <p><u>Tab "BM 2010 input"</u></p> <ol style="list-style-type: none"> <li>7. Some power plants built on year 2000 have been included in the set of power plants for the BM calculation but others were excluded. However, no specific information about the month in which they were commissioned has been provided. Clarification is required about how the PP has determined which power plants are included in the BM set of power plants as per the applicable tool.</li> </ol> <p><u>Tab "BM 2010"</u></p> <ol style="list-style-type: none"> <li>8. Diesel consumption data from 2010 available in the CDEC-SING statistics has not been used for the calculation of CO<sub>2</sub> emissions from CTA1 power plant.</li> <li>9. The set of power plants has not been arranged chronologically.</li> <li>10. Fossil fuel consumption for Tocopilla U-16 and SUTA power plants is not as per the CDEC-SING statistics.</li> </ol>



Finding:	CAR B11
	<p>11. Clarification is required about why the PP has calculated the CO<sub>2</sub> emissions from Salta power plant if it has been identified that the CDEC-SING statistics include records about Diesel consumption from this power unit.</p> <p>12. Clarification is required about the default efficiency factor (37.5%) applied for the calculation of natural gas consumption from Salta power plant.</p>

Finding:	CAR B11
<p><b>Corrective Action #1</b></p> <p><i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i></p>	<p><u>Tab "Gross Gen":</u></p> <ol style="list-style-type: none"> <li>1. The Installed capacity for power plants CAVA, ZOFRI_1-6 and ZOFRI_2-5 was corrected.</li> <li>2. The value was corrected to 0 GWh/y according the source.</li> </ol> <p><u>Tab "Elect cons":</u></p> <ol style="list-style-type: none"> <li>3. The SINF EF 2008-2009-2010 v2 was modified considering 0 GWh/y for the electricity consumption for Andina and Enorchile; according the source.</li> <li>4. The Power consumption from E-CL in 2008, specified as 230 GWh/year in the CDEC-SING statistics, was included in the emission factor calculation spreadsheet.</li> </ol> <p><u>Tab "Fuel cons"</u></p> <ol style="list-style-type: none"> <li>5. Diesel consumption for Tocopilla power plant on 2008 is specified as zero (0 tons) in the CDEC-SING statistics. Nevertheless, Tocopilla power plant generated energy from diesel; therefore the diesel consumption for the year 2008 was calculated considering the specific fuel consumption informed by the CNE in the Node Fixation Price report from Oct 2011. All the plants and units were checked and for the cases where it was energy production and no fuel consumption the same approach was used. All this changes are highlighted in the sheet named "Fuel Cons" of the spreadsheet.</li> </ol> <p><u>Tab "OM"</u></p> <ol style="list-style-type: none"> <li>6. The OM factor calculation was corrected according the applicable "Tool to calculate the emission factor for an electricity system" Version 2.2.1 which states that for an ex-ante OM a 3 year generation weighted average shall be used.</li> </ol> <p><u>Tab "BM 2010 input"</u></p> <ol style="list-style-type: none"> <li>7. In the yearbook 2000-2009 pages 12 and 13, the specific starting date is per unit, ie all the subunits that are part of the unit initiated its operation at the same date. The specific date for each unit is: <ul style="list-style-type: none"> <li>- Termoelectrica Mejillones CT3: June 2000 (page 13)</li> <li>- Salta Steam turbine N°10: April 2000 (page 13)</li> <li>- Salta gas turbine N°11 and 12: April 1999 (page 12)</li> </ul> </li> </ol> <p>Therefore the version 2 of the spreadsheet EF SING 2008-2009-2010, does not consider the units N°11 and 12 from Salta, because it is not necessary to fulfill the 20%.</p>

Finding:	CAR B11
	<p><u>Tab "BM 2010"</u></p> <ol style="list-style-type: none"> <li>8. The diesel consumption data from 2010 available in the CDEC-SING statistics is now used for the calculation of CO<sub>2</sub> emissions from CTA1 power plant.</li> <li>9. The set of power plants is now arranged chronologically.</li> <li>10. Fossil fuel consumption for Tocopilla U-16, is now according the CDEC-SING statistics and is calculated as the weighed Natural Gas consumption for Tocopilla; considering the unit generation TG3 (also uses Natural Gas). For SUTA the diesel consumption is now considered as is stated in the CDEC-SING statistics.</li> <li>11. The generation of Salta is mainly by gas natural but there is no available value for the natural gas consumption either for the calculation of the natural gas consumption considering the specific consumption factor. The diesel consumption data is available; nevertheless this value was not used because is a not realistic consumption according the generation. According the available data the diesel consumption was: 607,6 ton. And the generation was 953,08 GWh. Considering this data the efficiency of the unit will be: 350%          Therefore, considering that there is no available value for the calculation of natural gas consumption as a conservative approach the emission Factor was calculated with Option A2 from the tool considering an efficiency of 60%. Salta is a combined cycle unit according the Aes Gener information: <a href="http://www.gener.cl/AESGenerWebNeo/index.aspx?channel=6206">http://www.gener.cl/AESGenerWebNeo/index.aspx?channel=6206</a></li> <li>12. As is stated below the default efficiency factor was corrected to 60% because Salta is a Combined Cicle power plant.</li> </ol>

Finding:	CAR B11
<p><b>DOE Assessment #1</b></p> <p><i>The assessment shall encompass all open issues in annex A-2. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i></p>	<p>The PP has provided a revised EF calculation spreadsheet which has been checked by the validation team as follows:</p> <p><u>Tab “Gross Gen”:</u></p> <p>1. The installed capacity for CAVA, ZOFRI_1-6 and ZOFRI_2-5 power plants was corrected to 2.6 MW, 0.9 MW and 5.2 MW respectively. The validation team has checked the CDEC-SING yearbooks and statistics<sup>/EF/ &amp; /cdec-sing/</sup> and all values were found correct. Hence, this issue is closed.</p> <p>2. The PP has corrected the power generation value for CAVA power plant on November 2010 to zero (0 MWh). The validation team has checked the CDEC-SING yearbooks and statistics<sup>/EF/ &amp; /cdec-sing/</sup> and the power generation value was found correct. Hence, this issue is closed.</p> <p><u>Tab “Elect cons”:</u></p> <p>3. and 4. The power consumption for ANDINA and ENORCHILE in 2010 was changed to a value of zero (0 GWh/year), also the PP has corrected the power consumption for E-CL in 2008 to 230 GWh/year. The validation team has checked the CDEC-SING yearbooks and statistics<sup>/EF/ &amp; /cdec-sing/</sup> and all power consumption values were found correct. Hence, this issue is closed.</p> <p><u>Tab “Fuel cons”</u></p> <p>5. According to the PP for some years there is no fuel consumption records in tons for some power plants in the CDEC-SING fuel consumption statistics, which is the case for Diesel consumption of Tocopilla power plant in 2008. Hence, for the power plants in which power generation has been identified their respective fuel consumption has been determined based on the specific fuel consumption published for each power plant/unit in the Nude Price Report “Informe de Precio Nudo” which is issued by the CNE and the net energy generation from each power plant/unit.</p> <p>The validation team has checked the fuel consumption report from the CDEC-SING and it has been confirmed that not all fuel consumption is being reported. Therefore, the proposed calculation based on the specific fuel consumption is considered appropriate.</p> <p>The Nude Price Report “Informe de Precio Nudo” issued on 2008, 2009 and 2010 has been checked by the validation team and the fossil fuel consumption calculation for Tocopilla and all other power plants (Enaex, Tamaya, and Zofri) was reviewed. All power plants for which the fuel consumption was calculated have been highlighted in yellow in the Tab “Fuel cons”, also the specific fuel consumption factors were included in the EF calculation spreadsheet for further traceability. All values and formula applied were found correct.</p> <p>Hence, it is concluded that the fossil fuel consumption for all power plants in the SING grid is correct. This issue is closed.</p>

Finding:	CAR B11
	<p><u>Tab "OM"</u></p> <p><b>6.</b> The PP has provided a revised EF calculation spreadsheet and it has been identified that the OM factor has been determined based on a 3 year generation weighted average based on the most recent data available (2008, 2009 and 2010). The validation team has checked the calculation and it was found correct and in accordance with the applicable "Tool to calculate the emission factor for an electricity system" Version 2.2.1. Hence, this issue is closed.</p> <p><u>Tab "BM 2010 input"</u></p> <p><b>7.</b> The PP has provided a revised EF calculation spreadsheet, in which it has been corrected the start date of operation for Salta power plant sub-units TG 11 and TG 12 to 1999. Therefore, now the BM calculation considers all power plants that started in the period from 2010 to 2000, and all power plants from 1999 or older have been excluded. The validation team has checked the statistics and yearbooks from the CDEC-SING and it has been confirmed that all starting dates for all power plants is correct. Therefore, the BM is assessed to be correct and in accordance with the applicable tool.</p> <p><u>Tab "BM 2010"</u></p> <p><b>8.</b> The PP has corrected the BM calculation and now the Diesel consumption reported in the CDEC-SING statistics for power plant CTA 1 has been considered. The validation team has checked the CDEC-SING statistics<sup>/cdec-sing/</sup> and it has been confirmed that the Diesel consumption of 3,871 tons for CTA1 power plant is correct. Hence, this issue is closed.</p> <p><b>9.</b> The set of power plants has been arranged chronologically. The start year of operation has been crosschecked against the CDEC-SING Yearbooks<sup>/cdec-sing/</sup> and all data was found correct. This issue is closed.</p> <p><b>10.</b> Fossil fuel consumption for Tocopilla U-16 has been corrected, the PP has calculated the share of natural gas consumption that corresponds to this unit, diesel and fuel oil consumption are not being considered. For the case of SUTA power plant, the Diesel and Fuel Oil consumption registered in the CDEC-SING statistics has been considered for the BM factor calculation. The validation team has checked the fuel consumption data from the CDEC-SING website<sup>/cdec-sing/</sup> and all values were found correct. Hence, this issue is closed.</p> <p><b>11. and 12.</b> The PP has clarified that the approach of calculating the CO<sub>2</sub> emissions from Salta power plant based on the default efficiency factors from the tool and the power generation was because there is no information available in the CDEC-SING about the fuel consumption also no specific fuel consumption factor are available in the CNE.</p>

Finding:	CAR B11
	<p>The validation team has checked the CDEC-SING website<sup>/cdec-sing/</sup> so as the CNE reports<sup>/cne/</sup> and it has been confirmed that no natural gas consumption for Salta power plant is available. Therefore, even though there is a small consumption of Diesel, the PP has considered that all power generation from Salta was from natural gas and used a 60% efficiency factor to calculate the respective CO<sub>2</sub> emissions</p> <p>This approach is considered correct and conservative as it results in less ER because the natural gas has a lower emission factor than the Diesel. In addition, the default efficiency factor of 60% is found correct as it applied for combine cycle power plants. Hence, this issue is closed.</p> <p>The EF spreadsheet has been checked by the validation team and it has been identified that all values and data are in accordance with the available data from the grid operation<sup>/cdec-sing/ &amp; /cne/</sup>. In addition, it has been confirmed that conservative assumptions have been applied when required. All final values of the OM, BM and CM have been properly updated in the PDD.</p> <p>Therefore, it is concluded that the equations for the calculation of the emission reductions have been applied correctly according to the applied approved methodology ACM0002 version 12.2 and the “Tool to calculate the emission factor for an electricity system” Version 2.2.1.</p> <p>All data sources and assumptions were found appropriate and the grid emission factor (0.707 tCO<sub>2</sub>/MWh) which will remain fixed throughout the crediting period has been found will lead to a conservative calculation of the project emission reductions</p> <p>File “Ckani’s Emission reduction”: only checked ER-sheet: all cells connected, but:</p> <ol style="list-style-type: none"> <li>Cell B4, It should be EF<sub>grid,OM-ave,y</sub> instead of EF<sub>grid,OM-adj,y</sub></li> <li>There is an inconsistency between PDD and Excel-file, worksheet “Combined Emission Factor SING” regarding the EF<sub>BM</sub>-factor: in the excel file it is rounded down after the 6<sup>th</sup> digit: 0.429 – in the PDD it is rounded down after the 3<sup>rd</sup> digit: 0.428 (the EF<sub>OM</sub> factor values are rounded down after the 6<sup>th</sup> digit both in PDD and Excel file) – Please revise</li> <li>Common practice excel file – the link to excel file of CNE seems not to work anymore, so the source couldn’t be checked</li> </ol> <p><b><u>CAR remains open.</u></b></p>

Finding:	CAR B11
<p><b>Corrective Action #2</b></p> <p><i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i></p>	<p>a. Effectively cell B4 of the Emission reductions spreadsheet was wrongly written. This was changed in the Emission reductions spreadsheet v.3.</p> <p>b. Effectively there was an inconsistency between the excel file of the Emission factor calculation spreadsheet and the PDD in terms of the roundment of the values of the <math>EF_{OM}</math>, <math>EF_{BM}</math> and <math>EF_{CM}</math>. The correct value should be rounded at the 6<sup>th</sup> digit. Considering this the value of <math>EF_{OM}</math> should be 0.801 tCO<sub>2</sub>/MWh, <math>EF_{BM}</math> should be 0.429 tCO<sub>2</sub>/MWh and <math>EF_{CM}</math> should be 0.708 tCO<sub>2</sub>/MWh. This values where corrected in the spreadsheet v.3 and in the PDD.</p> <p>This inconsistency was also found in the calculation of the emission reductions and was corrected. Due to this, the Emission reductions of the project changed slightly, hence the values were corrected in the PDD.</p> <p>c. Effectively the CNE updated the "National installed capacity" file from October 2011 to add the Easter Island Electric System, update the gross generation data of several power plants and add other power plants to the list that were not operating before. Since the CNE doesn't maintain the dated files available (such as the file from October 2011 in wich was based the common practice analysis of Ckani Wind Farm project and that was handed to the DOE as a backup document) we decided to update the common practice spreadsheet (v.3) which considers the last information available from the CNE. As it can be seen stated in the changes of the PDD v.3 and in the common practice spreadsheet v.3, the values of <math>N_{all}</math> changed from 25 to 29 due to the incorporation of the following centrals to <math>N_{all}</math> range: "Cardones" power plant wich was not included in the CNE list and also the power plants "TERMOLÉCTRICA ANDINA – CTA"; "TERMOELÉCTRICA HORNITOS – CTH" and "SALTA - CC SALTA" wich the CNE corrected their installed capacity. <math>N_{diff}</math> also changed from 25 to 29 meaning that the factor <math>F</math> remains the same (equal to zero) and also that the project remains additional.</p>
<p><b>DOE Assessment #2</b></p> <p><i>The assessment shall encompass all open issues in annex A-2. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i></p>	<p>File "Ckani's Emission reduction":</p> <p>a. Cell B4 was corrected. It is now <math>EF_{grid,OM-ave,y}</math> instead of <math>EF_{grid,OM-adj,y}</math></p> <p>b. Correction were done and now there is no inconsistency between PDD and Excel-file, worksheet "Combined Emission Factor SING" regarding the <math>EF_{BM}</math>-factor</p> <p>c. Common practice excel file was updated in oder to make tracable all references. The project activity is still not common practice.</p> <p><b><u>CAR is closed.</u></b></p>



Finding:	CAR B11
<b>Conclusion</b> <i>Tick the appropriate checkbox</i>	<input type="checkbox"/> To be checked during the first periodic verification <input type="checkbox"/> Additional action should be taken (finding remains open) <input checked="" type="checkbox"/> The finding is closed

Finding:	CL B12
<b>Classification</b>	<input type="checkbox"/> CAR <input checked="" type="checkbox"/> CL <input type="checkbox"/> FAR
<b>Description of finding</b> <i>Describe the finding in unambiguous style; address the context (e.g. section)</i>	<p>According to Section B.6.3 of the PDD the BM factor has been calculated based on option b) of the "Tool to calculate the emission factor for an electricity system" Version 2.2.1. Nevertheless, it has been identified that power plants that started to supply electricity to the grid more than 10 years ago have been included in the set of power plants for the BM calculation.</p>
<b>Corrective Action #1</b> <i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i>	<p>The PDD v2, clarified that the SET<sub>sample</sub> include power units that started to supply electricity to the SING grid more than 10 years ago (year 2000 is included in the analysis); options d), e) and f) of the "Tool to calculate the emission factor for an electricity system v.02.2.1" were analyzed. At the time of the PDD submission there is no power plant registered as CDM project activity in the SING, therefore the option (f) of the "Tool to calculate the emission factor for an electricity system v.02.2.1" was considered and the sample group SET<sub>sample</sub> include power units older than 10 years until the set comprises 20% of generation.</p>



Finding:	CL B12
<b>DOE Assessment #1</b> <i>The assessment shall encompass all open issues in annex A-2. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i>	<p>The PP has provided a revised PDD in which the BM calculation procedure has been updated.</p> <p>According to the revised PDD now the BM is using option e) and f) of the applicable “Tool to calculate the emission factor for an electricity system” Version 2.2.1 these options results in the consideration of registered CDM power plants so as power units that started to supply electricity to the grid more than 10 years ago until the electricity generation of the set comprises 20%.</p> <p>The validation team has checked the UNFCCC website and it has been confirmed that up to today no power plants from the CDEC-SING have been registered as CDM power plants. Therefore, the 20% of the total power generation is reached when the set of power plants includes all power plants that started operation since 2000.</p> <p>The CDEC-SING statistics and yearbooks<sup>/cdec-sing/</sup> have been checked and all information was found correct, no mistakes have been identified.</p> <p>Therefore, it is concluded that Section B.6.3 has been corrected appropriately and the BM calculation procedure and results are in accordance with the applicable “Tool to calculate the emission factor for an electricity system” Version 2.2.1.</p> <p>All data sources and assumptions were found appropriate and the BM factor so as the grid emission factor (0.707 tCO<sub>2</sub>/MWh) which will remain fixed throughout the crediting period has been found will lead to a conservative calculation of the project emission reductions</p> <p><b><u>CL is closed.</u></b></p>
<b>Conclusion</b> <i>Tick the appropriate checkbox</i>	<input type="checkbox"/> To be checked during the first periodic verification <input type="checkbox"/> Additional action should be taken (finding remains open) <input checked="" type="checkbox"/> The finding is closed

Finding:	CL B13
<b>Classification</b>	<input type="checkbox"/> CAR <input checked="" type="checkbox"/> CL <input type="checkbox"/> FAR
<b>Description of finding</b> <i>Describe the finding in unambiguous style; address the context (e.g. section)</i>	<p>During site visit the PP has confirmed that Auxiliary Diesel Generator will be installed for emergency purposes. Nevertheless, this information has not been included in the PDD.</p>
<b>Corrective Action #1</b> <i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i>	<p>The PP confirmed that there won't be an auxiliary diesel generator in the project and that in cases of emergency there will be backup batteries which will supply energy to the project facilities.</p>

Finding:	CL B13
<b>DOE Assessment #1</b> <i>The assessment shall encompass all open issues in annex A-2. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i>	<p>According to the PP no auxiliary diesel generator will be installed for emergency purposes but batteries which will supply energy to the project facilities. During on site visit no information was identified to demonstrate that auxiliary diesel generator will be installed for emergency purposes.</p> <p><b><u>CL is closed.</u></b></p>
<b>Conclusion</b> <i>Tick the appropriate checkbox</i>	<input type="checkbox"/> To be checked during the first periodic verification <input type="checkbox"/> Additional action should be taken (finding remains open) <input checked="" type="checkbox"/> The finding is closed

Finding:	CAR B14
<b>Classification</b>	<input checked="" type="checkbox"/> CAR <input type="checkbox"/> CL <input type="checkbox"/> FAR
<b>Description of finding</b> <i>Describe the finding in unambiguous style; address the context (e.g. section)</i>	Parameters $EF_{grid,CM,y}$ and $EF_{CO2,m,i,y}$ are missing in Section B.6.2 of the PDD.
<b>Corrective Action #1</b> <i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i>	These parameters are included in the PDD v2.
<b>DOE Assessment #1</b> <i>The assessment shall encompass all open issues in annex A-2. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i>	<p>The validation team has checked the revised PDD provided by the PP and it has been identified that parameters <math>EF_{grid,CM,y}</math> and <math>EF_{CO2,m,i,y}</math> have been included in Section B.6.2</p> <p>The parameter description, source of data, calculation procedure and rest of the parameter information and provisions have been checked against the applicable methodology ACM0002 Version 12.2 and the "Tool to calculate the emission factor for an electricity system" Version 2.2.1. All data and parameter information was found correct and consistent with the applicable methodology and tool.</p> <p>The validation team concludes that all data sources and assumptions are appropriate and parameters <math>EF_{grid,CM,y}</math> and <math>EF_{CO2,m,i,y}</math> which remain fixed throughout the crediting period are found correct and will lead to a conservative estimation of emission reductions.</p> <p><b><u>CAR is closed.</u></b></p>
<b>Conclusion</b> <i>Tick the appropriate checkbox</i>	<input type="checkbox"/> To be checked during the first periodic verification <input type="checkbox"/> Additional action should be taken (finding remains open) <input checked="" type="checkbox"/> The finding is closed

Finding:	CAR B15
<b>Classification</b>	<input checked="" type="checkbox"/> CAR <input type="checkbox"/> CL <input type="checkbox"/> FAR

Finding:	CAR B15
<b>Description of finding</b> <i>Describe the finding in unambiguous style; address the context (e.g. section)</i>	<p>According to the Guidelines for completing the PDD, the following information is missing in section B.7.1:</p> <ul style="list-style-type: none"> <li><b>Description of measurement methods and procedures to be applied:</b> indication of local standards for calibration including calibration frequency, quantity of meters, function (main/back up), type (uni/bidirectional) and location of meters.</li> <li><b>QA/QC procedures to be applied:</b> detailed description of the cross-check procedures according to the applied methodology.</li> </ul> <p>Furthermore, parameter “EG<sub>PJ,y</sub>” from the applicable methodology ACM0002 Version 12.2 has been named as “EG<sub>y</sub>”. In addition, parameter description is not as per the applicable methodology.</p>
<b>Corrective Action #1</b> <i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i>	<p>Description of measurements methods and procedures and QA/QC procedures where added in section B.7.1 of PDD v2.</p> <p>The parameter EG<sub>y</sub> was changed to EG<sub>PJ,y</sub> in PDD v2</p>
<b>DOE Assessment #1</b> <i>The assessment shall encompass all open issues in annex A-2. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i>	<p>Description of measurement methods, procedures and QA/QC procedures to be applied were included in section B.7.1 according to the Guidelines for completing the PDD. Furthermore parameter “EG<sub>PJ,y</sub>” was corrected including parameter description as per the applicable methodology.</p> <p><b><u>CAR is closed.</u></b></p>
<b>Conclusion</b> <i>Tick the appropriate checkbox</i>	<p><input type="checkbox"/> To be checked during the first periodic verification</p> <p><input type="checkbox"/> Additional action should be taken (finding remains open)</p> <p><input checked="" type="checkbox"/> The finding is closed</p>

Finding:	CAR B16
<b>Classification</b>	<input checked="" type="checkbox"/> CAR <input type="checkbox"/> CL <input type="checkbox"/> FAR
<b>Description of finding</b> <i>Describe the finding in unambiguous style; address the context (e.g. section)</i>	<p>According to the guidelines for completing the PDD in section B.7.2 the following information is missing: the <u>operational and management structure</u> that the project operator will implement in order to monitor emission reductions and the <u>responsibilities</u> for and institutional arrangements for <u>data collection and archiving</u>. Furthermore monitoring arrangements for data archiving stated in the applied methodology are also missing. Moreover crosscheck procedures are missing.</p>
<b>Corrective Action #1</b> <i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i>	<p>The information related to the monitoring system in section B.7.2, specifically related to the operational and management structure, responsibilities in data collection and archiving, monitoring arrangements for data archiving and crosscheck procedures where added.</p>

Finding:	CAR B16
<b>DOE Assessment #1</b> <i>The assessment shall encompass all open issues in annex A-2. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i>	<p>Information regarding operational and management structure that the project operator will implement in order to monitor emission reductions and the responsibilities for and institutional arrangements for data collection and archiving was included in section B.7.2 of the PDD. Furthermore monitoring arrangements for data archiving stated in the applied methodology and crosscheck procedures were also included.</p> <p><b><u>CAR is closed.</u></b></p>
<b>Conclusion</b> <i>Tick the appropriate checkbox</i>	<input type="checkbox"/> To be checked during the first periodic verification <input type="checkbox"/> Additional action should be taken (finding remains open) <input checked="" type="checkbox"/> The finding is closed

Finding	CAR C1
<b>Classification</b>	<input checked="" type="checkbox"/> CAR <input type="checkbox"/> CL <input type="checkbox"/> FAR
<b>Description of finding</b> <i>Describe the finding in unambiguous style; address the context (e.g. section)</i>	<p>It is stated in section C.1 of PDD that project starting date has not occurred yet. However, it was revealed during site visit that a Turbine Supply Agreement<sup>/PSD/</sup>, which establishes a significant commitment towards implementation of the project activity was signed on 2012/01/17. Hence, the statement in section C.1 is not in accordance with the definition of the CDM Glossary of Terms.</p>
<b>Corrective Action #1</b> <i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i>	<p>The starting date of the project activity is updated in the PDD v2.</p>
<b>DOE Assessment #1</b> <i>The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i>	<p>The starting date of the project activity was corrected and referenced in section C of the PDD. The turbine supply contract was checked accordingly. No discrepancies were identified.</p> <p><b><u>CAR is closed.</u></b></p>
<b>Conclusion</b> <i>Tick the appropriate checkbox</i>	<input type="checkbox"/> To be checked during the first periodic verification <input type="checkbox"/> Additional action should be taken (finding remains open) <input checked="" type="checkbox"/> The finding is closed

Finding:	CL C2
<b>Classification</b>	<input type="checkbox"/> CAR <input checked="" type="checkbox"/> CL <input type="checkbox"/> FAR
<b>Description of finding</b> <i>Describe the finding in unambiguous style; address the context (e.g. section)</i>	<p>Reference of the operational life time of the project activity is missing in section C.1.2 of the PDD. Furthermore, the project technical lifetime was defined as 21 years but the Turbine Supply Agreement states that it is of 20 years. Correction is required</p>
<b>Corrective Action #1</b> <i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i>	<p>The PDD v2, stated that the lifetime is 20 years according the agreement with Goldwind.</p>

Finding:	CL C2
<b>DOE Assessment #1</b> <i>The assessment shall encompass all open issues in annex A-2. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i>	<p>Reference of the operational life time of the project activity was included in section C.1.2 of the PDD. Furthermore the project technical lifetime was corrected according to the Turbine Supply Agreement which defines it in 20 years.</p> <p><b><u>CL is closed.</u></b></p>
<b>Conclusion</b> <i>Tick the appropriate checkbox</i>	<p><input type="checkbox"/> To be checked during the first periodic verification</p> <p><input type="checkbox"/> Additional action should be taken (finding remains open)</p> <p><input checked="" type="checkbox"/> The finding is closed</p>

## 5 VALIDATION ASSESSMENT SUMMARY

### 5.1 General Description of the Project Activity

#### 5.1.1 Participation

##### LOA

Chile, the host country, has ratified the Kyoto Protocol on 26<sup>th</sup> August 2002, and as a non Annex I party meets all relevant participation requirements.

The Chile DNA assigned for CDM is the Ministry of Environment of Chile, which has been checked directly from the UNFCCC website.

In accordance with the CDM M&P at the time of making the PDD public at the stage of validation, a Party involved may or may not have provided its approval. At the time of requesting registration the approval of the Parties involved is required.

Letter num. 122624 signed and stamped by the DNA of Chile on 2012/08/01 was provided by the PP and assessed by the validation team. The project name "*Ckani Wind Farm Project*" stated in the LoA is the same as the project activity name stated in the PDD submitted for global stakeholder's consultation.

The DNA listed in the UNFCCC web site - Ministry of Environment of Chile - has issued the LoA of the project activity.

The LoA confirms that Chile is a Party to the Kyoto Protocol, the participation of AM Eolica Alto LoA SpA is voluntary and the project activity contributes to the sustainable development in the country.

#### Project Participants

As there is only one party involved, no other approvals are required for this project. This is consistent in the PDD and in the LoA.

#### 5.1.2 Contribution to Sustainable Development

According to the Letter of Approval<sup>/LoA/</sup> issued by the DNA of Chile, the project activity contributes to the sustainable development of Chile.

The project participant contributes to the sustainable development through clean and renewable electricity generation, contributing to fiscal accounts through the payment of taxes and increases opportunity for employment and contribution for local economy.

### **5.1.3 PDD editorial Aspects**

The project activity complies with latest PDD template and latest version of the guideline for completing PDDs and when a deviation has been identified, a corresponding CAR or CL was raised.

### **5.1.4 Technology to be employed**

In section A.4 of the PDD, description of the technology is provided. The description of the project in the PDD is complete and accurate.

The proposed project activity is the implementation of a wind farm with 240 MW of total power generation installed capacity with an expected annual output of 688.3 GWh.

The project activity consists of 160 GoldWind WTG of 1.5 MW each that will be mounted on 75 meters high steel tower and a rotor diameter of 87 meters.

The wind farm will be interconnected to the Central Interconnected System (SIC) by a transmission line.

The employed technology is environmentally safe and sound and state of the art, manufactured by leading provider GoldWind.

### **5.1.5 Small Scale Projects**

The project activity is not a small scale project but a large scale wind farm with 240 MW of installed capacity.

## **5.2 Project Baseline, Additionality and Monitoring Plan**

### **5.2.1 Application of the Methodology**

The project applies the baseline and monitoring methodology ACM0002 – “Consolidated baseline methodology for grid-connected electricity generation from renewable sources” – version 12.2.0 and methodological tools: “Tool to calculate the emission factor for an electricity system” – version 2.2.1 and “Tool for demonstration and assessment of additionality” – version 06.0. They are all approved and valid and derive from the UNFCCC CDM website.

All applicability conditions are met and the project activity is in line with all requirements and stipulations mentioned in all sections of the applied methodologies.

No significant emissions are expected from project or from leakage.



### **5.2.2 Project Boundary**

The project boundaries (geographic and also related to GHG sources and gases) are correctly given in PDD, as described in section B.3 of the PDD. The methodology does not allow for a choice of which GHG sources / sinks are included, and there are not any other sources which are impacted by the project which are not addressed by the applied methodology.

### **5.2.3 Baseline Identification**

The applied methodology establishes a one unique option for baseline scenario, in case the project activity is the installation of a new grid-connected renewable power plant/unit. This applied to the project activity.

### **5.2.4 Calculation of GHG Emission Reductions**

Methodologies for calculating emission reductions are documented. The project intends to reduce carbon dioxide (CO<sub>2</sub>) emissions by generating electricity from a wind farm project, which would be exported to the grid.

The calculation of GHG emission reductions was done in agreement with the applied methodology. As the project emissions are zero and leakage is not considered by the applied methodology, the emission reductions are calculated through calculation of the baseline emission. Baseline emission is calculated by multiplying the electricity baseline emission factor or grid emission factor and the net electricity exported to the grid.

The emission reductions calculation<sup>/XLS/</sup> was reviewed by the validation team. All underlying data/values are transparent presented and assessed to be adequate. When a deviation has been identified, a corresponding CAR or CL was raised.

The grid emission factor has been calculated based on public available data. The value was determined ex-ante. The grid emission factor calculation is deemed to be adequate and transparent. The estimated emission reductions are plausible and conservative.

All values for the monitoring and non monitoring parameters and estimated emission reductions are plausible and conservative.

### **5.2.5 Additionality Determination**

#### **Consideration of CDM in decision making (if project start before validation)**

The project start date is after 2<sup>nd</sup> August 2008 and formal notifications using the appropriate CDM Form were sent to host party DNA and to the UNFCCC secretariat within 6 months of the project starting date, hence complying with prior consideration rules of the UNFCCC.



## **Application of methodology / methodological tools**

The additionality was justified in section B.5 of the PDD in accordance with the requirements derived from the applied methodology. The project activity fulfils all applicability criteria of the methodology.

### **Alternatives**

The baseline is determined according to the applicable methodology and does not require alternative baseline consideration

### **Investment analysis**

The analysis method chosen is the benchmarking analysis, as the alternatives identified to the project activity generate financial or economics benefits other than CDM related income.

A benchmark analysis is applied to demonstrate that the project is not financially attractive. A calculation spread sheet<sup>/IRR/</sup> was elaborated by the PP and assessed by the validation team. As a result some findings were raised and successfully closed.

The IRR calculation was reproduced by the validation team. The source of project IRR is assessed to be adequate and the assumptions stated in the reports are assessed to be reasonable.

As described in the PDD and clearly demonstrated in the financial spread sheet, a sensitivity analysis of values that constitute more than 20% of the total project costs and total project revenues respectively were subject to a sensitivity analysis. The applied range of variation (+/-10%) is reasonable in the specific context of the project activity. No parameter constituting less than 20% of total project costs or revenues has been identified with potential material impact on the financial parameter.

After the PP has closed the raised findings, the validation team concludes that a clear, viewable and unprotected Excel spread sheet is available for the investment calculation.

For a detailed assessment of parameters considered for IRR calculation please refer to table A-3 located in Annex 3.

### **Barrier analysis**

No barrier is included in the PDD to demonstrate additionality.

### **Common practice analysis**

The defined region established in the PDD for comparison with other industries is the host country and is deemed appropriate. Calculation of similar projects identified in the relevant region has to follow the approach stated in paragraph 47 of the Tool for

the demonstration and assessment of additionality. No similar projects have been identified.

## **Summary**

The project start date is after 2<sup>nd</sup> August 2008 and formal notifications using the appropriate CDM Form were sent to host party DNA and to the UNFCCC secretariat.

The sequence utilized by the PP to demonstrate the additionality of the project has followed the criteria and requirements derived from the Tool for demonstration and assessment of additionality.

The additionality was demonstrated through investment barrier (investment analysis). A benchmark analysis is applied to demonstrate that the project is not financially attractive by comparing the project IRR with the benchmark.

The source of IRR calculation is assessed to be adequate and the assumptions stated in the reports are assessed to be reasonable.

No barrier is included in the PDD to demonstrate additionality.

Considering the above, it is TÜV NORD's opinion that it is sufficiently demonstrated that the project is not financially attractive and therefore faces investment and prevailing practice barriers.

## **5.2.6 Monitoring Methodology**

The monitoring plan in the PDD is in compliance with the applied monitoring methodology and it is assessed by the validation team as adequate and feasible.

## **5.2.7 Monitoring Plan**

The monitoring plan in the PDD covers all parameters which have to be monitored w.r.t. the project boundary, in line with monitoring methodology. The monitoring arrangements were assessed by the validation team and can be implemented and are feasible within the project design. For details see section B.6 of the Annex below and the resolution of the findings.

## **5.2.8 Project Management Planning**

There is a complete description in the PDD in section B.7.2 about the actions to be implemented concerning the monitoring process, including management structure and responsibilities, data collection and recording, measurement arrangements, internal audits, storage methods and training.

### **5.2.9 Crediting Period**

The starting date of the crediting period as mentioned in the PDD<sup>/PDD/</sup> under Section C.2. is 2013/01/01 or the date of registration of the project, whichever is later. The intended crediting period of the project is for a renewable period of seven years. The project life time (20 years duration) indicated in the Section C.1.2 of the PDD<sup>/PDD/</sup> was verified by the validation team.

### **5.2.10 Environmental Impacts**

According to the law 19300 the project activity does not require to perform an Environmental Impact Assessment. Therefore an Environmental Impact Declaration was submitted by the PP and approved by the SEA through the RCA.

The PP has presented the Environmental Impact Declaration to the environmental authority on 2011/05/04. The authority had approved it on 2011/12/14.

### **5.2.11 Comments by Local Stakeholders**

The stakeholder consultation was conducted in form of meetings to submit comments or questions about the project activity. They were invited by letters also through local community representatives.

Relevant stakeholders were invited to the public consultation meeting. A complete list is included in section E.1 of the PDD.

A summary of comments is also available in the PDD and it was verified by the validation team. No negative comments were received.

As a result from the stakeholder involvement process it can be concluded that no relevant concerns of the local stakeholders are existing.

## 6 VALIDATION OPINION

AM Eolica Alto Loa SpA has commissioned the TÜV NORD JI/CDM Certification Program (CP) to validate the project: “Ckani Wind Farm Project” with regard to the relevant requirements of the UNFCCC for CDM project activities, as well as criteria for consistent project operations, monitoring and reporting. UNFCCC criteria include article 12 of the Kyoto Protocol, the modalities and procedures for CDM (Marrakech Accords) and the relevant decisions by COP/MOP and CDM Executive Board

In the course of the pre-validation 11 Corrective Action Requests (CARs) and 10 Clarification Requests (CLs) were raised and successfully closed.

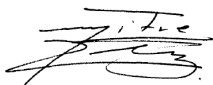
The review of the project design documentation and additional documents related to baseline and monitoring methodology; the subsequent background investigation, follow-up interviews and review of comments by parties, stakeholders and NGOs have provided TÜV NORD JI/CDM CP with sufficient evidence to validate the fulfilment of the stated criteria.

In detail the conclusions can be summarised as follows:

- The project is in line with all relevant host country criteria Chile and all relevant UNFCCC requirements for CDM. Project activity approval have been obtained from DNA of Chile vide the Letter of Approval (LoA) dated 2012/08/01.
- The project additionality is sufficiently justified in the PDD.
- The monitoring plan is transparent and adequate.
- The calculation of the project emission reductions is carried out in a transparent and conservative manner, so that the calculated emission reductions of 2,864,892 tCO<sub>2</sub>e are most likely to be achieved within the (1st renewable) crediting period.

The conclusions of this report show, that the project, as it was described in the project documentation, is in line with all criteria applicable for the validation.

Mexico, 2012-08-14



Raul Gonzalez Mitre  
TÜV NORD JI/CDM CP  
Validation Team Leader

Hannover, 2012-08-14



Alexandra Nebel  
TÜV NORD JI/CDM CP  
Final Approval

## 7 REFERENCES

**Table 7-1:** Documents provided by the project participant

Reference	Document
/COM/	<ol style="list-style-type: none"> <li>1. Common practice spread sheet</li> <li>2. Installed capacity by national electricity system (SING, SIC, AYSSEN &amp; Magallanes), 2011 by CNE.</li> </ol>
/DIA-RCA/	Environment Impact Declaration, May 2011, and its approval, i.e. Environmental Qualification Resolution #0221/2011 (RCA in Spanish), issued by SEA on 2011-12-14
/DIR/	First Session of Directors – AM EOLICA ALTO LOA SpA – Doc: 11.859/2010 issued by Musalem Registry Office on 2010/11/03
/EF/	<u>Grid emission factor evidences/references:</u> <ol style="list-style-type: none"> <li>1. Emission Factor calculation spread sheet.</li> <li>2. CDEC-SING Statistics Yearbook 2000-2009</li> <li>3. CDEC-SING Statistics Yearbook 2010</li> <li>4. National Energy Balance 2010 by CNE</li> </ol>
/FD/	<u>Financial data and evidence:</u> <ol style="list-style-type: none"> <li>1. Cost Model Budget Proposal by Mortenson Construction, 2011/09/22</li> <li>2. Proposal by Omar Nunez, 2011/08/19.</li> <li>3. Project Layout by SGA, June 2011, Rev. 1</li> <li>4. Wind Turbine Route Transportation Study by Ingenieria Consultores, 2011/11/25, Ver. 1</li> <li>5. Work Proposal No. 1539/2011 by Burger, 2011/10/24</li> <li>6. Wind Farm Connection Report by Reich Ingenieria, January 2011, Rev. B.</li> <li>7. Grid connection costs assessment of Cuel Wind Farm by Enacsel EIS S.A., October 2011.</li> <li>8. Node Price Report – “Informe de Precio Nudo” October 2011</li> <li>9. Calculation and determination of firm capacity by CDEC-SING, 2011/06/15, Ref. CDEC-SING P-0025/2010, Ver. 1.</li> <li>10. Definitive calculation of firm capacity year 2011 by CDEC-SIC.</li> <li>11. Definitive calculation of firm capacity year 2010 by CDEC-SIC.</li> <li>12. Definitive calculation of firm capacity year 2009 by CDEC-SIC.</li> <li>13. Economic and Technical Proposal for the development and use of transmission facilities required to connect Cuel Wind Project by Transnet, 2011/12/02.</li> <li>14. Report “The Economics of Wind Energy” issued by the European Wind Energy Association in March 2009 &amp; Report “Wind Energy – The Facts” – Part II – The Economics of Wind Power, issued by the European Wind Energy Association (pages 4 and 5).</li> </ol>

Reference	Document
	15. Installed Capacity per grid 2011 by CNE. 16. CDEC-SIC Statistics Yearbook 2010
/IRR/	IRR calculation spread sheet
/LOA/	Letter of Approval from DNA of Chile, letter Nr.: 122624, dated 2012/08/01
/MOC/	Modalities of Communication
/PDD/	1. PDD named "Ckani Wind Farm Project" Ver. 1, 2012/01/06. 2. PDD named "Ckani Wind Farm Project" Ver. 2, 2012/03/06. 3. PDD named "Ckani Wind Farm Project" Ver. 3, 2012/05/23.
/PLF/	Assessment of Energy Production of the proposed Ckani Wind Farm in Chile, Technical Note issued by GL Garrad Hassan, Iberica, S.L.U. on 2011-11-28
/PSD/	<u>Evidence of Project Starting date and Prior Consideration:</u>  1. Turbine Supply Agreement (TSA) signed between AM Eolica Alto LOA Spa as buyer and Goldwind USA, INC. as supplier for the Ckani Project (Phase I) dated as of January 17, 2012. <b>Confidential</b> 2. Exhibits for Turbine Supply Agreement signed between AM Eolica Alto LOA Spa as buyer and Goldwind USA, INC. as supplier for the Ckani Project (Phase I) dated as of January 17, 2012 <b>Confidential</b> 3. CDM Prior Consideration Form, received 2011/12/29; 4. Letter to DNA of Chile and Post Office (Correos de Chile) confirmation of receipt of prior confirmation form, 2012-12-22;
/SHCP/	<u>Stakeholder consultation process evidences:</u>  1. Invitation Letters. 2. Attendance Register. 3. Power Point presentations. 4. Photos of the meeting. 5. Notes from stakeholders comments. 6. Videos of the SHCP
/XLS/	Emission reduction calculation spreadsheet

**Table 7-2:** Background investigation and assessment documents

Reference	Document
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Reference	Document
/ACM0002/	ACM0002 Grid-connected electricity generation from renewable sources. Version 12.2.0, EB 65.
/CPM/	TÜV NORD JI / CDM CP Manual (incl. CP procedures and forms)
/GCP/	UNFCCC: Guidelines for completing CDM-PDD and CDM-NM
/GAIA/	Guidelines on the assessment of Investment Analysis. Version 05, EB 62, Annex 5.
/GDAPC/	Guidelines on the demonstration and assessment of prior consideration of the CDM, Ver. 4 (EB 62, Annex 13)
/GT/	UNFCCC: CDM Glossary of Terms
/IPCC/	<ul style="list-style-type: none"> <li>• IPCC Good Practice Guidance &amp; Uncertainty Management in National Greenhouse Gas Inventories, 2000.</li> <li>• Revised 2006 IPCC Guidelines for National Greenhouse Gas Inventories: Reference Manual</li> </ul>
/KP/	Kyoto Protocol (1997)
/LAW/	<u>List of applicable laws:</u> <ul style="list-style-type: none"> <li>• Chilean Law 19.300, Environment Act., 2007/03/27;</li> <li>• Complementary Chilean Law 20.417, regulates and modifies aspects Law 19.300;</li> <li>• Supreme Decree 30, regulation of Environmental Impact Assessment System , 1997-03-27;</li> <li>• Supreme Decree 95/2001, modifies Decree 30;</li> <li>• Supreme Decree N°327 which corresponds to the “Regulation of the General Law of Electric Services”, 1998/09/10</li> <li>• Law DFL-4; DFL-4/20018, 2007/02/05 – Electrical Service Law.</li> </ul>
/PDD-T/	Project Design Document Form (CDM PDD) – Version 03
/MA/	Decision 3/CMP. 1 (Marrakesh – Accords & Annex to decision (17/CP.7))
/TA/	Tool for the demonstration and assessment of additionality (Ver. 6).
/TEF/	Tool for calculating the emission factor of an electricity system – Version 2.2.1 EB 63, Annex 19.
/VVM/	Validation and Verification Manual (Version 01.2, Annex 1, EB 55)

**Table 7-3: Websites used**

Reference	Link	Organisation
/bcentral/	<a href="http://www.bcentral.cl">www.bcentral.cl</a>	Central Bank of Chile
/cd4cdm/	<a href="http://www.cd4cdm.org">www.cd4cdm.org</a>	UNEP Riso Centre
/cdec-sing/	<a href="http://cdec2.cdec-sing.cl">http://cdec2.cdec-sing.cl</a>	<b>CDEC-SING web site</b>  <i>Yearbook Operation Statistics access route: Anuarios (free access);</i>  <i>Power plants Data (Name, unit, subunit, gross generation and fuel type): Datos de Operación/ Operacion Real/ Generación de Energía/ Detalle Mensual de Generacion de Energia (free access)</i>  <i>Power consumption from each power plant: Datos de Operación/ Operacion Real/ Generación de Energía/ Detalle Anual de Generacion de Energia (free access)</i>  <i>Fossil fuel consumption from each power plant: Datos de Operación/ Operacion Real/ Consumo de combustible/ Consumo Anual de combustibles por centrales (free access)</i>
/cdec-sic/	<a href="https://www.cdec-sic.cl/index_en.php">https://www.cdec-sic.cl/index_en.php</a>	CDEC-SIC
/cne/	<a href="http://www.cne.cl/">http://www.cne.cl/</a>	<b>CNE website</b>  <i>Installed capacity for Norte Grande Interconnected System (and other Chilean Grids) – access route: Estadísticas/ Energia/ Electricidad/ Capacidad Instalada de Generacion</i>
/dna/	<a href="http://www.mma.gob.cl/1257/w3-channel.html">http://www.mma.gob.cl/1257/w3-channel.html</a>	Environmental Ministry – Climate Change Office (DNA of Chile)
/goldwind/	<a href="http://www.goldwindglobal.com/web/index.do">http://www.goldwindglobal.com/web/index.do</a>	Goldwind web site
/IEA/	<a href="http://www.iea.org/textbase/nppdf/free/2005/ElecCost.pdf">http://www.iea.org/textbase/nppdf/free/2005/ElecCost.pdf</a>	IEA – International Energy Agency – Projected Costs of Energy Electricity
/ipcc/	<a href="http://www.ipcc-nggip.iges.or.jp">www.ipcc-nggip.iges.or.jp</a>	IPCC publications



Reference	Link	Organisation
/minener/	<a href="http://antiguo.minenergia.cl/minwww/opencms/14_portal_informacion/06_Estadisticas/Balances_Energ.html">http://antiguo.minenergia.cl/minwww/opencms/14_portal_informacion/06_Estadisticas/Balances_Energ.html</a>	Energy Ministry – National Energy Balance 2010
/sea/	<a href="http://www.sea.gob.cl/">http://www.sea.gob.cl/</a>	Environmental Assessment Service – Ministry of Environmental
/Sii/	<a href="http://www.sii.cl/pagina/valores/bienes/tabla_vida_enero.htm">http://www.sii.cl/pagina/valores/bienes/tabla_vida_enero.htm</a> <a href="http://www.sii.cl/aprenda_sobre_impuestos/impuestos/imp_directos.htm">http://www.sii.cl/aprenda_sobre_impuestos/impuestos/imp_directos.htm</a>	National accounting regulations (Resolution N°43 of 26 December 2002, <i>which establishes Normal Lifetime of Fixed Assets</i> ) National Tax Regulations
/transnet/	<a href="http://www.transnet.cl">www.transnet.cl</a>	Transnet web site.
/unfccc/	<a href="http://cdm.unfccc.int">http://cdm.unfccc.int</a>	UNFCCC
/WindE/	<a href="http://www.wind-energy-the-facts.org">www.wind-energy-the-facts.org</a>	Wind Energy – The Facts

**Table 7-4:** List of interviewed persons

Reference	Mol <sup>1</sup>		Name	Organisation / Function
/IM01/	V	<input checked="" type="checkbox"/> Mr. <input type="checkbox"/> Ms	Juan Guillermo Walker	AM Eolica Alto Loa SpA - Business Developer Manager
/IM01/	V	<input checked="" type="checkbox"/> Mr. <input type="checkbox"/> Ms.	Mario Pavez Ovalle	AM Eolica Alto Loa SpA - Development Project Manager
/IM01/	V	<input checked="" type="checkbox"/> Mr. <input type="checkbox"/> Ms	Erick Underwood	AM Eolica Alto Loa SpA - Development Executive
/IM01/	V	<input checked="" type="checkbox"/> Mr. <input type="checkbox"/> Ms.	Christian Evans Rahal	AM Eolica Alto Loa SpA - Operation Development Executive

Reference	Mol <sup>1</sup>		Name	Organisation / Function
/IM01/	V	<input checked="" type="checkbox"/> Mr. <input type="checkbox"/> Ms.	José Escobar	AM Eolica Alto Loa SpA - General Manager
/IM02/	V	<input type="checkbox"/> Mr. <input checked="" type="checkbox"/> Ms.	Carolina Urmeneta	POCH – CDM Consultant
/IM02/	V	<input type="checkbox"/> Mr. <input checked="" type="checkbox"/> Ms.	Fiona Bello	POCH – CDM Consultant
/IM03/	V	<input checked="" type="checkbox"/> Mr. <input type="checkbox"/> Ms.	Hugo Galleguillos	Lasana Community – President/Representative
/IM03/	V	<input type="checkbox"/> Mr. <input checked="" type="checkbox"/> Ms.	Andrea Bautista	Estacion San Pedro Community – Community Member

<sup>1)</sup> Means of Interview: (Telephone, E-Mail, Visit)

# ANNEX

- A1:** Validation Protocol
- A2:** Assessment of Baseline Identification
- A3:** Assessment of Financial Parameters
- A4:** Assessment of Barrier analysis
- A5:** Outcome of the GSCP
- A6:** Appointment certificates of the team members

## ANNEX 1: VALIDATION PROTOCOL

**Table A-1:** Requirements Checklist

Checklist Item (incl. guidance for the validation team)	Validation Team Comments (justification and substantiation of information, data and evidences)	Ref.	Draft Concl.	Final Concl.
<b>A. General Description of Project Activity</b>				
<b>A.1. Approval</b> <i>The written approval of the parties involved is a mandatory requirement</i>				
<p>A.1.1. Has the project provided written approvals of all parties involved? (EB 55 Annex 1, § 44)</p> <p><i>Indicate whether a letter of approval has been received, with a clear reference to the supporting documentation.</i></p> <p><i>Indicate whether this letter was provided to the DOE by the project participants or directly by the DNA</i></p>	<p><i>Description:</i> The party involved in the project activity is Chile (Host Party).</p> <p>In accordance with the CDM M&amp;P at the stage of validation a Party involved may or may not have provided its approval at the time of making the PDD public. The approval of the parties involved is required at the time of requesting registration.</p> <p>Currently the PP has requested the LoA for the project activity, but LoA has not been received yet.</p> <p><i>Justification of evidences:</i> Interview with PP and CDM consultant.</p> <p><i>Conclusion:</i> The project has not provided the written approval from the Chilean DNA. Hence, CAR A1 has been raised.</p> <p><b>(CAR A1)</b> At the time of validation the letter of approval is missing.</p>	<p>/dna/ /unfccc/ /IM01/ /IM02/</p>	<b>CAR A1</b>	OK

Checklist Item (incl. guidance for the validation team)	Validation Team Comments (justification and substantiation of information, data and evidences)	Ref.	Draft Concl.	Final Concl.
<p>A.1.2. Are the approvals issued from organisations listed as DNAs on the UNFCCC CDM website?</p> <p>(EB 55 Annex 1, §§ 44, 47, 48, 49 (b), 49 (c), 53) Indicate the means of validation employed to assess the authenticity, i.e. in case of doubt whether LoA has been verified with the DNA. Further describe which entity submitted the LoA for validation.</p>	See comments at A.1.1 above.		<del>CAR</del> A1	OK
<p>A.1.3. Do the written approvals confirm that the corresponding party is a Party to the Kyoto Protocol?</p> <p>(EB 55 Annex 1, § 45(a))</p>	<p>Description: Chile, the host country, has ratified the Kyoto Protocol on 26<sup>th</sup> August 2002. The Chilean DNA assigned for CDM is the "MMA"</p> <p>Justification of evidences: Evidenced at UNFCCC website.</p> <p>Conclusion: The project complies with the requirement. However, it is still pending to receive the DNAs LoA, see CAR A1</p>	/dna/ /unfccc/	<del>CAR</del> A1	OK
<p>A.1.4. Do the written approvals confirm that the participation is voluntary?</p> <p>(EB 55 Annex 1, § 45(b))</p>	See comments at A.1.1 above.		<del>CAR</del> A1	OK
<p>A.1.5. Does the written approval from the host country confirm that the project contributes to the sustainable development in the country?</p> <p>(EB 55 Annex 1, § 45(c))</p>	See comments at A.1.1 above.		<del>CAR</del> A1	OK
<p>A.1.6. Do the written approvals refer to the precise project title in the PDD submitted for</p>	See comments at A.1.1 above.		<del>CAR</del> A1	OK

Checklist Item (incl. guidance for the validation team)	Validation Team Comments (justification and substantiation of information, data and evidences)	Ref.	Draft Concl.	Final Concl.
registration or an additional specification of the project activity, e.g. PDD version number? (EB 55 Annex 1, §§ 45(d), 50)				
A.1.7. Are the written approvals unconditional with regard to A.1.3 to A.1.6? (EB 55 Annex 1, § 46)	<i>See comments at A.1.1 above.</i>		<del>CAR</del> A1	OK
A.1.8. Is the information regarding the project participants listed in section A3 and in Annex 1 of the PDD internally consistent to each other? (EB 55 Annex 1, § 51)	<i>Description:</i> Yes, as stated at section A.3 and in Annex 1, the project participant is AM Eolica Alto Loa SpA. <i>Justification of evidences:</i> Both sections are consistent. <i>Conclusion:</i> The project complies with the requirement.	/PDD/ /DIR/	OK	OK
A.1.9. Are all project participants listed in the PDD approved at least by one Party involved? (EB 55 Annex 1, § 51) <i>Indicate whether the participation of the project participant(s) has been approved by a Party to the Kyoto Protocol.</i> <i>Describe the means of validation employed to draw this conclusion.</i>	<i>See comments at A.1.1 above.</i>		<del>CAR</del> A1	OK
A.1.10. Are any other project participants approved but not listed in the PDD? (EB 55 Annex 1, § 52)	<i>See comments at A.1.1 above.</i>		<del>CAR</del> A1	OK
A.1.11. Does the DoE have a direct contractual relationship with the PP?	<i>Description:</i> There is a signed Proposal for carrying out the validation CDM Project "Ckani Wind Farm Project" – #		OK	OK

Checklist Item (incl. guidance for the validation team)	Validation Team Comments (justification and substantiation of information, data and evidences)	Ref.	Draft Concl.	Final Concl.
(EB 55 Annex 1, § 51; EB 50 Annex 48, §§ 7–9) <i>Check whether the PPs listed in the published PDD are still listed in the PDD going to be submitted to request for registration.</i>	11CDMBR110828 – between TÜV NORD CERT GmbH and AM Eolica Alto Loa SpA signed on 2012-01-11.  <i>Justification of evidences:</i> It is a valid contract between the DOE and PP.  <i>Conclusion:</i> The project complies with the requirements			
<b>A.2. Contribution to Sustainable Development</b>  <i>The project's contribution to sustainable development is assessed.</i>				
A.2.1. Has the host country confirmed that the project assists it in achieving sustainable development?  (EB 55 Annex 1, §§ 125–127) <i>Contains a statement confirming whether the letter of approval by the DNA of the host party confirmed the contribution of the project to the sustainable development of the Host Party.</i>	<i>See comments at A.1.1 above.</i>		CAR A1	OK
A.2.2. Will the project create other environmental or social benefits than GHG emission reductions?  (EB 55 Annex 1, §§ 125–127) <i>Describe the other positive aspects not related to GHG emission reduction on the environment.</i>	<i>Description:</i> The view of the project participants on the contribution of the project activity towards sustainable development is briefly described in section A.2. of the PDD.  Besides GHG reduction, the project also helps reducing the reliance on fossil fuel for power generation and minimization of environmental impact..  <i>Justification of evidences:</i> The project was reviewed in detail, the	/PDD/ /IM01/ /IM02/ /IM03/	OK	OK

Checklist Item (incl. guidance for the validation team)	Validation Team Comments (justification and substantiation of information, data and evidences)	Ref.	Draft Concl.	Final Concl.
	<p>sites where the wind farm will be located were inspected and local stakeholders were also interviewed.</p> <p><i>Conclusion:</i> The project creates other social-environmental benefits than GHG emission reductions.</p>			
<p><b>A.3. PDD editorial aspects</b></p> <p><i>The PDD used as a basis for validation shall be prepared in accordance with the latest template and guidance from the CDM Executive Board available on the UNFCCC CDM website.</i></p>				
<p>A.3.1. Has the latest version of the PDD form been applied? (EB 55 Annex 1, § 55)</p>	<p><i>Description:</i> Yes, it has been used the version 3 of CDM PDD template. No deviations thereof have been observed.</p> <p><i>Justification of evidences:</i> The website of the UNFCC was checked.</p> <p><i>Conclusion:</i> The latest PDD template has been used.</p>	/unfccc/ /PDD-T/	OK	OK
<p>A.3.2. Has the PDD been duly filled in accordance with the latest guidance(s)? (EB 55 Annex 1, §§ 56–57)</p>	<p><i>Description:</i> Yes, the PDD has in general been filled in accordance with the PDD Guidelines. Minor editorial corrections have been discussed with PP.</p> <p>Nevertheless, information required in Section A.2 and Section A.4.3 as per the PDD guidance is missing.</p> <p><i>Justification of evidences:</i> The PDD has been reviewed against the PDD Guidelines.</p> <p><i>Conclusion:</i> Further information is required in Section A.2 and Section A.4.3 as per the PDD guidance requirements. CL A2 has been raised:</p>	/PDD/ /GCP/	<del>CL A2</del>	OK



Checklist Item (incl. guidance for the validation team)	Validation Team Comments (justification and substantiation of information, data and evidences)	Ref.	Draft Concl.	Final Concl.
	<p><b>(CL A2)</b> According to the guidelines for completing the PDD the following information is missing:</p> <ul style="list-style-type: none"> <li><b>Section A.2:</b> the scenario existing prior to the start of the implementation of the project activity (Greenfield project) is missing. Furthermore description of the baseline scenario, as identified in section B.4 is also missing.</li> <li><b>Section A.4.3:</b> The scenario existing prior to the start of the implementation of the project activity. The monitoring equipments and their location in the systems. Moreover references for the information about the age and average lifetime of the equipments and the PLF are missing.</li> </ul>			
<p><b>A.4. Technology to be employed</b></p> <p><i>Validation of project technology focuses on the project engineering, choice of technology and competence/maintenance needs. The DOE should ensure that environmentally safe and sound technology and know-how is used.</i></p>				
<p>A.4.1. Does the PDD contain a clear, accurate and complete project description?</p> <p>(EB 55 Annex 1, §§ 58–59, 64)</p> <p><i>The PDD shall contain a clear description of the project activity which provides the reader with a clear understanding of the precise nature of the project activity and the technical aspects of its implementation.</i></p> <p><i>Pl. consider esp. chapters A.2, A.4.2 and A.4.3 (in case of</i></p>	<p><i>Description:</i> A brief project description is given in sections A.2, and section A.4 of the PDD. The technology of the wind turbines is Chinese provided by the company Goldwind.</p> <p>The project description is compatible with the type and category of the project activity as described in item A.4.3 of the PDD, but further information is required in the PDD as it is not specified the list of equipment(s) and systems to be installed, therefore CL A2 was raised.</p>	<p>/PDD/ /IM01/ /IM02/</p>	<p><del>CL A2</del></p>	<p>OK</p>

Checklist Item (incl. guidance for the validation team)	Validation Team Comments (justification and substantiation of information, data and evidences)	Ref.	Draft Concl.	Final Concl.
<p><i>LSC PDD) for assessment.</i></p> <p><i>§64 (a) Describe the process undertaken to validate the accuracy and completeness of the project description.</i></p> <p><i>§64 (b) Contain the DOE's opinion on the accuracy and completeness of the project description.</i></p>	<p><i>Justification of evidences:</i> For the assessment the validation team has: a) reviewed the PDD in detail; b) carried out a site visit and c) carried out interviews with technical and operational personnel.</p> <p><i>Conclusion:</i> the project activity will use Goldwind turbines. Nevertheless, correction is required in section A.2 and A.4.3. CL A2 was raised, please refer to it.</p>			
<p>A.4.2. Is this description in accordance with the real situation or (in case of greenfield projects) is it most likely that the project will be implemented acc to the project description?</p>	<p><i>Description:</i> The project activity consists in a Greenfield wind farm. The PDD has been reviewed and it is confirmed that the project description is in accordance to the most likely implementation scenario.</p> <p>Nevertheless, further information is required in the PDD regarding the list of equipment(s) and systems to be installed.</p> <p><i>Justification of evidences:</i> This could be verified during site visit as described in question A.4.1 above.</p> <p><i>Conclusion:</i> Correction is required in the technology description CL A2 was raised, please refer to it.</p>	/PDD/	<del>CL A2</del>	OK
<p>A.4.3. In case the project involves alteration of the existing installation or process, is a clear description available regarding the differences between the project and the pre-project situation?</p> <p>(EB 55 Annex 1, §§ 63–64)</p> <p><i>Describe the steps taken to validate this issue.</i></p>	<p><i>Not applicable, since the project does not involve alteration of the existing installation or process. It is a Greenfield project.</i></p>	/PDD/	n.a	n.a.

<b>Checklist Item</b> (incl. guidance for the validation team)	<b>Validation Team Comments</b> (justification and substantiation of information, data and evidences)	<b>Ref.</b>	<b>Draft Concl.</b>	<b>Final Concl.</b>
<p>A.4.4. Does the project design engineering reflect current good practices?</p> <p><i>Consider the equipment specifications, literature (e.g. EU BREF papers) and professional experiences. Describe the process undertaken to assess the engineering.</i></p>	<p><i>Description:</i> Yes, the project is a new wind power plant which generates energy using wind power.</p> <p>In PDD, section A.4.2, description of the technology is provided. The technology of the wind turbines is Chinese provided by the company Goldwind. According to Goldwind website by the end of 2010, over 7,800 Goldwind turbines are in service, setting a standard of excellence and reliability around the globe. Hence, it is assessed that the project design reflects current good practices and is considered to be environmentally safe and sound.</p> <p><i>Justification of evidences:</i> The validation team could verify the information above by inspecting the project site and interviewing representatives of PP. Also, the contract signed<sup>/PSD/</sup> with Goldwind so as its website were checked.</p> <p><i>Conclusion:</i> The project design reflects current good practices.</p>	<p>/PDD/ /goldwind/ /PSD/</p>	<p>OK</p>	<p>OK</p>
<p>A.4.5. Does the project use state of the art technology or would the technology result in a significantly better performance than any commonly used technologies in the host country?</p> <p><i>Describe the process undertaken to assess the state of the art technology.</i></p>	<p><i>Description:</i> Yes, the turbines and towers will be provided by Goldwind, which is an important manufacturer of wind technology worldwide.</p> <p>Nevertheless, further information about how know-how and technology would be transferred to the host country is missing in the PDD.</p> <p><i>Justification of evidences:</i> Interviews with representatives of the PP were performed.</p> <p><i>Conclusion:</i> The project design uses state of the art technology. Nevertheless, further information is required in the PDD. CL A3 was raised.</p> <p><b>(CL A3)</b> Section A.4.3 it is not clarified how know-how and</p>	<p>/PDD/ /IM01/ /IM02/</p>	<p><del>CL A3</del></p>	<p>OK</p>

Checklist Item (incl. guidance for the validation team)	Validation Team Comments (justification and substantiation of information, data and evidences)	Ref.	Draft Concl.	Final Concl.
	technology would be transferred to the host country.			
A.4.6. Does the project make provisions for meeting training and maintenance needs? <i>Describe the process undertaken to assess the maintenance and training needs.</i>	<i>Description:</i> It has been identified that training activities and transfer of know-how will be required for the project activity. Nevertheless, this information has not been included in the PDD. <i>Justification of evidences:</i> The PDD has been checked and interviews with representatives of PPs have been performed. <i>Conclusion:</i> CL A3 was raised, please refer to it.	/PDD/ /IM01/ /IM02/	CL A3	OK
<b>A.5. Small scale project activity</b> <i>It is assessed whether the project qualifies as small-scale CDM project activity</i>				
A.5.1. Does the project qualify as a small scale CDM project activity as defined in decision 4 / CMP.1 annex II? (EB 55 Annex 1, §§ 135–136 (a))	<i>The project does not qualify as small-scale CDM project activity.</i>	/PDD/	n.a.	n.a.
A.5.2. Does the project apply one of the approved small scale categories and any methodology and tool referred therein? (EB 55 Annex 1, § 136 (b)) <i>Check, if applicable the expiry dates of the applied</i>	<i>The project does not qualify as small-scale CDM project activity.</i>	/PDD/	n.a.	n.a.

Checklist Item (incl. guidance for the validation team)	Validation Team Comments (justification and substantiation of information, data and evidences)	Ref.	Draft Concl.	Final Concl.
<i>methodology. Further, take into consideration the general guidance to the methodologies<sup>1</sup>, which provide guidance on equipment capacity, equipment performance, sampling and other monitoring related issues.</i>				
A.5.3. Is the small scale project activity not a debundled component of a larger project activity? (EB 55 Annex 1, § 136 (c)) <i>Describe the steps taken to validate this issue. PI refer to the Compendium of guidance on debundling (EB 54, Annex 13).</i>	<i>The project does not qualify as small-scale CDM project activity.</i>	/PDD/	n.a.	n.a
A.5.4. Is an assessment of the environmental impacts of the proposed SSC CDM project activity required by the host Party? (EB 55 Annex 1, § 136 (d))	<i>The project does not qualify as small-scale CDM project activity.</i>	/PDD/	n.a.	n.a
<b>B. Project Baseline, Additionality and Monitoring Plan</b>				
<b>B.1. Application of the Methodology</b>				
B.1.1. Does the project apply an approved and applicable CDM methodology and a valid	<i>Description:</i> Yes, the project activity applies the approved methodology ACM0002. At the time of validation, version 12.2.0 of	/unfccc/ /ACM	OK	OK

<sup>1</sup> <http://cdm.unfccc.int/methodologies/SSCmethodologies/approved.html>

<b>Checklist Item</b> (incl. guidance for the validation team)	<b>Validation Team Comments</b> (justification and substantiation of information, data and evidences)	<b>Ref.</b>	<b>Draft Concl.</b>	<b>Final Concl.</b>
version thereof?  (EB 55 Annex 1, § 65) <i>Describe the steps taken to validate this issue.</i>	the applied methodology was valid and applicable.  <i>Justification of evidences:</i> To ensure that the applied methodology is approved by the executive board and the PP has chosen the latest version, the methodologies section of UNFCCC CDM website ( <a href="http://cdm.unfccc.int/methodologies/PAmethodologies/approved.html">http://cdm.unfccc.int/methodologies/PAmethodologies/approved.html</a> ) was visited.  <i>Conclusion:</i> The project applies an approved and applicable version of a CDM methodology	0002/		
B.1.2. Is the applied CDM methodology identical with the version available on the UNFCCC website?  (EB 55 Annex 1, §§ 65, 70) <i>Describe the steps taken to validate this issue.</i>	<i>Description:</i> The methodology applied by the PPs follows stipulations of the version available on UNFCCC website.  <i>Justification of evidences:</i> The PDD was reviewed against the stipulations of the methodology.  <i>Conclusion:</i> The stipulations of the published version have been followed.	/ACM 0002/	OK	OK
B.1.3. Are all applicability criteria in the methodology, the applied tools or any other methodology component referred to therein fulfilled?  (EB 55 Annex 1, §§ 66(a)–(b), 68, 71, 76) <i>Describe for each applicability criterion listed in the selected approved methodology the steps taken to assess the information contained in the PDD.</i>	<i>Description:</i> In order to assess the applicability of the project, the PDD was reviewed and the applicability determination of the PDD was counter checked against the criteria given in the applicability section of the methodology. The information in the PDD was checked during on-site visit to prove that such information is valid and reflects the reality of the project.  <i>Justification of evidences:</i>  The methodology is applicable under the following conditions:  <ul style="list-style-type: none"> <li>• <b>For grid-connected renewable power generation project activities that (a) install a new power plant at a site where no renewable power plant was operated prior to the implementation of the project activity (greenfield plant); (b)</b></li> </ul>	/PDD/ /ACM 0002/	OK	OK

Checklist Item (incl. guidance for the validation team)	Validation Team Comments (justification and substantiation of information, data and evidences)	Ref.	Draft Concl.	Final Concl.
	<p><b>involve a capacity addition; (c) involve a retrofit of (an) existing plant(s); or (d) involve a replacement of (an) existing plant(s).</b></p> <p>The project activity fits option (a), as it consists of the implementation of a new wind power plant/unit.</p> <ul style="list-style-type: none"> <li><b>The project activity is the installation, capacity addition, retrofit or replacement of a power plant/unit of one of the following types: hydro power plant/unit (either with a run-of-river reservoir or an accumulation reservoir), wind power plant/unit, geothermal power plant/unit, solar power plant/unit, wave power plant/unit or tidal power plant/unit;</b></li> </ul> <p>The project activity is the installation of a new wind power plant/unit.</p> <ul style="list-style-type: none"> <li><b>In the case of capacity additions, retrofits or replacements (except for wind, solar, wave or tidal power capacity addition projects which use Option 2: on page 10 to calculate the parameter <math>EG_{PJ,y}</math>): the existing plant started commercial operation prior to the start of a minimum historical reference period of five years, used for the calculation of baseline emissions and defined in the baseline emission section, and no capacity expansion or retrofit of the plant has been undertaken between the start of this minimum historical reference period and the implementation of the project activity;</b></li> </ul> <p>Not applicable to the project activity as it consists of a new wind power plant.</p> <ul style="list-style-type: none"> <li><b>In case of hydro power plants, one of the following conditions must apply:</b> <ul style="list-style-type: none"> <li><b>The project activity is implemented in an existing</b></li> </ul> </li> </ul>			

<b>Checklist Item</b> (incl. guidance for the validation team)	<b>Validation Team Comments</b> (justification and substantiation of information, data and evidences)	<b>Ref.</b>	<b>Draft Concl.</b>	<b>Final Concl.</b>
	<p><b>reservoir, with no change in the volume of reservoir; or</b></p> <p>Not applicable to the project activity.</p> <ul style="list-style-type: none"> <li><b>The project activity is implemented in an existing single or multiple reservoirs, where the volume of any of reservoirs is increased and the power density of each reservoir, as per definitions given in the Project Emissions section, is greater than 4 W/m2.</b></li> </ul> <p>Not applicable to the project activity.</p> <p><b>The methodology is not applicable to the following:</b></p> <ul style="list-style-type: none"> <li><b>Project activities that involve switching from fossil fuels to renewable energy sources at the site of the project activity, since in this case the baseline may be the continued use of fossil fuels at the site;</b></li> </ul> <p>Not applicable to the project activity.</p> <ul style="list-style-type: none"> <li><b>Biomass fired power plants;</b></li> </ul> <p>Not applicable to the project activity.</p> <ul style="list-style-type: none"> <li><b>Hydro power plants that result in new single reservoirs or in the increase in existing reservoirs where the power density of the power plant is less than 4 W/m2.</b></li> </ul> <p>Not applicable to the project activity.</p> <p><i>Conclusion:</i> Project fulfils applicability criteria of the methodology.</p>			



Checklist Item (incl. guidance for the validation team)	Validation Team Comments (justification and substantiation of information, data and evidences)	Ref.	Draft Concl.	Final Concl.
B.1.4. In case one or more applicability criteria have not been met, has the validation team requested clarification to, revision of or deviation from the methodology in accordance with the latest guidelines?  (EB 55 Annex 1, §§ 72–75)	<i>Description:</i> Not applicable as project meets all applicability conditions of ACM0002. <i>Justification of evidences:</i> See comment just above. <i>Conclusion:</i> Not applicable.	/PDD/ /ACM 0002/	OK	OK
B.1.5. Is the project in accordance with every other stipulation or requirement mentioned in all sections of the methodology and in guidances for approved methodologies provided by the CDM EB?  (EB 55 Annex 1, § 69, 71)  <i>Describe the steps taken to check whether the proposed project activity meets <u>all the other possible stipulations and/or limitations</u> mentioned in all sections of the approved methodology selected.</i>	<i>Description:</i> All stipulations and requirements were fulfilled by the project activity. <i>Justification of evidences:</i> Technical information and interviews were performed. <i>Conclusion:</i> All applicable criteria and further requirements are fulfilled by the project activity. No discrepancies were identified.	/PDD/ /ACM 0002/ /IM01/ /IM02/	OK	OK
<b>B.2. Project Boundaries</b>  <i>Project Boundaries are the limits and borders defining the GHG emission reduction project</i>				
B.2.1. Are the project's spatial boundaries (geographical) clearly defined?	<i>Description:</i> Section B.3 of the PDD includes a definition of the project's spatial boundaries. These boundaries are in accordance with the applicable methodology ACM0002, <i>the spatial extent of the</i>	/PDD/ /ACM	<del>CL-B1</del>	OK

Checklist Item (incl. guidance for the validation team)	Validation Team Comments (justification and substantiation of information, data and evidences)	Ref.	Draft Concl.	Final Concl.
(EB 55 Annex 1, §§ 67(a), 78–80) <i>Provide information on how the validation of the geographical boundary has been performed either based on reviewed documented evidence or by describing what was observed/viewed during a site visit.</i>	<p><i>project boundary includes the project power plant and all power plants connected physically to the electricity system that the CDM project activity is connected to.</i></p> <p><i>Justification of evidences:</i> The draft PDD and the applicable methodology have been reviewed.</p> <p><i>Conclusion:</i> The project fulfils the requirement; Nevertheless, some corrections are required in the PDD regarding the project boundary, CL B1 was raised.</p> <p><b>(CL B1) Section B.3</b> Table 5 and Figure 3 for the project boundary are not as per the applicable methodology ACM0002 Version 12.2.</p>	0002/		
<p>B.2.2. Are all sources and GHGs included in the project boundary as required in the applied methodology?</p> <p>(EB 55 Annex 1, §§ 67(a), 78–80) <i>Provide information on how the validation of the GHGs and sources has been performed either based on reviewed documented evidence or by describing what was observed/viewed during a site visit.</i></p>	<p><i>Description:</i> Yes, all sources and GHGs included in the project boundary are included in the table in section B.3 of the PDD in line with ACM0002.</p> <p><i>Justification of evidences:</i> The PDD was revised against sources and gases defined in ACM0002.</p> <p><i>Conclusion:</i> The sources are in compliance with the applied methodology as well as with the real situation.</p>	/PDD/ /ACM 0002/	OK	OK
<p>B.2.3. In case the methodology allows to choose whether a source and/or gas is to be included, is the choice sufficiently explained and justified?</p> <p>(EB 55 Annex 1, §§ 67(a), 78–80) <i>Confirm if the justification provided by the PPs is reasonable, based on assessment of supporting</i></p>	<p><i>Not applicable, since the methodology does not allow such choices.</i></p>	/ACM 0002/	OK	OK

Checklist Item (incl. guidance for the validation team)	Validation Team Comments (justification and substantiation of information, data and evidences)	Ref.	Draft Concl.	Final Concl.
<i>documented evidence provided by the PPs or by onsite observations.</i>				
<b>B.3. Baseline Identification</b>  <i>The choice of the baseline scenario will be validated with focus on whether the baseline is a likely scenario, and whether the methodology to define the baseline scenario has been followed in a complete and transparent manner.</i>				
B.3.1. What possible baseline scenarios have been considered?  (EB 55 Annex 1, §§ 67(b), 83) <i>Fill in all alternatives in table A-2.</i>	<i>Description:</i> The baseline is determined according to the applicable methodology and does not require alternative baseline consideration. See definition of baseline in B.3.3 below.  <i>Justification of evidences:</i> ACM0002 provides a definition of the baseline for the installation of a new grid-connected renewable power plant/unit.  <i>Conclusion:</i> See definition of baseline in B.3.3 below.	/ACM 0002/	OK	OK
B.3.2. Is the list of alternatives complete?  (EB 55 Annex 1, §§ 67(b), 83)  <i>Describe how it was validated that all alternatives are plausible and no plausible alternative is excluded from the consideration</i>	<input checked="" type="checkbox"/> All plausible alternative scenarios listed in the approved methodology have been considered. In the course of document review and site visit, it has been validated that no other alternatives which supply comparable outputs and / or services are to be taken into consideration. Thus no plausible scenario has been omitted.  <input type="checkbox"/> The following alternative scenarios/options have been omitted. Corresponding CAR(s)/CL(s) has /have been issued	/ACM 0002/	OK	OK
B.3.3. What has been identified as the baseline scenario?	<i>Description:</i> 'Electricity delivered to the grid by the project activity would have otherwise been generated by the operation of grid-	/PDD/ /ACM	OK	OK

<b>Checklist Item</b> (incl. guidance for the validation team)	<b>Validation Team Comments</b> (justification and substantiation of information, data and evidences)	<b>Ref.</b>	<b>Draft Concl.</b>	<b>Final Concl.</b>
(EB 55 Annex 1, §§ 81–82, 86) <i>Describe the chosen BL scenario, taking into consideration the technology that would be employed and / or the activities that would take place in the absence of the proposed CDM project activity.</i>	<i>connected power plants and by the addition of new generation sources, as reflected in the combined margin (CM) calculations described in the “Tool to calculate the emission factor for an electricity system”.</i>  <i>Justification of evidences:</i> The definition of ACM0002 was applied.  <i>Conclusion:</i> The identified baseline scenario is according to definition stated in ACM0002.	0002/		
<b>B.3.4. Has the baseline scenario been determined according to the methodology?</b>  (EB 55 Annex 1, §§ 82, 87(e)) <i>Describe how it is validated that the identification of the most plausible baseline scenario is carried out in accordance with the applied methodology and applied methodological tools. Please refer to table A-2.</i>	For details of the assessment regarding the evaluation of the baseline scenario pl. refer to table A-2. <input checked="" type="checkbox"/> The determination has been carried out as per the procedure contained in the applied methodology. <input type="checkbox"/> The following CARs / CLs have been identified with respect to the selection of the baseline scenario:	/ACM 0002/	OK	OK
<b>B.3.5. Has any plausible alternative scenario been excluded?</b>  (EB 55 Annex 1, § 83) <i>Describe how it is validated that no plausible alternative scenario has been excluded.</i>	For details of the assessment regarding the evaluation of the baseline scenario pl. refer to table A-2. <input checked="" type="checkbox"/> No plausible baseline scenario has been excluded. <input type="checkbox"/> The following plausible baseline scenarios have been excluded though no adequate justification has been provided for elimination. The following CARs / CLs have been issued:	/ACM 0002/	OK	OK
<b>B.3.6. Is the identified baseline scenario reasonable and has the baseline scenario been determined using conservative assumptions where possible, including relevant references and sources?</b>	<input checked="" type="checkbox"/> The baseline scenario is reasonable and has been determined using conservative assumptions where possible. Please refer to comments in table A-2 and sections B.3.2 to B.3.5 above. <input type="checkbox"/> The following CARs / CLs have been issued because assumptions used in the baseline determination have been assessed to be not conservative	/ACM 0002/	OK	OK

Checklist Item (incl. guidance for the validation team)	Validation Team Comments (justification and substantiation of information, data and evidences)	Ref.	Draft Concl.	Final Concl.
(EB 55 Annex 1, §§ 84–86(a)–(c)) <i>Describe whether the choice of the identified baseline scenario is reasonable by validating the <u>key assumptions, calculations and rationales</u> used in the PDD. Describe whether these are listed, relevant and <u>conservatively interpreted</u> in the PDD.</i>				
B.3.7. Does the baseline scenario sufficiently take into account relevant national and/or sectoral policies, macro-economic trends and political aspirations?  (EB 55 Annex 1, §§ 85, 87(d)) <i>Describe whether the PP has shown that all relevant policies and circumstances have been identified and correctly considered in the PDD in accordance with the guidance by the Board. Pl. consider the guidance EB 22 annex 3 (regarding E+ and E- policies).</i>	<i>Not applicable, as the baseline is given by the methodology.</i>	/ACM 0002/	OK	OK
B.3.8. Is the baseline scenario determination compatible with the available data and are all literature and sources clearly referenced?  (EB 55 Annex 1, § 87(a)–(c)) <i>Describe whether the documents and sources referred to in the PDD are correctly quoted and clearly referenced.</i>	<i>Not applicable, as the baseline is given by the methodology.</i>	/ACM 0002/	OK	OK
B.3.9. Does the PDD contain a <i>verifiable</i> description of the identified baseline scenario, including a description of the technology that would be employed and/or the activities that would take	<i>Not applicable, as the baseline is given by the methodology.</i>	/ACM 0002/	OK	OK

Checklist Item (incl. guidance for the validation team)	Validation Team Comments (justification and substantiation of information, data and evidences)	Ref.	Draft Concl.	Final Concl.
place in the absence of the proposed CDM project activity. (EB 55 Annex 1, § 86)				
<b>B.4. Additionality Determination</b> <i>The assessment of additionality will be validated with focus on whether the project itself is not a likely baseline scenario.</i>				
<b>B.4.1. Methodology</b>				
B.4.1.1. Does the PDD describe how the project is additional and does the additionality justification follow the requirements of the applied methodology and/or methodological tools?  (EB 55 Annex 1, §§ 67(d), 94–95) <i>Describe how it is validated that additionality justification is carried out in accordance with the applied methodology and/or applied methodological tools. Further focus your assessment on the reliability and credibility of data, rationales and assumptions, justifications and documentations provided by the PP.</i>	<i>Description:</i> Yes, the sequence utilized by the PP to demonstrate the additionality of the project has followed the step-wise approach described in version 6 of the “Tool for the demonstration and assessment of additionality” <sup>TA/</sup> .  <i>Justification of evidences:</i> The PDD was reviewed in detail and supporting evidences cross-checked.  <i>Conclusion:</i> The additionality is demonstrated by benchmark analysis calculating Project IRR.	/PDD/ /ACM 0002/ /TA/	OK	OK
<b>B.4.2. Consideration of CDM before project start</b>				
B.4.2.1. Is the project starting date reported in accordance with the CDM glossary of terms?	<i>Description:</i> The project starting date reported in section C.1.1 of PDD is 2012/05/01 which is the expected date of signature of the contract for the supply of the wind turbines. However, it has been revealed during validation site visit and	/PDD/ /GT/ /PSD/	<del>CAR</del> C1	OK

<b>Checklist Item</b> (incl. guidance for the validation team)	<b>Validation Team Comments</b> (justification and substantiation of information, data and evidences)	<b>Ref.</b>	<b>Draft Concl.</b>	<b>Final Concl.</b>
<p>(EB 55 Annex 1, § 99, 104(a))</p> <p><i>Assess why the chosen starting date can be considered as the earliest date at which either the implementation or construction or real action of a project has begun or will begin.</i></p> <p><i>Check that no other activities related to the project that happened before the identified start date can be considered as start date. In this context please also take into consideration infrastructural expenses if they are relevant (in terms of costs and importance for the project implementation) in the specific context of the project activity. Appropriate evidence should be given.</i></p>	<p>interviews with representatives of PP that a turbine supply agreement has been signed between the PP and the wind turbines supplier on <b>2012/01/17</b>. Such contract represents a <u>significant</u> financial commitment. Therefore, validation team concludes that it is the project starting date according to the definition of the Glossary of CDM Terms.</p> <p><i>Justification of evidences:</i> Representatives of PP were interviewed, the PDD, the Turbine Supply Agreement<sup>/PSD/</sup> were reviewed in detail by the validation team.</p> <p><i>Conclusion:</i></p> <p><b>(CAR C1)</b> It is stated in section C.1 of PDD that project starting date has not occurred yet. However, it was revealed during site visit that a Turbine Supply Agreement<sup>/PSD/</sup>, which establishes a significant commitment towards implementation of the project activity was signed on 2012/01/17. Hence, the statement in section C.1 is not in accordance with the definition of the CDM Glossary of Terms.</p>	<p>/IM01/ /IM02/</p>		
<p>B.4.2.2. In case the project start date is on or after 2<sup>nd</sup> August 2008 has the PP informed the DNA and UNFCCC about the intension to seek CDM status?</p> <p>(EB 55 Annex 1, §§ 99–101)</p> <p><i>Describe whether such a notification has been provided by the project participants within six months of the project activity start date; if NOT it shall be determined that the CDM was not seriously considered.</i></p>	<p><i>Description:</i> Yes, the project start date is after 2<sup>nd</sup> August 2008 and formal notifications using the appropriate CDM Form<sup>/PSD-3/</sup> were sent to host party DNA<sup>/PSD-4/</sup> and to the UNFCCC secretariat in December 2011, i.e. within 6 months of the project starting date.</p> <p><i>Justification of evidences:</i> Interviews were performed on site with representatives of PPs. The Guidelines on the demonstration and assessment of prior consideration of the CDM was checked.</p> <p><i>Conclusion:</i> The project start date is after 2<sup>nd</sup> August 2008 and formal notifications using the appropriate CDM Form<sup>/PSD-3/</sup> were sent to host party DNA and to the UNFCCC secretariat within 6 months of the project starting date, hence complying with prior</p>	<p>/GDAPC/ /PSD/ /PDD/ /IM01/ /IM02/</p>	<p><del>CAR</del> <b>B2</b></p>	<p>OK</p>



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	consideration rules of the UNFCCC. Nevertheless a CAR was raised due to a wrong information regarding prior consideration included in section B.5.  <b>(CAR B2)</b> The project starting date has occurred prior to Global Stakeholders Consultation. Correction is necessary in section B.5			
B.4.2.3. In case the project start date is before commencing of validation and 2 <sup>nd</sup> August 2008, was the incentive from the CDM seriously considered and are details given in the PDD?  (EB 55 Annex 1, §§ 100, 102) <i>Describe whether the evidence to support such consideration is adequately and transparently described in the PDD.</i>	<i>Not applicable to the project activity. See comments above.</i>		n.a	n.a
B.4.2.4. How and when was the decision to proceed with the project taken? <i>Describe the steps taken to validate the starting date.</i>	Please, see comment in B.4.2.1.	/PSD/ /PDD/ /IM01/ /IM02/	<del>CAR</del> G1	OK
B.4.2.5. Is the project start date consistent with the available evidences? (EB 55 Annex 1, § 102) <i>Describe the evidence assessed regarding the prior consideration of the CDM (if necessary). Describe whether the evidence to support such consideration is adequately</i>	Please, see comment in B.4.2.1 and B.4.2.2.	/PDD/ /GT/ /PSD/ /IM01/ /IM02/	<del>CAR</del> G1	OK



Checklist Item (incl. guidance for the validation team)	Validation Team Comments (justification and substantiation of information, data and evidences)	Ref.	Draft Concl.	Final Concl.
<i>and transparently described in the PDD.</i>				
B.4.2.6. Was the decision to proceed with the project taken by a person which has the authority to do so? (EB 55 Annex 1, § 102(a)) <i>Describe the steps taken to validate this issue.</i>	Yes, please, see comment in B.4.2.1. The decision is marked by the signature of the Turbine Supply Agreement <sup>/PSD-1/</sup> , which was done by legal representatives of the PP.	/PSD/	OK	OK
B.4.2.7. How was the CDM involved in the decision making process? (EB 55 Annex 1, § 102) <i>Describe why CDM was a decisive factor in the decision making process.</i>	Please, see comment in B.4.2.1 and B.4.4.2.	/PDD/	OK	OK
B.4.2.8. Do the evidences provided doubtlessly prove that continuous and real actions were taken in order to secure the CDM status? (EB 55 Annex 1, § 102; EB 62 Annex 13 § 7)	Not applicable to the project activity, as project start date is after 2008/08/02 and notifications were sent to DNA and UNFCCC in due time. Please, see comment in B.4.2.1.		n.a	n.a
B.4.2.9. Is the gap of documented evidences to secure the CDM status less than 3 years and are the evidences relevant for substantiating the action taken, credible, reliable and complete? (EB 62 Annex 13 § 8)	Not applicable to the project activity, as project start date is after 2008/08/02 and notifications were sent to DNA and UNFCCC due time. Please, see comment in B.4.2.1.		n.a	n.a

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<p>B.4.2.10. Did implementation of the project ceased after its commencement and did implementation recommence after consideration of the CDM?</p> <p>(EB 62 Annex 5, § 7) <i>Describe the reasons for ceasing the project and explain why the incentive from CDM was necessary to recommence the implementation.</i></p>	<p>Not applicable to the project activity.</p>		<p>n.a</p>	<p>n.a</p>
<p>B.4.2.11. Can the CDM involvement in the decision assessed as serious?</p> <p>(EB 55 Annex 1, § 104(b)–(c)) <i>Describe whether or not the project would have been undertaken without the incentive of the CDM.</i></p>	<p><i>Description:</i> Although it has been demonstrated the CDM prior consideration through the notification of intention to seek CDM status within 6 months of project start date, the ultimate conclusion on the subject (i.e. if project would or not have been implemented without CDM) shall be based upon the assessment of the financial analysis, depending on the outcome of the assessment of the corrective actions for the corresponding CARs and CLs raised in this section.</p> <p><i>Justification of evidences:</i> The financial spreadsheet<sup>/IRR/</sup> was reviewed in detail and the IRR of the project without CDM is lower than benchmark so that the project is not to be considered attractive. However, several findings have been raised and need to be closed before forming an concluding opinion.</p> <p><i>Conclusion:</i> DNA and UNFCCC have been communicated by PPs of the intention to seek the CDM status within the 6 months from the starting date of project activity. Although it was evidenced that CDM was considered prior to the starting date, the ultimate conclusion on the subject (i.e. if project would or not have been implemented without CDM) shall be based upon the assessment of the financial analysis, depending on the responses to the</p>	<p>/PDD/ /PSD/ /IRR/ /FD/ /IM01/</p>	<p><del>CAR</del> <del>C1</del> <del>CAR</del> <del>B2</del></p>	<p>OK</p>

Checklist Item (incl. guidance for the validation team)	Validation Team Comments (justification and substantiation of information, data and evidences)	Ref.	Draft Concl.	Final Concl.
	corresponding CARs and CLs raised in this section.			
<b>B.4.3. Identification of alternatives Step 1</b> (in case of SSC projects pl. skip steps 1 and 2 if appropriate)				
<p>B.4.3.1. Does the list of alternatives contain the status-quo situation, the project not undertaken as a CDM project as well as all other viable means of supplying the outputs or services that are to be supplied by the proposed CDM project activity?</p> <p>(EB 55 Annex 1, §§ 105–107) Describe the steps taken to validate this issue on the basis of your local and sectoral knowledge.</p>	<p><i>Description:</i> Yes, the list of alternatives contains the status-quo and the project activity not undertaken as a CDM project</p> <p>Methodology ACM0002 defines the baseline scenario to be applied to the project activity, which is <i>‘Electricity delivered to the grid by the project activity would have otherwise been generated by the operation of grid-connected power plants and by the addition of new generation sources, as reflected in the combined margin (CM) calculations described in the “Tool to calculate the emission factor for an electricity system”.</i></p> <p>Nevertheless, it has been identified that an additional alternative <i>“The implementation of a fossil fuel based thermoelectric power plant, with an installed capacity that will make it efficient and comparable with the installed power capacity of Ckani Wind Farm Project”</i> has been included in Step 1.a of Section B.5 of the PDD but it has not been further analyzed to determine if it is a plausible baseline scenario. CL B3 was raised.</p> <p><i>Justification of evidences:</i> It is included in section B.5 of PDD.</p> <p><i>Conclusion:</i> The list of alternatives contains the status-quo and the project activity not undertaken as a CDM project. Nevertheless, CL B3 was raised.</p> <p><b>(CL B3)</b></p> <p>In section B.5 of PDD, Sub-step 1a. Alternative b) <i>“The implementation of a fossil fuel based thermoelectric power plant, with an installed capacity that will make it efficient and comparable</i></p>	<p>/PDD/ /ACM 0002/</p>	CL-B3	OK

Checklist Item (incl. guidance for the validation team)	Validation Team Comments (justification and substantiation of information, data and evidences)	Ref.	Draft Concl.	Final Concl.
	<i>with the installed power capacity of Ckani Wind Farm Project” is included as an alternative for the project activity. Nevertheless, it is not further assessed or evaluated in Section B.5 against the project activity scenario to determine if it is a plausible baseline scenario</i>			
<b>B.4.3.2. Have all realistic alternatives been identified to the project?</b> (EB 55 Annex 1, §§ 105–107) <i>Describe whether the list of alternatives is credible and complete. Describe how it is validated that the alternatives are realistic.</i>	<i>Description:</i> As the baseline is directly given by the methodology ACM0002, the selection of alternatives is not required. <i>Justification of evidences:</i> ACM0002 gives the baseline directly and there is no requirement for identification of baseline alternatives. <i>Conclusion:</i> Project complies with ACM0002	/PDD/ /ACM 0002/	OK	OK
<b>B.4.3.3. Do all identified alternatives comply with enforced legislations?</b> (EB 55 Annex 1, §§ 106(c)) <i>Describe the steps taken to validate this issue. Refer to the legislations.</i>	<i>Description:</i> Yes, all alternatives described in the PDD are in agreement with mandatory laws and regulations <sup>/LAW/</sup> . The proposed CDM project activity fulfils with applicable legislation. The RCA of the project is already approved by the environmental Authority. <i>Justification of evidences:</i> There is no legislation in Chile preventing any of the identified alternatives. <i>Conclusion:</i> All alternatives described in the PDD comply with mandatory laws and regulations.	/LAW/ /DIA-RCA/	OK	OK
<b>B.4.4. Investment analysis Step 2</b> <i>In case the investment analysis as per step 2 is chosen to justify the additivity Annex 2 “Assessment of Financial Parameters” has to be used to provide additional details of the calculation parameters..</i>				

<b>Checklist Item</b> (incl. guidance for the validation team)	<b>Validation Team Comments</b> (justification and substantiation of information, data and evidences)	<b>Ref.</b>	<b>Draft Concl.</b>	<b>Final Concl.</b>
<p>B.4.4.1. Does the PDD provide evidence that the project would not be the most economically or financially attractive alternative or economically / financially feasible without the revenues from the sale of CERs?</p> <p>(EB 55 Annex 1, § 108)</p>	<p><i>Description:</i> In the Draft PDD benchmark analysis is the basis of additionality determination and according to financial excel sheet provided, The project was evaluated considering 100% equity because no debt was used in the investment; therefore no loan repayments and interests were included in the project IRR calculation. Therefore project IRR is the financial indicator chosen and considering 100% equity. However, in the PDD is not clearly mentioned that Project IRR is the indicator, hence CL B4 was raised. According to Draft PDD the IRR is below the benchmark, and hence not the most financially attractive alternative. However, several findings have been raised and need to be closed before forming an opinion.</p> <p><i>Justification of evidences:</i> PDD, financial spreadsheet and supporting evidences have been revised in detail.</p> <p><i>Conclusion:</i> Refer to CARs/CLs raised in this section.</p> <p><b>(CL B4)</b> In section B.5 of PDD, Sub-step 2b it is not stated the selected IRR</p>	<p>/PDD/ /FD/ /IRR/</p>	<p>CL B4</p>	<p>OK</p>
<p>B.4.4.2. Is an appropriate analysis method chosen for the project (simple cost analysis, investment comparison analysis or benchmark analysis)?</p> <p>(EB 55 Annex 1, § 108; EB 39 Annex 10)</p> <p><i>Describe why the selected analysis method is appropriate under consideration of potential revenues and costs, potential project alternatives and potential available benchmark values.</i></p>	<p><i>Description:</i> Yes, the chosen approach for demonstrating the additionality of the project is the Benchmark Analysis (Option III).</p> <p><i>Justification of evidences:</i> The project activity generates economic benefits with the sale of energy, therefore the simple cost analysis (Option I) cannot be used. As there is no evidence that the proposed baseline scenario does not leave any other option to the PPs than to make an investment to supply the same product or service, the investment comparison analysis (Option II) cannot be used. Benchmark analysis (Option III) is appropriate and the best method to demonstrate additionally for a project implemented with the sole purpose of energy generation for commercialization.</p> <p><i>Conclusion:</i> Benchmark Analysis was appropriately chosen as</p>	<p>/PDD/ /TA/ /GAIA/ /IRR/</p>	<p>OK</p>	<p>OK</p>

Checklist Item (incl. guidance for the validation team)	Validation Team Comments (justification and substantiation of information, data and evidences)	Ref.	Draft Concl.	Final Concl.
	method of analysis.			
<p>B.4.4.3. Is a clear, viewable and unprotected Excel spreadsheet available for the investment calculation?</p> <p>(EB 55 Annex 1, § 110; EB 51, Annex 58, §8) <i>Describe the steps taken to validate this issue.</i></p>	<p><input checked="" type="checkbox"/> Yes, a clear, viewable and unprotected Excel spreadsheet is available.</p> <p><input type="checkbox"/> No, a respective Excel spreadsheet needs to be made available for investment calculation.</p> <p>In this context the following additional findings have been identified: <b>(CAR B5)</b> Some value of the total investment/costs were wrongly applied or no evidence were provided to crosscheck the value* applied:</p> <ul style="list-style-type: none"> <li>• Engineering</li> <li>• Site access roads</li> <li>• Public roads updates</li> <li>• Turbine Transport</li> <li>• Turbine Erection</li> <li>• 34.5 kV Collector Underground cable</li> <li>• 34.5 kV Collector single Circuit Overhead Line</li> <li>• 690-34.5 kV unit transformer</li> <li>• Turbines</li> <li>• Outage Temporary Generation *</li> <li>• Grid compliance equipment *</li> <li>• O&amp;M</li> <li>• Other costs</li> </ul>	/IRR/	<del>CAR</del> B5	OK
B.4.4.4. Does the period chosen for the investment analysis reflect the technical lifetime of the	<i>Description:</i> The period of investment analysis considers 20 years, and the technical lifetime of wind turbines stated in the Turbine	/PSD/ /IRR/	OK	OK

Checklist Item (incl. guidance for the validation team)	Validation Team Comments (justification and substantiation of information, data and evidences)	Ref.	Draft Concl.	Final Concl.
<p>project activity or in case a shorter period is chosen, is the fair value of the project activity's assets at the end of the investment analysis period (as a cash inflow) included?</p> <p>(EB 55 Annex 1, § 109; EB 62 Annex 5, § 3 – 4) <i>Describe how the technical lifetime / period chosen for calculating financial parameter(s) is reviewed and which documents were utilised in the course of review. Describe furthermore the approach used to check the inclusion of a potential fair value.</i></p>	<p>Supply Agreement with Goldwind is 20 years. A fair value is considered at the end of the investment period as the project will be built in phases.</p> <p><i>Justification of evidences:</i> The Turbine Supply Agreement was checked and analysis period is evidenced in the IRR calculation sheet.</p> <p><i>Conclusion:</i> The period chosen for investment analysis reflect the technical lifetime of the project activity which is 20 years. Furthermore for turbines and turbines foundation a fair value was considered in year 20 as construction will be built on phases.</p>			
<p>B.4.4.5. Is the (remaining) technical lifetime of existing or project equipment defined in accordance with the guidance of the <i>Tool to determine the remaining lifetime of equipment?</i></p> <p>(EB 50 Annex 15)</p>	<p><i>Not applicable to the project activity.</i></p>		n.a.	n.a
<p>B.4.4.6. Is the fair value calculated in accordance with local accounting regulations (where available) or international best practice?</p> <p>(EB 55 Annex 1, § 109; EB 62 Annex 5, § 4) <i>State the accounting regulations applied for calculating the fair value and describe why these are applicable under the project specific circumstances. Describe potential mismatches between regulations and the approach applied for calculating the fair value.</i></p>	<p><i>Description:</i> Yes, the fair value was calculated according to National Accounting Regulation. The period of analysis is conservative (20 years), and in line with EB62 Annex 5. All assets will be fully depreciated before the end of the 20 year period, with exception of turbines and turbines foundation which a book value was applied at the end of the investment analysis.</p> <p><i>Justification of evidences:</i> The Chilean legislation was checked at the official website of the SII (Internal tax service).</p> <p><i>Conclusion:</i> Although a fair value was considered at the end of the</p>	/IRR/ /sii/	<del>CL-B6</del> CAR B7	OK



Checklist Item (incl. guidance for the validation team)	Validation Team Comments (justification and substantiation of information, data and evidences)	Ref.	Draft Concl.	Final Concl.
	analysis period a CL was raised according to this item.  <b>(CL B6)</b> It is not clear that the applicable rate of depreciation for wind turbines is 20 years according to the Chilean accounting regulations (Resolution 43 of the Internal Revenue Service of Chile).  <b>(CAR B7)</b> Depreciation of turbines and turbines foundation was wrongly considered since year 0 where no income is considered. Correction is necessary.			
B.4.4.7. Is the book value as well as the expectation of the potential profit or loss included in the fair value calculation? (EB 55 Annex 1, § 109; EB 62 Annex 5, § 4)	Refer to checklist questions B.4.4.4. and B.4.4.6 above.	/IRR/ /vestas/ /sii/	<del>CL-B6</del> <del>CAR</del> B7	OK
B.4.4.8. Are depreciation and other non-cash related items only considered in the tax calculation and not as cash outflow? (EB 55 Annex 1, § 109; EB 62 Annex 5, § 5)	<i>Description:</i> Yes, the depreciation has been added back to the net profits as required by EB 62 Annex 5. <i>Justification of evidences:</i> National tax and accounting legislation <sup>/sii/</sup> and the investment analysis spread sheet <sup>/IRR/</sup> were reviewed in detail. <i>Conclusion:</i> The PP has added back depreciation to net profits for the calculation of the project IRR.	/IRR/ /GAIA/ /sii/	OK	OK
B.4.4.9. Were the input values used in the investment analysis valid and applicable at the time of the investment decision? (EB 55 Annex 1, § 109,112; EB 62 Annex 5, § 6) <i>In case the basis for input values is a Feasibility Study Report (FSR) describe how it has been ensured that the period in time</i>	<i>Description:</i> yes, all input data were valid and available at the time of investment decision. <i>Justification of evidences:</i> The investment analysis excel sheet and supporting evidences <sup>/FD/</sup> was reviewed in detail. For a detailed analysis please refer to Table A-3 Annex 3. <i>Conclusion:</i> all inputs values were available valid and applicable at	/PDD/ /IRR/ /FD/ /sii/ /IM01/	OK	OK



Checklist Item (incl. guidance for the validation team)	Validation Team Comments (justification and substantiation of information, data and evidences)	Ref.	Draft Concl.	Final Concl.
<i>between the finalisation of the FSR and the investment decision is sufficiently short so that it is unlikely that input values would have materially changed. Further confirm the consistency of values in FSR and PDD.</i>	the time of investment decision.	/IM02/		
B.4.4.10. Is the plant load factor (PLF) chosen in a conservative manner, taking into account that the PLF may be different in the framework of demonstrating additionality and calculating the ex-ante ER? (EB 48, Annex 11)	<p><i>Description:</i> The PLF used both in financial analysis and emission reduction calculation is based on an assessment report prepared by third party from <i>GL Garrad Hassan</i>, hence in line with EB48 Annex 11.</p> <p><i>Justification of evidences:</i> Garrad Hassan report has been reviewed by validation team. This company is a leading company in wind measurement and yield assessment and certification and therefore the value can be considered reliable. The PDD was also reviewed.</p> <p><i>Conclusion:</i> PLF has been chosen in line with EB 48, Annex 11. Nevertheless a minor issue was identified regarding this item.</p> <p><b>(CAR B8)</b> Plant load factor determined for year 1 is not correct.</p>	/PDD/ /IRR/ /PLF/ /IM01/ /IM02/	<del>CAR</del> B8	OK
B.4.4.11. In case of project IRR: Are the costs of financing expenditures (loan repayments and interests) excluded from the calculation of project IRR? (EB 55 Annex 1, § 109; EB 62 Annex 5, § 9)	<input type="checkbox"/> N/A <input checked="" type="checkbox"/> Yes, the costs of financing expenditures have been excluded. <input type="checkbox"/> No, this requirement is not met. In this context the following additional findings have been identified: N/A	/IRR/	OK	OK
B.4.4.12. In cases where a post-tax benchmark is applied please ensure that actual interest payable is taken into account in the	<input checked="" type="checkbox"/> N/A (Project IRR is calculated and hence interest is not considered at all) <input type="checkbox"/> Yes, the interest has been taken into account.	/IRR/	n.a.	n.a

Checklist Item (incl. guidance for the validation team)	Validation Team Comments (justification and substantiation of information, data and evidences)	Ref.	Draft Concl.	Final Concl.
<p>calculation of income tax.</p> <p>(EB 55 Annex 1, § 109; EB 62 Annex 5, § 11)</p> <p><i>If this is not the case, ensure that taxation is excluded from the investment analysis.</i></p> <p><i>As per the guidance it is recommended to select a pre tax benchmark in order to describe the steps taken in assessing this requirement.</i></p>	<p><input type="checkbox"/> No, this requirement is not met.</p> <p>In this context the following additional findings have been identified: N/A</p>			
<p>B.4.4.13. In case of equity IRR: Is the part of the investment costs, which is financed by equity, considered as net cash outflow and is the part financed by debt excluded in net cash outflow?</p> <p>(EB 55 Annex 1, § 109; EB 62 Annex 5, § 10)</p>	<p><input checked="" type="checkbox"/> N/A</p> <p><input type="checkbox"/> Yes, in- and outflows have been considered correctly.</p> <p><input type="checkbox"/> No, this requirement is not met.</p> <p>In this context the following additional findings have been identified: N/A</p>	/IRR/	n.a.	n.a
<p>B.4.4.14. Is the type of benchmark chosen appropriate for the type of IRR calculated (e.g. local commercial lending rates or weighted average costs of capital for project IRR; required/expected returns on equity for equity IRR)?</p> <p>(EB 55 Annex 1, § 111; EB 62 Annex 5, §§12 – 18)</p> <p><i>In case risk premiums are applied precisely describe its suitability to reflect the risks associated with the project activity, considering the project type and market situation.</i></p>	<p><i>Description:</i> Yes, the PP is using the default benchmark value for returns on equity as defined in EB 62 Annex 5. The financial calculation chosen by PP is carried out for project IRR. Nevertheless, in case of Project IRR one assumes 100% equity and hence the default benchmark in EB62 Annex 5 (paragraph 8) is deemed appropriate and conservative.</p> <p><i>Justification of evidences:</i> The IRR calculation excel sheet, PDD and EB 62 Annex 5<sup>/GAIA/</sup> guidance requirements were reviewed in detail.</p> <p><i>Conclusion:</i> The type of benchmark is appropriate for type of IRR.</p>	/PDD/ /IRR/ /GAIA/	OK	OK
<p>B.4.4.15. Is the benchmark value suitable for the</p>	<p><i>Description:</i> Yes, as explained just above the default benchmark</p>	/IRR/	OK	OK

<b>Checklist Item</b> (incl. guidance for the validation team)	<b>Validation Team Comments</b> (justification and substantiation of information, data and evidences)	<b>Ref.</b>	<b>Draft Concl.</b>	<b>Final Concl.</b>
<p>project activity and is it reasonable to assume that no investment would be made at a rate of a lower return than the benchmark?</p> <p>(EB 55 Annex 1, § 109; EB 62 Annex 5, §§13 – 18) <i>Describe whether it is reasonable to assume that a lower rate of return would consequently result in the baseline scenario.</i></p>	<p>defined in the EB 62 Annex 5 guidance<sup>/GAIA/</sup> can be considered a suitable and conservative benchmark.</p> <p><i>Justification of evidences:</i> The IRR calculation excel sheet, PDD and EB 62 Annex 5<sup>/GAIA/</sup> guidance requirements were reviewed in detail.</p> <p><i>Conclusion:</i> The benchmark value is suitable for the project activity and is it reasonable to assume that no investment would be made at a rate of a lower return than the benchmark.</p>	<p>/GAIA/</p>		
<p>B.4.4.16. Is it ensured that the project cannot be developed by other developers than the PP?</p> <p>(EB 55 Annex 1 § 109; EB 62 Annex 5, §§ 13 – 14) <i>Describe why the benchmark does not include the subjective profitability expectations or risk profile of the project developer. If applicable assess the past financial behavior of the entity during at least the last 3 years in relation to similar projects.</i></p>	<p><i>Description:</i> As described in B.4.4.15, the project is using the default value available in EB 62 Annex 5 guidance<sup>/GAIA/</sup> which is publicly available and conservative and provided by UNFCCC; hence the benchmark does not include the subjective profitability expectations or risk profile of the project developer.</p> <p><i>Justification of evidences:</i> The PDD and EB 62 Annex 5 guidance requirements were reviewed<sup>/GAIA/</sup>.</p> <p><i>Conclusion:</i> The benchmark does not include the subjective profitability expectations or risk profile of the project developer.</p>	<p>/PDD/ /IRR/ /GAIA/</p>	<p>OK</p>	<p>OK</p>
<p>B.4.4.17. Was the benchmark consistently used in the past for similar projects with similar risks?</p> <p>(EB 55 Annex 1, § 112(c))</p>	<p><i>See comments above.</i></p>		<p>n.a.</p>	<p>n.a.</p>
<p>B.4.4.18. Does the PDD and related spreadsheets contain a sensitivity analysis and does the same contain variation of parameters</p>	<p><i>Description:</i> Yes, a sensitivity analysis is included in the PDD and financial spreadsheet. Key parameters which may vary throughout the project lifetime were included. As described in the PDD and clearly demonstrates in the financial spread sheet, a sensitivity</p>	<p>/PDD/ /IRR/</p>	<p>CAR B9</p>	<p>OK</p>

<b>Checklist Item</b> (incl. guidance for the validation team)	<b>Validation Team Comments</b> (justification and substantiation of information, data and evidences)	<b>Ref.</b>	<b>Draft Concl.</b>	<b>Final Concl.</b>
<p>which may vary throughout the project lifetime, (EB 55 Annex 1, §§ 109–110(e); EB 62 Annex 5, § 20-21) <i>Describe relevance of parameters used in the sensitivity analysis as well as their likeliness to vary during the project's lifetime. Parameters which are fixed on the basis of contracts, PPAs etc. may not be subject to variation and not adequate.</i></p>	<p>analysis of the following items were performed:</p> <ul style="list-style-type: none"> <li>- Investment (CAPEX)</li> <li>- Energy generation</li> <li>- Energy Price</li> <li>- Firm Capacity</li> <li>- Firm Capacity Price</li> <li>- Operational Costs</li> </ul> <p>Those values constitute more than 20% of the total project costs and total project revenues respectively. The applied range of variation (+/-10%) is reasonable in the specific context of the project activity.</p> <p><i>Justification of evidences:</i> PDD and financial spreadsheet<sup>/IRR/</sup> were reviewed in detail. For more details of assessment of each financial parameter, please refer to Table A-3 Annex 3.</p> <p><i>Conclusion:</i> A sensitivity analysis has been carried out and contains parameters which may vary throughout the project lifetime..</p> <p>However, CAR B9 has been raised.</p> <p><b>(CAR B9)</b> Analysis for firm capacity (capacity &amp; price) is missing.</p>			
<p>B.4.4.19. Were only variables that constitute more than 20% of either total project costs or total project revenues subjected to reasonable variation? (EB 55 Annex 1, § 109; EB 62 Annex 5, § 20)</p>	<p><i>Description:</i> No, see comment just above. Sensitivity analysis should also be performed for firm capacity.</p> <p>No parameter constituting less than 20% of total project costs or revenues has been identified with potential material impact on the financial parameter</p> <p><i>Justification of evidences:</i> PDD and spreadsheet<sup>/IRR/</sup> were reviewed</p>	<p>/PDD/ /IRR/</p>	<p><del>CAR B9</del></p>	<p>OK</p>

Checklist Item (incl. guidance for the validation team)	Validation Team Comments (justification and substantiation of information, data and evidences)	Ref.	Draft Concl.	Final Concl.
	in detail. <i>Conclusion:</i> CAR B9 was raised. Please refer to it.			
<p>B.4.4.20. Have parameters, constituting less than 20% of total project costs or revenues, been identified with potential material impact on the financial parameter?</p> <p>(EB 55 Annex 1, § 109; EB 62 Annex 5, § 20) <i>Describe whether those parameters are considered in the sensitivity analysis?</i></p>	<p><i>Description:</i> No, no other parameters with material impact were identified.</p> <p><i>Justification of evidences:</i> PDD and spreadsheet<sup>/IRR/</sup> were reviewed in detail.</p> <p><i>Conclusion:</i> No other parameters with material impact were identified.</p>	<p>/PDD/ /IRR/ /FD/</p>	OK	OK
<p>B.4.4.21. Is the range of variation reasonable in the specific context of the project activity, taking into consideration historic trends in the business sector?</p> <p>(EB 55 Annex 1, § 109; EB 62 Annex 5, § 21) <i>Describe whether the range of variation is appropriate with focus on historic developments, e.g. price of oil / labour etc., energy potential in the region in question.</i></p>	<p><i>Description:</i> Yes, the range of variation applied was + 10% to -10% and it is deemed appropriate by the validation team, considering that the input values applied are deemed adequate and conservative, as described in the assessment of each financial parameter in Table A-3 Annex 3.</p> <p><i>Justification of evidences:</i> PDD and spreadsheet<sup>/IRR/</sup> were reviewed in detail. Each financial parameter was reviewed and validated carefully considering submitted evidences, public available sources of information and the local expertise of the validation team. The variation is in line with latest EB guidance<sup>/GAIA/</sup>. Registered CDM projects were checked and the variation is in line with other similar registered CDM projects.</p> <p><i>Conclusion:</i> The variation applied is considered appropriate in the context of the project activity, taking in consideration historic trends in the business sector.</p>	<p>/PDD/ /IRR/ /GAIA/ /unfccc/</p>	OK	OK
<b>B.4.5. Barrier analysis Step 3 or SSC additionality</b>				

Checklist Item (incl. guidance for the validation team)	Validation Team Comments (justification and substantiation of information, data and evidences)	Ref.	Draft Concl.	Final Concl.
<b>assessment</b>				
<p>B.4.5.1. Are there any barriers given which have a clear and direct impact on the financial returns of the project?</p> <p>(EB 55 Annex 1, §§ 115, 134, 137)  <i>In case of LSC projects those issues cannot be considered as barriers and shall be assessed in the investment analysis. In case of SSC projects the same fundamentals as for LSC projects shall apply, i.e. the assessment of the investment barrier according to EB 62 Annex 5.</i></p>	<i>No barrier is included in the PDD to demonstrate additionality.</i>		n.a	n.a
<p>B.4.5.2. Are the barriers described risk related (e.g technology failure, other performance related risks)?</p> <p>(EB 55 Annex 1, §§ 116, 134, 137)  <i>Are there other barriers or barriers due to prevailing practice existent which would have led to higher emissions?</i></p>	<i>No barrier is included in the PDD to demonstrate additionality.</i>		n.a	n.a
<p>B.4.5.3. Has the unavailability of means of finance for the project been described and adequately substantiated? Do evidences doubtlessly prove that the financing of the project was assured only due to the benefit of the CDM?</p> <p>(EB 55 Annex 1, §§ 116, 137, EB 50 Annex 13, § 9)</p>	<i>No barrier is included in the PDD to demonstrate additionality.</i>		n.a	n.a
<p>B.4.5.4. How is it justified and evidenced that the barriers given in the PDD are real?</p>	<i>No barrier is included in the PDD to demonstrate additionality.</i>		n.a	n.a

<b>Checklist Item</b> (incl. guidance for the validation team)	<b>Validation Team Comments</b> (justification and substantiation of information, data and evidences)	<b>Ref.</b>	<b>Draft Concl.</b>	<b>Final Concl.</b>
(EB 55 Annex 1, § 116(a))				
B.4.5.5. How is it justified that one or a set of real barriers prevent(s) the implementation of the project activity and do not prevent the implementation of at least one of the alternatives? (EB 55 Annex 1, § 116(b))	<i>No barrier is included in the PDD to demonstrate additionality.</i>		n.a	n.a
B.4.5.6. Does the review of relevant background information on the nature of the company(ies) and entitiy(ies) involved in the financing and implementation of the project sufficiently justify that the barriers related to the lack of access to capital, technologies and skilled labour are real? (EB 50 Annex 13, § 4)	<i>No barrier is included in the PDD to demonstrate additionality.</i>		n.a	n.a
B.4.5.7. Has it been demonstrated in an objective way how the CDM alleviates each of the identified barriers to a level that the project is not prevented anymore from occurring by any of the barriers? (EB 50 Annex 13, § 5)	<i>No barrier is included in the PDD to demonstrate additionality.</i>		n.a	n.a
B.4.5.8. Would provision of additional financial means lead to the mitigation of the barrier(s) demonstrated?	<i>No barrier is included in the PDD to demonstrate additionality.</i>		n.a	n.a

Checklist Item (incl. guidance for the validation team)	Validation Team Comments (justification and substantiation of information, data and evidences)	Ref.	Draft Concl.	Final Concl.
(EB 50 Annex 13, § 7) <i>Describe why provision of additional financial means would not lead to mitigation of the barrier(s) demonstrated and hence analysing the project's additionality within the framework of an investment analysis is inappropriate. .</i>				
<b>B.4.6. Common practice analysis Step 4</b> (in case of SSC projects skip this step)				
B.4.6.1. Is the defined region for the common practice analysis appropriate for the technology/industry type?  (EB 55 Annex 1, § 120(a)) <i>Describe why the project activity is not common practice in a transparent and unambiguous manner. If a region other than the entire host country is chosen, describe why this region is more appropriate.</i>	<i>Description:</i> The defined region established in the PDD for comparison with other industries is the host country and is deemed appropriate.  According to step 4 of the Tool for the demonstration and assessment of additionality for measures that are listed in paragraph 6 such as the use of renewable energies the common practice analysis shall be performed following four steps stated in paragraph 47.  <i>Justification of evidences:</i> PDD and Tool for the demonstration and assessment of additionality were checked accordingly.  <i>Conclusion:</i> The defined region established in the PDD is appropriate and in accordance with the Tool for the demonstration and assessment of additionality.  The common practice analysis stated in the PDD follows the approach required by the additionality tool <sup>/TA/</sup> .	/PDD/ /TA/	OK	OK
B.4.6.2. To what extent similar projects have been undertaken in the relevant region?  (EB 55 Annex 1, § 120(b))	<i>Description:</i> Calculation of similar projects identified in the relevant region has to follow the approach stated in paragraph 47 of the Tool for the demonstration and assessment of additionality. No similar projects have been identified.	/PDD/ /TA/ /COM/	<del>CL-B10</del>	OK



Checklist Item (incl. guidance for the validation team)	Validation Team Comments (justification and substantiation of information, data and evidences)	Ref.	Draft Concl.	Final Concl.
	<p><i>Justification of evidences:</i> PDD and Tool for the demonstration and assessment of additionality were checked accordingly. Moreover, list of power plants in Chile has also been reviewed.</p> <p><i>Conclusion:</i> The PP followed the approach stated in paragraph 47 of the Tool for the demonstration and assessment of additionality. Nevertheless a CL was raised.</p> <p><b>(CL B10)</b> In the common practice analysis indication of power plants considered is missing. Furthermore result of common practice calculation is incorrect.</p>			
<p>B.4.6.3. In case similar projects are identified, are there any key differences between the proposed project and existing or ongoing projects and what kind of differences are observed?</p> <p>(EB 55 Annex 1, § 120(c))</p>	<p><i>Description:</i> No similar projects have been identified. Nevertheless CL B10 has been raised.</p> <p><i>Justification of evidences:</i> PDD and Tool for the demonstration and assessment of additionality were checked accordingly. Moreover, list of power plants in Chile has also been reviewed.</p> <p><i>Conclusion:</i> lack of information and discrepancies were identified when common practice analysis was calculated. Please refer to CL B10.</p>	<p>/PDD/ /TA/ /COM/</p>	<p><del>CL B10</del></p>	<p>OK</p>

Checklist Item (incl. guidance for the validation team)	Validation Team Comments (justification and substantiation of information, data and evidences)	Ref.	Draft Concl.	Final Concl.
<b>B.5. Ex-Ante Calculation of GHG Emission Reductions</b>  <i>It is assessed whether the ex-ante calculations of project emissions, baseline emissions, leakage emissions are stated according to the methodology and whether the argumentation for the choice of default factors and values – where applicable – is justified. Furthermore calculation of emission reductions shall be assessed.</i>				
<p>B.5.1. Are the equations applied correctly according to the applied approved methodology?</p> <p>(EB 55 Annex 1, §§ 67(c), 89–90, 92)</p> <p><i>Describe clearly the steps taken to assess whether the methodology has been applied correctly to calculate project emissions, baseline emissions, leakage and emission reductions. Further take into consideration that all estimates of the baseline emissions can be replicated using the data and parameter values provided in the PDD.</i></p>	<p><input type="checkbox"/> The equations applied for calculation are correctly applied according to the approved methodology.</p> <p><input checked="" type="checkbox"/> The following mistakes have been identified in this context:</p> <p><b>(CAR B11)</b> Mistakes were detected in the emission factor calculation spread sheet:</p> <p><u>Tab “Gross Gen”:</u></p> <ol style="list-style-type: none"> <li>1. Installed capacity for power plants CAVA, ZOFRI_1-6 and ZOFRI_2-5 was not in accordance with the data included in the CDEC-SING statistics</li> <li>2. According to the CDEC-SING statistics the power generation value for CAVA power plant on November 2010 is zero (0). Nevertheless, the PP has applied a value of 1.16407 GWh, clarification is required.</li> </ol> <p><u>Tab “Elect cons”:</u></p> <ol style="list-style-type: none"> <li>3. Power consumption from ANDINA and ENORCHILE in 2010 is specified as zero (0 GWh/year) in the CDEC-SING</li> </ol>	<p>/PDD/ /XLS/</p>	<p><del>CAR</del> <del>B11</del> <del>CL B12</del></p>	<p>OK</p>

Checklist Item (incl. guidance for the validation team)	Validation Team Comments (justification and substantiation of information, data and evidences)	Ref.	Draft Concl.	Final Concl.
	<p>statistics. Nevertheless, the PP has applied a value of 1 GWh/year, clarification is required.</p> <p>4. Power consumption from E-CL in 2008 is specified as 230 GWh/year in the CDEC-SING statistics. Nevertheless, this value was not used in the emission factor calculation spreadsheet.</p> <p><u>Tab "Fuel cons"</u></p> <p>5. Diesel consumption for Tocopilla power plant on 2008 is specified as zero (0 tons) in the CDEC-SING statistics. Nevertheless, the PP has applied a value of 55,898.7 tons/year, clarification is required.</p> <p><u>Tab "OM"</u></p> <p>6. The OM factor has not been calculated as per the applicable "Tool to calculate the emission factor for an electricity system" Version 2.2.1 which states that for an ex-ante OM a 3 year generation weighted average shall be used.</p> <p><u>Tab "BM 2010 input"</u></p> <p>7. Some power plants built on year 2000 have been included in the set of power plants for the BM calculation but others were excluded. However, no specific information about the month in which they were commissioned has been provided. Clarification is required about how the PP has determined which power plants are included in the BM set of power plants as per the applicable tool.</p> <p><u>Tab "BM 2010"</u></p> <p>8. Diesel consumption data from 2010 available in the CDEC-</p>			

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	<p>SING statistics has not been used for the calculation of CO<sub>2</sub> emissions from CTA1 power plant.</p> <p>9. The set of power plants has not been arranged chronologically.</p> <p>10. Fossil fuel consumption for Tocopilla U-16 and SUTA power plants is not as per the CDEC-SING statistics.</p> <p>11. Clarification is required about why the PP has calculated the CO<sub>2</sub> emissions from Salta power plant if it has been identified that the CDEC-SING statistics include records about Diesel consumption from this power unit.</p> <p>12. Clarification is required about the default efficiency factor (37.5%) applied for the calculation of natural gas consumption from Salta power plant.</p> <p><b>(CL B12)</b> According to Section B.6.3 of the PDD the BM factor has been calculated based on option b) of the “Tool to calculate the emission factor for an electricity system” Version 2.2.1. Nevertheless, it has been identified that power plants that started to supply electricity to the grid more than 10 years ago have been included in the set of power plants for the BM calculation.</p>			
<p>B.5.2. In case the methodology allows for different methodological choices, are the equations applied properly justified and have they been used reflecting the other methodological choices (i.e. baseline identification)?</p> <p>(EB 55 Annex 1, §§ 90–91)</p> <p><i>Assess the correct selection and application of methodological choices. Describe whether proper justification has been provided (based on the choice of the baseline scenario, context of the project activity and other</i></p>	<p><i>Not applicable as the methodology does not allow such choices.</i></p>		n.a	n.a.

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<i>evidence provided) and whether the correct equations have been used reflecting the relevant methodological choices.</i>				
<p>B.5.3. Have conservative assumptions been used when calculating the project emissions?</p> <p>(EB 55 Annex 1, §§ 90–91)</p> <p><i>Describe clearly the steps taken to assess whether all the assumptions and data used by the PP are listed in the PDD including references and sources and are conservatively interpreted in the PDD.</i></p>	<p><i>Description:</i> The baseline emissions are calculated based on net energy generated multiplied by the combined margin emission factor (<math>EF_{CM}</math>) calculated according to the “Tool to Calculate the emission factor for an electric system”<sup>TEF/</sup> based on the public information available from CDEC-SING. The PP used the average OM for the grid emission factor.</p> <p>The CDEC-SING continuously publishes the power generation data for each power plant. Consolidated reports can be downloaded from the CDEC-SING showing the final power generation for each plant.</p> <p>The gross power generation per power plant was determined by the PP based on the monthly generation data. The reports from the CDEC-SING website were reviewed. Also, the annual generation reports (Yearbook statistics) available at the CDEC-SING website were reviewed in order to crosscheck the total gross generation per power plant for years 2008, 2009 and 2010. All the data used was found correct.</p> <p>The power consumption data from all generation companies was taken from the Annual Generation Reports and Yearbook Statistics published by the CDEC-SING website. This information together with the gross power generation data is used to the PP to calculate the net power generation from the grid system. According to the applicable “Tool to Calculate the emission factor for an electric system”<sup>TEF/</sup> net power generation data shall be used for the calculation of the grid emission factor. The validation team has checked the power consumption data against the CDEC-SING</p>	<p>/EF/ /XLS/ /ACM 0002/ /IPCC/ /TEF/ /cdec-sing/ /minener/</p>	<p><del>CAR</del> <del>B1+</del></p>	<p>OK</p>

Checklist Item (incl. guidance for the validation team)	Validation Team Comments (justification and substantiation of information, data and evidences)	Ref.	Draft Concl.	Final Concl.
	<p>statistics and all information was found correct.</p> <p>Regarding the fossil fuel consumption and fuel type for each power plant, the amount of fuel consumed per power plant is published also in the CDEC-SING website. The Annual Yearbook statistics available at the CDEC-SING website were also reviewed in order to crosscheck the total fossil fuel consumption per power plant for years 2008, 2009 and 2010. All values were found consistent and correct.</p> <p>The commissioning date so as the installed capacity for all power plants was reviewed based on the CDEC-SING and the CNE websites.</p> <p>The lower fossil fuels emission factor published in the IPCC guideline 2006 were used. This is in accordance to the tool<sup>/TEF/</sup> requirements.</p> <p>The Energy Ministry published<sup>/minener/</sup> the National energy Balance<sup>/EF/</sup> including information of the gross calorific values for different type of fuels. The values were corrected in order to get the net calorific values required by the applied EF tool. Correction was done following the IPCC 2006 Guidelines (Volume 2, chapter 1, page 1.16) the validation team checked the IPCC documents. Correction method was correctly applied.</p> <p>The period selected for the ex-ante calculation of the grid emission factor was 2008, 2009 and 2010; this approach was selected by the PP. At the time of submission of the PDD to the validation DOE data of the SING Chilean grid was available till year 2010.</p> <p>The grid emission factor has been calculated and fixed ex-ante.</p> <p>Regarding the Build Margin (BM), the sample group <i>m</i> has been defined as per the procedure of the tool. The most recent built</p>			

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	<p>power plants were determined based on the reports from the CDEC-SING.</p> <p>The rest of information used for the project and baseline emission has also been reviewed.</p> <p><i>Justification of evidences:</i> Data used is adequate as the power generation data is publicly available. The emission factor and emission reductions calculation<sup>/XLS/</sup> spread sheets were reviewed. The “Tool to Calculate the emission factor for an electric system”<sup>/TEF/</sup> and the IPCC guideline 2006 and was checked accordingly. Moreover the consolidated reports and the Annual Yearbooks were downloaded directly from the CDEC-SING. The Energy Ministry published<sup>/minener/</sup> the National energy Balance<sup>/EF</sup> were also checked.</p> <p><i>Conclusion:</i> The calculation of the OM and BM has been checked. Conservative assumptions were used to calculate emission reductions. Nevertheless, some mistakes were detected in the emission factor calculation spreadsheet. CAR B11 was raised, please refer to it.</p>			
<p>B.5.4. Does the implementation of the project activity lead to GHG emissions within the project boundary which are expected to contribute more than 1% of the overall expected average annual emission reductions, which are not addressed by the methodology?</p> <p>(EB 55 Annex 1, § 77)</p>	<p><i>Description:</i> No, according to the PP an auxiliary Diesel generator will be installed but only for emergency cases. It is expected that this auxiliary Diesel generator will result in GHG emission lower than 1% of the overall expected average annual emission reductions from the project activity</p> <p><i>Justification of evidences:</i> Interviews with PP representatives</p> <p><i>Conclusion:</i> the project activity will install a Diesel based emergency generator for the project activity. CL B13 has been raised requesting further information about the auxiliary diesel generator and the GHG emissions that may result from its</p>	<p>/PDD/ /IM01/ /IM02/</p>	<p><del>CL B13</del></p>	<p>OK</p>

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	operation. Final assessment will be provided as soon as CL B13 is closed.  <b>(CL B13)</b> During site visit the PP has confirmed that Auxiliary Diesel Generator will be installed for emergency purposes. Nevertheless, this information has not been included in the PDD.			
<p>B.5.4.1. Has a plant load factor (PLF) been defined ex-ante and considered for determination of baseline emissions?</p> <p>(EB 48 Annex 11, §§ 1, 3–4)</p> <p><i>Describe why the PLF is conservative in the framework of calculating emissions reductions and whether the PLF is the same in the framework of demonstrating additionality by applying the investment analysis. Note, in order to be conservative in both cases the PLF may be different.</i></p>	<p><i>Description:</i> The PLF used both in financial analysis and emission reduction calculation is based on an assessment report prepared by third party <i>GL Garrad Hassan</i>, hence in line with EB48 Annex 11.</p> <p><i>Justification of evidences:</i> Garrad Hassan report has been reviewed by validation team. This company is a leading company in wind measurement and yield assessment and certification and therefore the value can be considered reliable. The PDD was also reviewed.</p> <p><i>Conclusion:</i> PLF has been chosen in line with EB 48, Annex 11. Nevertheless a minor issue was identified regarding this item. Please, refer to CL B8 above</p>	<p>/PDD/ /IRR/ /PLF/ /IM01/ /IM02/</p>	<del>CL B8</del>	OK
<p>B.5.5. Are all data sources and assumptions appropriate and parameters which remain fixed throughout the crediting period correct, applicable to the project and will lead to a conservative estimation of emission reductions?</p> <p>(EB 55 Annex 1, § 91)</p> <p><i>Describe clearly the steps taken to assess whether the values used for the fixed parameters are considered</i></p>	<p><i>Description:</i> Yes, the Operating Margin and the Build Margin were calculated in accordance with the latest version of the “Tool to Calculate the emission factor for an electric system”<sup>TEF/</sup>. Also other variables used in the emission reductions<sup>XLS/</sup> calculations are adequate.</p> <p><i>Justification of evidences:</i> The grid emission factor and emission reductions calculation spreadsheets were reviewed<sup>EF/ and /XLS/</sup>.</p> <p><i>Conclusion:</i> All applied formulae and methods for calculating baseline emissions are in accordance with the approved methodology and applied tools. No project or leakage emissions</p>	<p>/EF/ /TEF/ /XLS/</p>	<del>CAR B11</del> <del>CAR 14</del>	OK



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<i>reasonable, correct and applicable in the context of the project activity. Check esp. chapter 6.2 of the PDD.</i>	<p>are considered for this project.</p> <p>Almost all assumptions used in the emission calculation spread sheet have been correctly justified and referenced. Nevertheless some mistakes have been identified between the source used and the excel calculation spread sheet as indicated in CAR B11</p> <p>In addition, some parameters were missing in Section B.6.2. Hence, CAR B14 was raised.</p> <p><b>(CAR14)</b> Parameters <math>EF_{grid,CM,y}</math> and <math>EF_{CO2,m,i,y}</math> are missing in Section B.6.2 of the PDD.</p>			
<p>B.5.6. Are all ex-ante calculation values for monitoring parameters (as defined as per chapter B.7.1) reasonable?</p> <p>(EB 55 Annex 1, § 91)</p> <p><i>Describe clearly the steps taken to assess whether the values used for the monitoring parameters are considered reasonable, applicable and conservative in the context of the project activity</i></p>	<p><input checked="" type="checkbox"/> All "Values of data to be applied for the purpose of calculating expected emissions reductions" are considered to be reasonable, applicable and conservative.</p> <p><input type="checkbox"/> The following mistakes have been identified in this context:</p>	<p>/PDD/ /PLF/ /XLS/</p>	<p>OK</p>	<p>OK</p>
<p>B.5.7. Are the emission reductions real, measurable and give long-term benefits related to the mitigation of climate change.</p> <p><i>Describe the steps taken to validate this issue.</i></p>	<p><i>Description:</i> Several findings have been raised and have to be closed out before forming an opinion.</p> <p><i>Justification of evidences:</i> The PDD and excel spreadsheet ER calculations were checked.</p> <p><i>Conclusion:</i> Please refer to the findings raised in this report.</p>	<p>/PDD/ /XLS/</p>	<p><del>CAR</del> <del>B11</del> <del>CAR</del> <del>B13</del></p>	<p>OK</p>

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<b>B.6. Monitoring of Emission Reductions</b>  <i>It is assessed whether the monitoring plan is appropriate for the project activity and in line with the applied methodology.</i>				
<b>B.6.1. Are all monitoring parameters required by the applied methodology contained in the monitoring plan?</b>  (EB 55 Annex 1, §§ 67(e), 121, 123(a), 124) <i>Assess whether all applicable parameters listed in the methodology are included in the monitoring plan.</i>  <i>Pl. check further whether the selection of parameters not to be monitored (section B.6.2) is appropriate and in line with the applied methodology.</i>  <i>In case of different approaches can be chosen acc. to the methodology assess whether the selection of parameters is justified and correct.</i>	<i>Description:</i> Yes, all monitoring parameters required by the applied methodology and applicable tools are contained in the monitoring plan. The selection of parameters not to be monitored (section B.6.2) is appropriate and in line with the applied methodology.  <i>Justification of evidences:</i> PDD, methodology ACM0002 and applied EF tool were reviewed.  <i>Conclusion:</i> all monitoring parameters required by the applied methodology and the applied EF tool are included in section B.7.1 of the PDD. The selection of parameters not to be monitored (section B.6.2) is appropriate and in line with the applied methodology. No different approaches can be chosen according to the methodology.	/PDD/ /ACM 0002/ /TEF/	OK	OK
<b>B.6.2. Are the means of monitoring of all parameters contained in the monitoring plan feasible and in accordance with the requirements of the applied methodology?</b>  (EB 55 Annex 1, § 123(a)–(b), 124) <i>Assess whether the provided information for all parameters w.r.t.</i>	<i>Description:</i> The only parameter need to be monitored is the net Electricity supplied by the project to the grid (EG <sub>PJ,y</sub> ).  <i>Justification of evidences:</i> Section B.7.1 of the PDD was crosschecked against the applied methodology and the applied tool.  <i>Conclusion:</i> Information defined for parameter EG <sub>PJ,y</sub> is not complete and in compliance with the Guidelines for completing CDM-PDD. Therefore a CAR was raised.	/PDD/ /ACM 0002/ /TEF/ /GCP/	<del>CAR</del> B15	OK

Checklist Item (incl. guidance for the validation team)	Validation Team Comments (justification and substantiation of information, data and evidences)	Ref.	Draft Concl.	Final Concl.
<p>a) <i>Label (name of the data / parameter)</i></p> <p>b) <i>data unit</i></p> <p>c) <i>description</i></p> <p>d) <i>source of data</i></p> <p>e) <i>measurement equipment / method / procedure</i></p> <p>f) <i>monitoring frequency</i></p> <p>g) <i>QA/QC procedures</i></p> <p><i>are appropriately described and in compliance with the requirements of the methodology..</i></p>	<p><b>(CAR B15)</b> According to the Guidelines for completing the PDD, the following information is missing in section B.7.1:</p> <ul style="list-style-type: none"> <li>• <b>Description of measurement methods and procedures to be applied:</b> indication of local standards for calibration including calibration frequency, quantity of meters, function (main/back up), type (uni/bidirectional), accuracy class and location of meters.</li> <li>• <b>QA/QC procedures to be applied:</b> detailed description of the cross-check procedures according to the applied methodology.</li> </ul> <p>Furthermore, parameter “EG<sub>PJ,y</sub>” from the applicable methodology ACM0002 Version 12.2 has been named as “EG<sub>y</sub>”. In addition, parameter description is not as per the applicable methodology.</p>			
<p>B.6.3. Are all parameters presented as per international standards?</p> <p>a) <i>Format: Standard format (e.g. 1,000 representing one thousand and 1.0 representing one).</i></p> <p>b) <i>Units: Values shall be directly given in SI units – or additionally to original units transferred to SI.</i></p> <p>c) <i>Short scale naming system: (Only) million = 10<sup>6</sup> and billion 10<sup>9</sup> shall be used.</i></p> <p><i>Please refer to the International System of Units (SI) as published within Guidance 11/08.</i></p>	<p><input checked="" type="checkbox"/> Standard formats have been used</p> <p><input checked="" type="checkbox"/> SI units were used – or added</p> <p><input checked="" type="checkbox"/> The short scale naming is correct</p> <p>In this context the following additional findings have been identified: n.a.</p>	/PDD/	OK	OK
<p>B.6.4. Have all means of implementing the monitoring plan, e.g. equations necessary for</p>	<p><i>Description:</i> All equations necessary for ex-post calculation of emissions reductions are correctly described in section B.6.1 of the PDD and in line with the methodology.</p>	/PDD/ /ACM	OK	OK

<b>Checklist Item</b> (incl. guidance for the validation team)	<b>Validation Team Comments</b> (justification and substantiation of information, data and evidences)	<b>Ref.</b>	<b>Draft Concl.</b>	<b>Final Concl.</b>
<p>ex-post emission reduction calculation, been described clearly and in line with the methodology?</p> <p>(EB 55 Annex 1, §§ 123(b), 124)</p> <p><i>Check whether all necessary equations have been provided in the PDD. Pl. consider that ex-post and ex-ante calculations might be different.</i></p> <p><i>Please consider that additional equations might be necessary to calculate auxiliary parameters.</i></p>	<p><i>Justification of evidences:</i> The PDD was reviewed and compared with the equations provided in ACM0002 and Tool for calculating the emission factor of an electricity system.</p> <p><i>Conclusion:</i> All necessary equations for ex-post emission reduction calculation have been correctly and clearly described and are in line with the methodology.</p>	<p>0002/ /TEF/ /GCP/</p>		
<p>B.6.5. Is it likely that the monitoring arrangements described in the PDD can properly be implemented in the context of the project activity?</p> <p>(EB 55 Annex 1, § 124(c))</p> <p><i>Assess whether the described monitoring arrangements are sufficient and realistic to enable a thorough monitoring. Pl. consider also special monitoring conditions, e.g. downtimes of monitoring equipment etc.</i></p>	<p><i>Description:</i> It is likely that monitoring arrangements consisting of electricity meters for electricity generation will be implemented at project site and connection point to the grid and proper staff will be assigned to perform CDM monitoring activities. However, CAR B16 is raised for further clarifications in the PDD.</p> <p><i>Justification of evidences:</i> PDD was reviewed accordingly. Interviews were performed on site.</p> <p><i>Conclusion:</i> It is likely that the monitoring arrangements described in the PDD can be properly implemented, but a CAR was raised for further clarifications.</p> <p><b>(CAR B16)</b> According to the guidelines for completing the PDD in section B.7.2 the following information is missing: the <u>operational</u> and management structure that the project operator will implement in order to monitor emission reductions and the <u>responsibilities</u> for and institutional arrangements for data collection and archiving. Furthermore monitoring arrangements for data archiving stated in the applied methodology are missing. Moreover crosscheck procedures are missing.</p>	<p>/PDD/ /ACM 0002/</p>	<p><b>CAR B16</b></p>	<p>OK</p>

<b>Checklist Item</b> (incl. guidance for the validation team)	<b>Validation Team Comments</b> (justification and substantiation of information, data and evidences)	<b>Ref.</b>	<b>Draft Concl.</b>	<b>Final Concl.</b>
<p>B.6.6. Are the QA/QC procedures appropriate sufficient to ensure the emission reductions achieved from the project activity can be reported ex-post and verified?</p> <p>(EB 55 Annex 1, § 124(b))</p> <p><i>Please consider the description given in section B.7.2. Describe which QA/QC provisions are considered. Address Quality Management System provisions, calibration and maintenance of equipment. Address further any review procedures.</i></p>	<p><i>Description:</i> QA/QC procedures were described in PDD, However some clarifications are required and hence CAR B16 was raised.</p> <p><i>Justification of evidences:</i> The PDD document was crosschecked with methodology ACM0002 requirements and Guidelines for completing the PDD.</p> <p><i>Conclusion:</i> Refer to CAR B16 just above.</p>	<p>/PDD/ /ACM 0002/ /GCP/</p>	<p><del>CAR</del> B16</p>	<p>OK</p>
<p>B.6.7. Are procedures identified for data management?</p> <p>(EB 55 Annex 1, § 124(b))</p> <p><i>Check whether appropriate provisions are considered for data management including responsibilities, what records to keep, storage area of records and how to process performance documentation</i></p> <p><i>Check further the data archiving provisions for the project activity and ensure that provisions are made to archive data for the whole crediting period + 2 years.</i></p>	<p><i>Description:</i> According to the applied methodology all data collected as part of monitoring should be archived electronically and be kept at least for 2 years after the end of the last crediting period. Nevertheless, CAR B16 has been raised requesting further detail of the monitoring arrangements</p> <p><i>Justification of evidences:</i> PDD document and the applied methodology was reviewed.</p> <p><i>Conclusion:</i> Procedures for data management have been included in the PDD. Nevertheless, CAR B16 has been raised requesting further detail of the monitoring arrangements, please refer to it.</p>	<p>/PDD/ /ACM 0002/</p>	<p><del>CAR</del> B16</p>	<p>OK</p>
<p><b>C. Duration of the Project/ Crediting Period</b></p> <p><i>It is assessed whether the temporary boundaries of the project are clearly defined.</i></p>				

<b>Checklist Item</b> (incl. guidance for the validation team)	<b>Validation Team Comments</b> (justification and substantiation of information, data and evidences)	<b>Ref.</b>	<b>Draft Concl.</b>	<b>Final Concl.</b>
<p><b>C.1. Is the project's operational lifetime clearly defined and evidenced?</b></p> <p><i>Check whether the project lifetime is correctly defined. Consider the guidance on the assessment of investment analysis (annex to the additionality tool).</i></p> <p><i>Check in case of phased implementation this has been reflected throughout the whole PDD incl. the financial assessment, if applicable.</i></p>	<p><i>Description:</i> The project operational lifetime has been defined in Section C.1.2 of the PDD as 21 years.</p> <p>The operational lifetime has been determined based on the signed Turbine Supply Agreement between Goldwind and the PP<sup>/PSD/</sup>. The technical life time defined by Goldwind is of 20 years.</p> <p>Furthermore, the project Environmental Impact Declaration and its approval<sup>/DIA-RCA/</sup> states a 20 years technical lifetime for the project activity.</p> <p>Hence, as the project lifetime in the PDD is not as per the provided evidences CL C2 was raised.</p> <p><i>Justification of evidences:</i> The turbine supply agreement and the PDD have been reviewed. Also, the validation team has checked the Environmental Impact Declaration and its approval<sup>/DIA-RCA/</sup>.</p> <p><i>Conclusion:</i> Operational lifetime is clearly defined and evidenced. Nevertheless, the value is not as the provided evidence and specific reference about the project operational lifetime is missing in the PDD. Hence, CL C2 was raised.</p> <p><b>(CL C2)</b> Reference of the operational life time of the project activity is missing in section C.1.2 of the PDD. Furthermore, the project technical lifetime was defined as 21 years but the Turbine Supply Agreement states that it is of 20 years. Correction is required</p>	<p>/PDD/ /PSD/ /DIA-RCA/</p>	<p>CL C2</p>	<p>OK</p>
<p><b>C.2. Is the start of the crediting period clearly defined and reasonable?</b></p> <p><i>Check whether the envisaged starting date of the crediting period is realistic, taking into consideration the times needed</i></p>	<p><i>Description:</i> The starting date of the crediting period is clearly defined at section C.2.1.1 as 2013/01/01. The selected date is realistic considering time needed for validation and beginning of operation of project activity</p> <p><i>Justification of evidences:</i> PDD was checked Interviews were also</p>	<p>/PDD/ /IM01/ /IM02/</p>	<p>OK</p>	<p>OK</p>

Checklist Item (incl. guidance for the validation team)	Validation Team Comments (justification and substantiation of information, data and evidences)	Ref.	Draft Concl.	Final Concl.
<i>for validation and registration.</i>	performed during on site visit.  <i>Conclusion:</i> Starting date of the crediting period is clearly defined and realistic.			
<b>D. Environmental Impacts</b>  <i>Documentation on the analysis of the environmental impacts will be assessed, and if deemed significant, an EIA should be provided to the DOE.</i>				
D.1.1. Are there any Host Party requirements for an Environmental Impact Assessment (EIA)? (EB 55 Annex 1, §§ 131–133) <i>Check the host party regulations, regarding EIA.</i>	<i>Description:</i> The SEA is the entity in charge by the Ministry of Environment to analyze the environmental impact of new projects and prevent the national environmental decay.  According to the law 19300 describes whether a project shall present an Environmental Impact Assessment or a more simple Environmental Impact Declaration. In the project case only a DIA is required.  <i>Justification of evidences:</i> The SEA web site was checked. The law 19300 and other relevant Chilean laws ruling environmental licensing process were checked.  <i>Conclusion:</i> According to the law 19300 the project activity does not require to perform an Environmental Impact Assessment. Therefore an Environmental Impact Declaration was submitted by the PP and approved by the SEA through the RCA.	/IM01/ /IM02/ /sea/ /LAW/ /DIA-RCA/	OK	OK
D.1.2. In case an Environmental Impact Assessment (EIA) is requested by the host party, has it been carried out and if applicable duly approved?	<i>Description:</i> As stated above, a DIA (Environmental Impact Declaration) is required for the project Activity. It has been elaborated and approved by host party <sup>/DIA-RCA/</sup> .  <i>Justification of evidences:</i> The validation team has checked the	/IM01/ /IM02/ /DIA-RCA/	OK	OK



Checklist Item (incl. guidance for the validation team)	Validation Team Comments (justification and substantiation of information, data and evidences)	Ref.	Draft Concl.	Final Concl.
(EB 55 Annex 1, §§ 131–133) <i>Check the EIA and its approval, if applicable.</i>	Environmental Impact Declaration and its approval <sup>/DIA-RCA/</sup> . Both are public available at the SEA webpage <sup>/sea/</sup> .  <i>Conclusion:</i> The PP has presented the Environmental Impact Declaration <sup>/DIA-RCA/</sup> to the environmental authority on 2011/05/04. The authority had approved it on 2011/12/14.	/sea/		
D.1.3. Has an analysis of the environmental impacts of the project activity been sufficiently described and in line with the host party environmental legislation?  (EB 55 Annex 1, §§ 130–132) <i>Check the PDD (section D). Check whether the project will create any adverse environmental effects.</i> <i>Check the relevant national environmental legislation.</i>	<i>Description:</i> Yes, the DIA includes an assessment of the environmental impacts of the project. It is also stated in the DIA the fulfilment of the national environmental regulation applicable to the project. No significant adverse impacts were identified.  <i>Justification of evidences:</i> The DIA was checked accordingly.  <i>Conclusion:</i> The PP complies with the national regulation defined by the environmental authority. The original documents were checked. No discrepancies were identified.	/DIA-RCA/ /IM01/ /IM02/	OK	OK
D.1.4. Are transboundary environmental impacts considered in the analysis?  (EB 55 Annex 1, §§ 131–133) <i>Check the documents and local official sources / expertise regarding transboundary environmental impacts.</i>	<i>Description:</i> No transboundary impacts are envisaged for the project activity. All information regarding the environmental impacts of the project during construction and operation are identified in the DIA. The DIA was approved by the environmental authority.  <i>Justification of evidences:</i> The validation team has checked the Environmental Impact Declaration <sup>/DIA-RCA/</sup> and its approval. No transboundary impacts are expected.  <i>Conclusion:</i> No transboundary environmental impacts were detected in the DIA approved by the host country environmental authority.	/DIA-RCA/ /IM01/ /IM02/	OK	OK
<b>E. Stakeholder Comments</b> <i>The DOE should ensure that stakeholder comments</i>				



<b>Checklist Item</b> (incl. guidance for the validation team)	<b>Validation Team Comments</b> (justification and substantiation of information, data and evidences)	<b>Ref.</b>	<b>Draft Concl.</b>	<b>Final Concl.</b>
<i>have been invited with appropriate media and that due account has been taken of any comments received.</i>				
<p>E.1. Have relevant local stakeholders been invited to consultation prior to the publication of the PDD?</p> <p>(EB 55 Annex 1, § 128)</p> <p><i>Check by means of document review and interviews with local stakeholders if and when a local stakeholder consultation process has been carried out.</i></p>	<p><i>Description:</i> Yes, as described in section E.1 of PDD, several relevant stakeholders have been invited for the consultation prior to the publication of the PDD for GSC:</p> <ul style="list-style-type: none"> <li>a) Neighbors from Estacion San Pedro – Local Community</li> <li>b) Neighbors from Conchi Viejo – Local Community</li> <li>c) Neighbors from Lasana – Local Community</li> <li>d) Estacion San Pedro Secretary</li> <li>e) Estacion San Pedro President</li> <li>f) Rural Water President from Lasana Community</li> <li>g) Lasana Treasurer</li> <li>h) Lasana Community President</li> <li>i) Lasana Community Secretary</li> <li>j) Women Association President</li> </ul> <p><i>Justification of evidences:</i> Invitations through invitation letters<sup>/SHCP/</sup> have been presented to the validation team. In addition, the attendance list has been reviewed.</p> <p><i>Conclusion:</i> Relevant stakeholders have been invited to consultation prior to the publication of PDD for GSC.</p>	<p>/SHCP/ /IM01/ /IM02/ /IM03/</p>	<p>OK</p>	<p>OK</p>

<b>Checklist Item</b> (incl. guidance for the validation team)	<b>Validation Team Comments</b> (justification and substantiation of information, data and evidences)	<b>Ref.</b>	<b>Draft Concl.</b>	<b>Final Concl.</b>
<p>E.2. Can the local stakeholder consultation process be assessed as adequate? (EB 55 Annex 1, § 129(a)–(c))</p> <p><i>Describe what assessment steps have been undertaken to assess the adequacy of the stakeholder consultation process. Give a final opinion on the adequacy.</i></p> <p><i>Please consider the following requirements in this context:</i></p> <p><i>(a) Comments by local stakeholders that can reasonably be considered relevant for the proposed CDM project activity, have been invited;</i></p> <p><i>(b) The summary of the comments received as provided in the PDD is complete;</i></p> <p><i>(c) The project participants have taken due account of any comments received and have described this process in the PDD.</i></p>	<p><i>Description:</i> Relevant stakeholders have been invited, by means of invitation letters and also through local community representatives, to local consultation prior to the publication of PDD for GSC. The consultation process took place at two places: Calama city on 2011/11/21 and Lasana town on 2011/11/22.</p> <p>Stakeholders' questions raised during the meeting were reviewed and no major concerns about the project activity have been identified. All questions raised were responded during the meetings.</p> <p>The PDD has been checked and it has been identified that the stakeholders' consultation information so as the summary of the comments received is complete.</p> <p><i>Justification of evidences:</i> All the stakeholder consultation evidences (invitation letters, photos, attendance list and documentation used during the consultation process (i.e. power point presentation)) were checked by the validation team.</p> <p><i>Conclusion:</i> The project complies with the requirements and local stakeholder process is deemed adequate.</p>	<p>/SHCP/ /IM01/ /IM02/ /IM03/</p>	<p>OK</p>	<p>OK</p>

## ANNEX 2: ASSESSMENT OF BASELINE IDENTIFICATION

**Table A-2:** Assessment of Baseline Identification (EB 55 Annex 1 §§83 – 86)

<input checked="" type="checkbox"/>	Baseline is not identified / Identified by the applied methodology
<input type="checkbox"/>	Assessment of baseline see below

Baseline Alternatives identified	In line with the Methodology?	Eliminated	Reasons for elimination / non-elimination from list of alternatives	Evidence used	DOE Assessment	
					Appropriateness of elimination	Assessment of validation team (results and means of assessment)

## ANNEX 3: ASSESSMENT OF FINANCIAL PARAMETERS

**Table A-3:** Assessment of Financial Parameters (EB 55 Annex 1, §§ 111, 112, 114/ in case financial parameters stem from FSR §113,)

<input type="checkbox"/>	No financial parameters are used for additionality justification					
<input checked="" type="checkbox"/>	Assessment of all financial parameters see below					
Parameter	Value applied	Unit	Source of Information (please indicate document and page)	Reference	DOE ASSESSMENT	
					Correctness of value applied	Comment
<b><u>TOTAL INVESTMENT</u></b>	375.26	Mio USD	Report "The Economics of Wind Energy" issued by the European Wind Energy Association in March 2009 (page 31)  Report "Wind Energy – The Facts" – Part II – The Economics of Wind Power, issued by the European Wind Energy Association (pages 4 and 5)	/FD-14/	<input checked="" type="checkbox"/>	<p>The total investment considers the following items:</p> <ol style="list-style-type: none"> <li>1. Civil works (considering 8 items)</li> <li>2. Electrical items</li> <li>3. Turbines</li> <li>4. Substation items</li> <li>5. Grid items</li> </ol> <p>The total investment cost was calculated adding up the costs above. The calculation formulas in the excel sheet were checked and they are found correct.</p> <p>The validation team has reviewed all offers and references and it has been confirmed that the total project investment of US\$375.26 Mio is correct. This represents a project investment per installed MW of <b>1.56 Mio USD</b>.</p> <p>Commonly only the turbines investment costs is around 1.0 to 1.35</p>

<input type="checkbox"/>	No financial parameters are used for additionality justification													
<input checked="" type="checkbox"/>	Assessment of all financial parameters see below													
Parameter	Value applied	Unit	Source of Information (please indicate document and page)	Reference	DOE ASSESSMENT									
					Correctness of value applied	Comment								
						<p>million € /MW which represents 68 – 84 % of the total project investment<sup>/FD-14/</sup>.</p> <p>The total investment per installed MW is approx. <b>1.3– 1.75</b> million USD<sup>/FD-14/</sup>. This information was taken from two studies issued by the European Wind Energy Association (EWEA). These reports are considered an appropriate source as the EWEA is the voice of the wind industry, actively promoting the utilization of wind power in Europe and worldwide. Therefore, information published by the EWEA is considered as a third party trustable data about the wind energy sector worldwide.</p> <p>Hence, applying a project investment of 1.56 Mio USD/MW for the project activity is considered appropriate.</p> <p>Moreover, the validation team cross-checked the cost per installed MW with registered CDM projects in Chile:</p> <table border="1"> <thead> <tr> <th>Project Name</th> <th>(MioUSD/MW)</th> </tr> </thead> <tbody> <tr> <td>Project 1958 : Canela Wind Farm Project</td> <td>2.10</td> </tr> <tr> <td>Project 3252 : Totoral Wind Farm Project</td> <td>2.88</td> </tr> <tr> <td>Project 4449 : Monte Redondo Wind Farm Project</td> <td>2.89</td> </tr> </tbody> </table>	Project Name	(MioUSD/MW)	Project 1958 : Canela Wind Farm Project	2.10	Project 3252 : Totoral Wind Farm Project	2.88	Project 4449 : Monte Redondo Wind Farm Project	2.89
Project Name	(MioUSD/MW)													
Project 1958 : Canela Wind Farm Project	2.10													
Project 3252 : Totoral Wind Farm Project	2.88													
Project 4449 : Monte Redondo Wind Farm Project	2.89													

<input type="checkbox"/>	No financial parameters are used for additionality justification					
<input checked="" type="checkbox"/>	Assessment of all financial parameters see below					
Parameter	Value applied	Unit	Source of Information (please indicate document and page)	Reference	DOE ASSESSMENT	
					Correctness of value applied	Comment
						<p>The DOE checked all wind power projects registered as CDM and it has been identified that the project activity has the most conservative cost per installed MW which represents higher IRR.</p> <p>As the sample of CDM projects chosen considers projects from the host country which has an installed capacity lower than 50 MW it is considered that the selected projects are appropriate and similar to the project activity.</p> <p>Therefore, the validation team concludes that the total investment cost is conservative and appropriate.</p> <p>A CAR was raised due to some values were wrongly applied or no evidence were provided to crosscheck the value applied. Please refer to CAR B5.</p>
<b>1. CIVIL WORKS</b> (as part of CAPEX)	114.03	Mio USD			<input checked="" type="checkbox"/>	<p>Civil Works considers the following items:</p> <ul style="list-style-type: none"> <li>○ Engineering: 5.48 Mio USD</li> <li>○ Turbines foundation: 27.42 Mio USD</li> <li>○ Site access roads: 15.81 Mio USD</li> <li>○ Public roads updates: 2.41 Mio USD</li> <li>○ Met masts: 0.47 Mio USD</li> <li>○ Turbine Transport: 42.10 Mio USD</li> <li>○ Turbine Erection: 19.78 Mio USD</li> <li>○ O&amp;M Building: 0.56 Mio USD</li> </ul>

<input type="checkbox"/>	No financial parameters are used for additionality justification					
<input checked="" type="checkbox"/>	Assessment of all financial parameters see below					
Parameter	Value applied	Unit	Source of Information (please indicate document and page)	Reference	DOE ASSESSMENT	
					Correctness of value applied	Comment
						<p>Further as it is a component of total investment, the cross-check of total investment cost per MW has been carried out to ensure that input data is conservative. Please refer to Assessment of Total Investment above.</p> <p>Concluding all documents presented by the PP to demonstrate the Civil Works data are available and valid at the time of investment decision.</p>
1.1 Engineering	5.48	Mio USD	<p>Cost Model Budget Proposal by Mortenson Construction (Page 3)</p> <p>Proposal by Omar Nunez (page 1)</p> <p>Web site of the Central bank of Chile</p>	<p>/FD-1/</p> <p>/FD-2/</p> <p>/bcentral/</p>	<input checked="" type="checkbox"/>	<p>Engineer costs (BOP) consider the following items:</p> <ul style="list-style-type: none"> <li>Supervision and field Office: the value used is 21.3 USD/kW which is extracted from the Mortenson Proposal<sup>/FD-1/</sup>.</li> <li>Soil studies: the value \$26,644,150 Chilean pesos is taken from a proposal<sup>/FD-2/</sup> performed for another wind park project (Cuel Wind Project). The PP has taken this number as a reference and applied the cost/MW to the installed capacity of the project activity. The resulting value is in Chilean pesos (\$185,350,608.7). Therefore an exchange rate (\$/USD) was applied (\$520.30/USD) resulting in \$356,237.96 USD. The exchange rate used is from 2011/12/20 which is prior to the project starting date.</li> </ul>
1.2 Turbines foundation	27.42	Mio USD	Cost Model Budget Proposal by Mortenson	/FD-1/	<input checked="" type="checkbox"/>	Turbines base consider the following items:

<input type="checkbox"/>	No financial parameters are used for additionality justification					
<input checked="" type="checkbox"/>	Assessment of all financial parameters see below					
Parameter	Value applied	Unit	Source of Information (please indicate document and page)	Reference	DOE ASSESSMENT	
					Correctness of value applied	Comment
			Construction (Page 3)			<ul style="list-style-type: none"> <li>• Crane pads (5,264 USD/turbine)</li> <li>• Foundations (157,919 USD/turbine)</li> <li>• Conduit &amp; Grounding (8,188 USD/turbine)</li> </ul> <p>Which is extracted from the Mortenson Proposal<sup>/FD-1/</sup>. The total cost per turbine (171,371 USD/turbine) is then multiplied for the number of turbines which will be installed as follow:</p> <ul style="list-style-type: none"> <li>- Year 2013: 47 turbines</li> <li>- Year 2014: 47 turbines (totaling 94)</li> <li>- Year 2015: 66 turbines (totaling 160)</li> </ul>
<b>1.3</b> Site access roads	15.81	Mio USD	Project Layout (page 1) Cost Model Budget Proposal by Mortenson Construction (Page 3)	/FD-3/  /FD-1/	<input checked="" type="checkbox"/>	Using the Project Layout the PP obtained the number of meters (90,904 m) that will be built. Then the cost of road construction (174 USD/m) is obtained from the Mortenson Proposal <sup>/FD-3/</sup> .
<b>1.4</b> Public roads updates	2.41	Mio USD	Wind Turbine Route Transportation Study (80)	/FD-4/	<input checked="" type="checkbox"/>	Value (56,365 Chilean UF) was evidenced in the Wind Turbine Route Transportation Study from Ingenieria Consultores <sup>/FD-4/</sup> .  The resulting value is in Chilean UF (in Spanish Unidad de Fomento). Therefore an exchange rate (UF/USD) was applied (42.8 USD/UF). The exchange rate used is from 2011/12/20 which is prior to the project starting date.



<input type="checkbox"/>	No financial parameters are used for additionality justification					
<input checked="" type="checkbox"/>	Assessment of all financial parameters see below					
Parameter	Value applied	Unit	Source of Information (please indicate document and page)	Reference	DOE ASSESSMENT	
					Correctness of value applied	Comment
1.5 Met masts	0.47	Mio USD	Cost Model Budget Proposal by Mortenson Construction (Page 3)	/FD-1/	<input checked="" type="checkbox"/>	Value was evidenced in the Mortenson Proposal <sup>/FD-1/</sup> .
1.6 Turbine Transport	42.10	Mio USD	Turbine Supplier Agreement (page 13) Work Proposal by Burger (page 1)	/PSD/ /FD-5/	<input checked="" type="checkbox"/>	<p>Turbine transport considers the following items:</p> <ul style="list-style-type: none"> <li>• Transoceanic transport (31.62 Mio USD)</li> <li>• National/Local Transport (10.48 Mio USD)</li> </ul> <p>Value of transoceanic transport was evidenced through the Turbine Supplier Agreement<sup>/PSD/</sup>.</p> <p>Value of national/local transport was evidenced through the Work Proposal issued by Burger<sup>/FD-5/</sup> and considers the following items:</p> <ul style="list-style-type: none"> <li>- Wind turbines transportation (item 1.1 – 34,419 Euro): cost per turbine</li> <li>- Crane use (item 1.2 – 15,869 Euro) : cost per turbine</li> <li>- Crane mobilization (item 1.3 – 5,832 Euro): fix cost per event</li> </ul> <p>Costs stated in the Work Proposal by Burger are stated in Euros. Therefore an exchange rate (USD/Euro) was applied (1.3 USD/Euro). The exchange rate used is from 2011/12/20 which valid at the time of investment decision.</p>

<input type="checkbox"/>	No financial parameters are used for additionality justification					
<input checked="" type="checkbox"/>	Assessment of all financial parameters see below					
Parameter	Value applied	Unit	Source of Information (please indicate document and page)	Reference	DOE ASSESSMENT	
					Correctness of value applied	Comment
1.7 Turbine Erection	19.78	Mio USD	Work Proposal by Burger (page 1)	/FD-5/	<input checked="" type="checkbox"/>	<p>Turbine erection considers the following items:</p> <ul style="list-style-type: none"> <li>• Assembly (12.49 Mio USD) – item 2.1</li> <li>• Installation (7.29 Mio USD) – item 2.3</li> </ul> <p>Value of turbine erection (cost per turbine) was evidenced through the Work Proposal issued by Burger<sup>/FD-5/</sup>.</p> <p>Costs stated in the Work Proposal by Burger are stated in Euros. Therefore an exchange rate (USD/Euro) was applied (1.3 USD/Euro). The exchange rate used is from 2011/12/20.</p>
1.8 O&M Building	0.56	Mio USD	Cost Model Budget Proposal by Mortenson Construction (Page 3)	/FD-1/	<input checked="" type="checkbox"/>	Value was evidenced in the Mortenson Proposal <sup>/FD-1/</sup> . The proposal was checked
2. ELECTRICAL ITEMS (as part of CAPEX)	16.6	Mio USD			<input checked="" type="checkbox"/>	<p>Electrical items considers the following items:</p> <ul style="list-style-type: none"> <li>2.1 34.5 kV Collector Underground cable: 10.44 Mio USD</li> <li>2.2 34.5 kV Collector single Circuit Overhead Line: 1.2 Mio USD</li> <li>2.3 690-34.5 kV unit transformer: 4.96 Mio USD</li> </ul> <p>Further as it is a component of total investment, the cross-check of total investment cost per MW has been carried out to ensure that input data is conservative. Please refer to Assessment of Total Investment above.</p>

<input type="checkbox"/>	No financial parameters are used for additionality justification					
<input checked="" type="checkbox"/>	Assessment of all financial parameters see below					
Parameter	Value applied	Unit	Source of Information (please indicate document and page)	Reference	DOE ASSESSMENT	
					Correctness of value applied	Comment
						Concluding all documents presented by the PP to demonstrate the electrical items costs data are available and valid at the time of investment decision.
2.1 - 34.5 kV Collector Underground cable	10.44	Mio USD	Cost Model Budget Proposal by Mortenson Construction (Page 3) Project Layout (page 1)	/FD-1/ /FD-3/	<input checked="" type="checkbox"/>	Using the Project Layout the PP obtained the number of meters of cable (90,904 m) that will be use. Then the underground cable costs (114.8 USD/m) is obtained from the Mortenson Proposal <sup>/FD-1/</sup> . The proposal was checked.
2.2 - 34.5 kV Collector single Circuit Overhead Line	1.2	Mio USD	Grid Connection Costs assessment (page 6) Environmental Impact Declaration (page 16)	/FD-7/ /DIA-RCA/	<input checked="" type="checkbox"/>	Value of 34.5 kV Overhead Line was evidenced through the Grid connection costs assessment <sup>/FD-7/</sup> of Cuel Wind Farm which specifies 3 km of Overhead Line.  It is stated in page 16 of the DIA <sup>/DIA-RCA/</sup> that 18 km overhead line will be built. The RCA is proof of approval of the DIA and it was checked. Therefore the PP has applied the cost per km (200,000 USD/3 km) stated in the Grid connection costs assessment <sup>/FD-7/</sup> to the project activity scenario. No discrepancies were identified in the calculation.
2.3 - 690-34.5 kV unit transformer	4.96	Mio USD	Turbine Supplier Agreement (page 13)	/PSD/	<input checked="" type="checkbox"/>	Value of 690-34.5 kV unit transformer was evidenced through the Turbine Supplier Agreement <sup>/PSD/</sup> .
3. TURBINES (as part of CAPEX)	218.61	Mio USD	Turbine Supplier Agreement (page 13)	/PSD/	<input checked="" type="checkbox"/>	Total cost of 160 Turbines was evidenced through the Turbine Supplier Agreement <sup>/PSD/</sup> signed on 2012/01/17.

<input type="checkbox"/>	No financial parameters are used for additionality justification					
<input checked="" type="checkbox"/>	Assessment of all financial parameters see below					
Parameter	Value applied	Unit	Source of Information (please indicate document and page)	Reference	DOE ASSESSMENT	
					Correctness of value applied	Comment
						<p>Further as it is a component of total investment, the cross-check of total investment cost per MW has been carried out to ensure that input data is conservative. Please refer to Assessment of Total Investment above.</p> <p>Concluding all documents presented by the PP to demonstrate the turbines cost data are available and valid at the time of investment decision.</p>
<b>4. SUBSTATION ITEMS</b> (as part of CAPEX)	20.95	Mio USD			<input checked="" type="checkbox"/>	<p>Electrical items considers the following items:</p> <p>4.1 Substation 220 kV Extension: 2.23 Mio USD 4.2 Substation 220 kV-34.5 kV: 18.72 Mio USD</p> <p>Further as it is a component of total investment, the cross-check of total investment cost per MW has been carried out to ensure that input data is conservative. Please refer to Assessment of Total Investment above.</p> <p>Concluding all documents presented by the PP to demonstrate the Civil Works data are available and valid at the time of investment decision.</p>
4.1 Substation 220kV Extension	2.23	Mio USD	Wind Farm Connection Report (page 4)	/FD-6/	<input checked="" type="checkbox"/>	Value of substation was evidenced through the Wind Farm Connection Report <sup>/FD-6/</sup> .

<input type="checkbox"/>	No financial parameters are used for additionality justification					
<input checked="" type="checkbox"/>	Assessment of all financial parameters see below					
Parameter	Value applied	Unit	Source of Information (please indicate document and page)	Reference	DOE ASSESSMENT	
					Correctness of value applied	Comment
<b>4.2 Substation 220kV-34.5 kV Extension</b>	18.72	Mio USD	Cost Model Budget Proposal by Mortenson Construction (Page 3)  Environmental Qualification Resolution (page 2)	/FD-1/  /DIA-RCA/	<input checked="" type="checkbox"/>	Value was evidenced in the Mortenson Proposal <sup>/FD-1/</sup> . The proposal was checked. Two substations will be implemented in order to avoid transmission losses. It is stated in page 2 of the RCA <sup>/DIA-RCA/</sup> that two substations will be built. The RCA is proof of approval of the DIA and it was checked.
<b>5. GRID ITEMS</b> (as part of CAPEX)	5.08	Mio USD	Wind Farm Connection Report (page 4)	/FD-6/	<input checked="" type="checkbox"/>	Value of grid items corresponds to 220 kV transmission line that will connect one of the project activity substations and also El Abra substation which is the connection point to the SING. The value applied was evidenced through the Wind Farm Connection Report <sup>/FD-6/</sup> .  Further as it is a component of total investment, the cross-check of total investment cost per MW has been carried out to ensure that input data is conservative. Please refer to Assessment of Total Investment above.  Concluding all documents presented by the PP to demonstrate the grid items costs data are available and valid at the time of investment decision.
<b><u>ENERGY PRICE</u></b>	69.765	USD/M Wh	Node Price Report (table 4, page 11)	/FD-8/	<input checked="" type="checkbox"/>	The node which the project activity will be connected through the substation El Abra is Crucero Node.

<input type="checkbox"/>	No financial parameters are used for additionality justification													
<input checked="" type="checkbox"/>	Assessment of all financial parameters see below													
Parameter	Value applied	Unit	Source of Information (please indicate document and page)	Reference	DOE ASSESSMENT									
					Correctness of value applied	Comment								
			CNE web site	/cne/		<p>The price defined by the Node Price Report is 69.765 USD/MWh which is the price the PP has applied in the financial calculation. The Node price Report is a document published by the CNE and is public available. The verification team has checked the information directly from the CNE web site. No discrepancies were identified.</p> <p>The Node price Report is a document published by the CNE and is <b>public available</b>. The validation team has checked the information directly from the CNE web site. No discrepancies were identified. The PP will sell its energy in the spot market.</p> <p>Moreover, the validation team cross-checked the energy price with registered CDM projects in Chile:</p> <table border="1"> <thead> <tr> <th>Project Name</th> <th>(MioUSD/MW)</th> </tr> </thead> <tbody> <tr> <td>Project 1958 : Canela Wind Farm Project</td> <td>levelized cost</td> </tr> <tr> <td>Project 3252 : Totoral Wind Farm Project</td> <td>81*</td> </tr> <tr> <td>Project 4449 : Monte Redondo Wind Farm Project</td> <td>79.7</td> </tr> </tbody> </table> <p>* This price has an energy and <u>capacity component</u>, and is based on the long term expansion cost of the system</p>	Project Name	(MioUSD/MW)	Project 1958 : Canela Wind Farm Project	levelized cost	Project 3252 : Totoral Wind Farm Project	81*	Project 4449 : Monte Redondo Wind Farm Project	79.7
Project Name	(MioUSD/MW)													
Project 1958 : Canela Wind Farm Project	levelized cost													
Project 3252 : Totoral Wind Farm Project	81*													
Project 4449 : Monte Redondo Wind Farm Project	79.7													

<input type="checkbox"/>	No financial parameters are used for additionality justification					
<input checked="" type="checkbox"/>	Assessment of all financial parameters see below					
Parameter	Value applied	Unit	Source of Information (please indicate document and page)	Reference	DOE ASSESSMENT	
					Correctness of value applied	Comment
						<p>The DOE checked all wind power projects registered as CDM project. The value of energy price differs every year and it is published by the energy authority according to the energy generation in the Chilean Market. Therefore is difficult to compare energy price of registered projects.</p> <p>As the sample of CDM projects chosen considers projects from the host country which has an installed capacity lower than 50 MW it is considered that the selected projects are appropriate and similar to the project activity.</p> <p>Public and available information which is published by the energy authority was used as a source of energy price. Therefore, the validation team concludes that the energy price is conservative and appropriate.</p>
<b><u>FIRM CAPACITY</u></b>	38.4 (16%)	MW-year	<p>Calculation of firm capacity</p> <p>Definitive calculation of firm capacity 2011 (page 17)</p> <p>Definitive calculation of firm capacity 2010 (page</p>	<p>/FD-09/</p> <p>/FD-10/</p> <p>/FD-11/</p>	<input checked="" type="checkbox"/>	<p>CDEC is the entity who calculates the firm capacity recognized to a power plant based<sup>/FD-9/</sup> on the availability of the power plant at pick hours. Therefore this is calculated based on <u>historical</u> information of energy generation of each power plant.</p> <p>The PP has calculated the firm capacity of the project activity using the firm capacity recognized<sup>/FD-10, FD-11 FD-12, FD-15 &amp; FD-16/</sup> for all wind power plants connected to any Chilean grid during the last 3 years (2009-2011). As a result the PP has taken the higher firm</p>

<input type="checkbox"/>	No financial parameters are used for additionality justification					
<input checked="" type="checkbox"/>	Assessment of all financial parameters see below					
Parameter	Value applied	Unit	Source of Information (please indicate document and page)	Reference	DOE ASSESSMENT	
					Correctness of value applied	Comment
			19)  Definitive calculation of firm capacity 2009 (page 18)  Installed Capacity per grid  CDEC-SIC Statistics Yearbook 2010	/FD-12/    /FD-15/    /FD-16/		capacity recognized to a wind power plant (16%). The average firm capacity recognized to all wind power plants in the last three years is 12.6%. Therefore the assumption taken by the PP is considered as conservative. The firm capacity represents 7% of the total incomes.  Public and available information which is published by the energy authority was used as a source of firm capacity. Therefore, the validation team concludes that the firm capacity is conservative and appropriate.
<b><u>PRICE OF FIRM CAPACITY</u></b>	110,439.	USD/M W-year	Node Price Report (table 4, page 11)  CNE web site	/FD-8/    /cne/	<input checked="" type="checkbox"/>	In Chile energy is paid by the CDEC to project owners for the firm capacity (see above) that the project provides to the grid.  The price to be paid for the firm capacity for the energy delivered by the project activity would be 110 USD per MW per year (9.20 USD/kW-month).  The price is defined in the Node Price Report which is the price the PP has applied in the financial calculation. The Node price Report is a document published by the CNE and is public available. The validation team has checked the information directly from the CNE web site. No discrepancies were identified. Therefore, the validation team concludes that the firm capacity is



<input type="checkbox"/>	No financial parameters are used for additionality justification					
<input checked="" type="checkbox"/>	Assessment of all financial parameters see below					
Parameter	Value applied	Unit	Source of Information (please indicate document and page)	Reference	DOE ASSESSMENT	
					Correctness of value applied	Comment
						conservative and appropriate.
<b><u>PLANT LOAD FACTOR</u></b>	32.7	%	Assessment of energy Production by GL Garrad Hassan Ibérica S.L.U., (page 17)	/PLF/	<input checked="" type="checkbox"/>	Value was evidenced in Report from third party Garrad Hassan, which is a worldwide leading company in wind yield assessment and certification. Therefore determination of PLF is considered reliable and absolutely in line with EB48 Annex 11.  A CAR was raised regarding the plant load factor. Please refer to CAR B8.
<b><u>OPERATIONAL COSTS</u></b>					<input checked="" type="checkbox"/>	Operational costs consider the following items:  1. Transmission Fee: 0.50 Mio USD-year 2. Operation and Maintenance (O&M): 4.896 Mio USD-year 3. Others (insurance, administration, etc.): 8.0 Mio USD-year  Concluding all documents presented by the PP to demonstrate the operational costs data are available and valid at the time of investment decision.  A CAR was raised due to some values were wrongly applied or no evidence were provided to crosscheck the value applied. Please refer to CAR B5.
<b><u>1.TRANSMISSION FEE</u></b>	0.50	Mio USD-year	Transmission Proposal (page 10 & page 16)	/FD-13/	<input checked="" type="checkbox"/>	The transmission fee is extracted from the Economic and Technical Proposal for the development and use of transmission facilities <sup>/FD-13/</sup> . According to such document (performed for another

<input type="checkbox"/>	No financial parameters are used for additionality justification						
<input checked="" type="checkbox"/>	Assessment of all financial parameters see below						
Parameter	Value applied	Unit	Source of Information (please indicate document and page)	Reference	DOE ASSESSMENT		
					Correctness of value applied	Comment	
						<p>wind park that will be built by the same PP) the monthly fee to be paid in order to be able to use the transmission line is 41,666 USD. The proposal was checked. This value is considered for a wind park with a lower installed capacity. Therefore the transmission fee value for the project activity would be much higher. As a conservative assumption the PP has used the same value.</p> <p>The value was conservatively applied in the financial analysis.</p> <p>Transnet which is the entity who has issued the proposal<sup>/FD-13/</sup> is a Chilean company who provide the service of transmission of electricity. Therefore is considered as plausible evidence.</p> <p>Moreover the validation team cross-checked the transmission fee with registered CDM projects in Chile. Canela Wind Farm Project (18.2 MW) was the only CDM project which transmission fee value is available. For this project a transmission fee of 0.4 Mio was considered. Nevertheless it is difficult to compare transmission fees between projects as different companies in Chile provide the service of energy transmission and different costs might apply.</p> <p>Therefore, the validation team concludes that the transmission fee is considered as appropriate.</p>	

<input type="checkbox"/> No financial parameters are used for additionality justification						
<input checked="" type="checkbox"/> Assessment of all financial parameters see below						
Parameter	Value applied	Unit	Source of Information (please indicate document and page)	Reference	DOE ASSESSMENT	
					Correctness of value applied	Comment
2. O&M	4.89	Mio USD-year	Turbine Supplier Agreement (page 13)	/PSD-2/	<input checked="" type="checkbox"/>	The operation and Maintenance costs are defined in page 13 of the Exhibits for Turbine Supplier Agreement <sup>/PSD-2/</sup> . According to the TSA the O&M costs per turbine is 30,600 USD-year. The source used for the O&M was valid at the time of investment decision and is based on quotation of the turbine supplier which is considered as reliable evidence. The USD/MWh-year is 7.11.
			Wind energy – The facts web site	/Wind-E/		The validation team has crosschecked the O&M costs applied against the Economics publication of Wind Energy – The Facts which O&M costs are estimated to be around 4.19 to 5.24 USD/MWh-year.
						The value used by the PP is based on reliable evidence provided by the manufacturer of the wind turbine and compared with the Economics publication of Wind Energy is considered as conservative.
						The Economics publications of Wind Energy are issued by the European Wind Energy Association (EWEA). These reports are considered an appropriate source as the EWEA is the voice of the wind industry, actively promoting the utilization of wind power in Europe and worldwide. Therefore, information published by the EWEA is considered as a third party trustable data about the wind energy sector worldwide.

<input type="checkbox"/>	No financial parameters are used for additionality justification					
<input checked="" type="checkbox"/>	Assessment of all financial parameters see below					
Parameter	Value applied	Unit	Source of Information (please indicate document and page)	Reference	DOE ASSESSMENT	
					Correctness of value applied	Comment
						<p>The validation team has checked calculation and sources and no mistakes have been identified.</p> <p>Furthermore, the O&amp;M costs are strongly justified based on the contracts signed by the PP and the technology supplier.</p> <p>The validation team concludes that the applied O&amp;M costs are correct and determined using conservative assumptions.</p>
<b>3. OTHERS COSTS</b>	8.0	Mio USD-year	The Economics of Wind Power (Part III, page 205-206)	/FD-14/	<input checked="" type="checkbox"/>	<p>This item considers: Insurance, Land rent, Administration, Power from the grid and Miscellaneous. According to the publication The Economics of Wind Power other costs are estimated to be around 1.2 to 1.5 Euros cents per kWh (considering O&amp;M). The PP has taken the most conservative value of 1.2 Euros cents per kWh and excluded the O&amp;M cost which represents 26% (this was already considered above using most reliable evidence such as the Turbine Supply Agreement<sup>/PSD-2/</sup>).</p> <p>The resulting value is in Euros. Therefore an exchange rate (Euro/USD) was applied (1.30USD/Euro). The exchange rate used is from 2011/12/20 which is prior to the project starting date.</p> <p>At the value considered for <i>other costs</i> were taken from public available sources the validation team considers it as reliable and plausible. Furthermore the source (The Economics publications of Wind Energy) used by the PP is issued by the European Wind Energy Association (EWEA). These reports are considered an appropriate source as the EWEA is the voice of the wind industry,</p>

<input type="checkbox"/>	No financial parameters are used for additionality justification					
<input checked="" type="checkbox"/>	Assessment of all financial parameters see below					
Parameter	Value applied	Unit	Source of Information (please indicate document and page)	Reference	DOE ASSESSMENT	
					Correctness of value applied	Comment
						actively promoting the utilization of wind power in Europe and worldwide. Therefore, information published by the EWEA is considered as a third party trustable data about the wind energy sector worldwide.
<b><u>TAX</u></b>	17	%	<a href="http://www.sii.cl/aprenda_sobre_impuestos/impuestos/imp_directos.htm">http://www.sii.cl/aprenda_sobre_impuestos/impuestos/imp_directos.htm</a> (article 20)	/sii/	<input checked="" type="checkbox"/>	According to the Chilean Internal Tax Service the tax rate of 17% shall be applied to all companies in Chile.  The webpage of the Chilean Internal Revenue Service has been checked and the rate of 17% income tax evidenced.
<b><u>BENCHMARK</u></b>	10.3	%	Guidelines on the Assessment of Investment Analysis, v.05, EB 62, Annex 5	EB62 Annex 5	<input checked="" type="checkbox"/>	Post-tax benchmark in real terms has been applied by the PP.  The UNFCCC default value as per paragraph 8 of the Appendix from the Guidelines on the Assessment of Investment Analysis, v.05, EB 62 Annex 5 has been used.
<b><u>TECHNICAL LIFETIME</u></b>	20	years	Turbine Supply Agreement (page 20)	/PSD-2/	<input checked="" type="checkbox"/>	Yes, the technical life time of the project activity stated in the PDD is 20 years. The investment analysis was elaborated using a time horizon of 20 years.  The Turbine Supply Agreement <sup>/PSD-2/</sup> given by the wind turbine manufacturer (Goldwind) has been checked. It is stated a technical life time of 20 years.  Moreover, the value is considered reasonable according to the technical expertise of the validation team.

<input type="checkbox"/>	No financial parameters are used for additionality justification					
<input checked="" type="checkbox"/>	Assessment of all financial parameters see below					
Parameter	Value applied	Unit	Source of Information (please indicate document and page)	Reference	DOE ASSESSMENT	
					Correctness of value applied	Comment
<b><u>DEPRECIATION</u></b>			National accounting regulations  Turbine Supply Agreement (page 20)	/Sii/  /PSD-2/	<input checked="" type="checkbox"/>	<p>Depreciation is determined based on the National Accounting Regulation. The validation team has checked the source and crosschecked every item for which depreciation has been applied. No discrepancies were identified.</p> <p>For turbines the depreciation is based on the technical life time defined at the Turbine Supply Agreement<sup>/PSD-2/</sup> (page 20) as accounting regulation does not considers this item.</p> <p>Furthermore for turbines and turbines foundation a fair value was considered in year 20 as construction will be built on phases.</p> <p>A CL and a CAR were raised regarding the project depreciation. Please refer to CL B6 and CAR B7.</p>
<b>DEPREC. – 20</b>	20	years	National accounting regulations  Turbine Supply Agreement (page 20)	/Sii/  /PSD-2/	<input checked="" type="checkbox"/>	<p>Depreciation to be applied considering 20 years:</p> <ul style="list-style-type: none"> <li>- Turbines foundations (section E.1.18)</li> <li>- Site Access Roads (section A.6)</li> <li>- Public roads upgrades (section A.6)</li> <li>- O&amp;M Building (section E.1.18)</li> <li>- 34.5 kV Collector Underground cable (section E.1.10)</li> <li>- 34.5 kV Collector single circuit overhead line (section E.1.9)</li> <li>- Turbines (based on the technical life time defined at /PSD-2/ (page 20) as accounting regulation does not considers this item)</li> </ul>

<input type="checkbox"/>	No financial parameters are used for additionality justification					
<input checked="" type="checkbox"/>	Assessment of all financial parameters see below					
Parameter	Value applied	Unit	Source of Information (please indicate document and page)	Reference	DOE ASSESSMENT	
					Correctness of value applied	Comment
						<ul style="list-style-type: none"> <li>- Substation 220 kV extension (section E.1.13)</li> <li>- Substation 220 kV-34.5 kV (section E.1.13)</li> <li>- 220 kV Transmission line (section E.1.3)</li> </ul> <p>For turbines the depreciation is based on the technical life time defined at the Turbine Supply Agreement<sup>/PSD-2/</sup> (page 20) as accounting regulation does not considers this item. Chile has signed the IFRS (International Financial Reporting Standards). Norm IFRS –IAS 16 stated that depreciation shall be based on useful lifetime of assets. PP considered conservatively 20 years for WTG. The validation team considers such estimates appropriate and conservative.</p>
<b>DEPREC. – 10</b>	10	years	National accounting regulations	/Sii/	<input checked="" type="checkbox"/>	<p>Depreciation to be applied considering 10 years:</p> <ul style="list-style-type: none"> <li>- Met masts (section E.1.18)</li> <li>- 690-34.5 kV unit transformer (section E.1.16)</li> </ul>
<b>Internal Rate of Return (IRR)</b>	6.47	%	Financial analysis calculation spreadsheet	/XLS/	<input checked="" type="checkbox"/>	<p>All inputs values were checked directly from the sources and they were valid at the time of the investment decision. Depreciation and other non-cash related were included in the investment analysis as taxation was considered in the financial analysis.</p> <p>The project was evaluated considering 100% equity because no debt was used in the investment; therefore no loan repayments and interests were included in the project IRR calculation.</p> <p>As described in the PDD and clearly demonstrates in the financial</p>

<input type="checkbox"/>	No financial parameters are used for additionality justification					
<input checked="" type="checkbox"/>	Assessment of all financial parameters see below					
Parameter	Value applied	Unit	Source of Information (please indicate document and page)	Reference	DOE ASSESSMENT	
					Correctness of value applied	Comment
						<p>spread sheet, a sensitivity analysis of the following items were performed:</p> <ul style="list-style-type: none"> <li>- Investment (CAPEX)</li> <li>- Energy generation</li> <li>- Energy Price</li> <li>- Firm Capacity</li> <li>- Firm Capacity Price</li> <li>- Operational Costs</li> </ul> <p>Those values constitute more than 20% of the total project costs and total project revenues respectively. The applied range of variation (+/-10%) is reasonable in the specific context of the project activity.</p> <p>No parameter constituting less than 20% of total project costs or revenues has been identified with potential material impact on the financial parameter.</p> <p>The resulting IRR applying a fluctuation of +/-10% is as follow:</p> <ul style="list-style-type: none"> <li>- Investment-CAPEX (-10%): 7.84 %</li> <li>- Energy generation (+10%): 7.86%</li> <li>- Energy Price (+10%): 7.86%</li> <li>- Firm Capacity (+10%): 6.59%</li> </ul>



<input type="checkbox"/>	No financial parameters are used for additionality justification					
<input checked="" type="checkbox"/>	Assessment of all financial parameters see below					
Parameter	Value applied	Unit	Source of Information (please indicate document and page)	Reference	DOE ASSESSMENT	
					Correctness of value applied	Comment
						<ul style="list-style-type: none"> <li>- Firm Capacity Price (+10%): 6.59%</li> <li>- Operational Costs (-10%): 6.86%</li> </ul> <p>In all cases the IRR remains below the applied benchmark. Therefore the project activity is considered as additional.</p> <p>Nevertheless, a CAR was raised regarding sensitivity analysis. Please refer to CAR B9.</p>

## ANNEX 4: ASSESSMENT OF BARRIER ANALYSIS

**Table A-4:** Assessment of Barrier Analysis (EB 55 Annex 1, §118)

<input checked="" type="checkbox"/>	No barrier parameters are used for additionality justification			
<input type="checkbox"/>	Assessment of barriers see below			
Kind of Barrier (invest, tech, other)	Description of Barrier	Evidence used	Assessment of validation team	
			Appropriateness of information source	Explanation of final result

## ANNEX 5: OUTCOME OF THE GSCP


**Table A-5:** Outcome of the Global Stakeholder Consultation Process

(§§ 40-42, VVM Version 1.2)

<input checked="" type="checkbox"/>	No comments were received during the global stakeholder consultation period					
<input type="checkbox"/>	Comments were received during the global stakeholder consultation period. The comments (in unedited form) and the consideration/response of the validation team are presented below:					
Comment No.:	Comment by:	Inserted on:	Subject	Comment <sup>*)</sup>	Action taken by the validation team to take due account on the comment <sup>*)</sup>	Conclusion (incl. CARs CLs or FARs)

<sup>\*)</sup> In case clarifications have been requested by the validation team corresponding rows shall be added

## ANNEX 6: STATEMENTS OF COMPETENCE OF ALL INVOLVED PERSONNEL



**Statement of Competence**  
Appointment and authorization according to the procedures  
of the TÜV NORD JI/CDM Certification Program

**Mr. Raul Gonzalez Mitre**

SCHEME	STATUS	VALID UNTIL
CDM	Lead Assessor (Validation, Verification)	2014-06-27
VCS	Lead Assessor	2014-06-27


Authorization status for technical areas within sectoral scopes:

CODE	TECHNICAL AREA	TR SUBCATEGORIES
1.2	Renewable Energies	

082 – Rev. 2, Date: 2011-09-27

082\_S01-F003\_2011-09-27\_rev2

S01-F003 rev1 / 2011-08-02



**Statement of Competence**  
Appointment and authorization according to the procedures  
of the TÜV NORD JI/CDM Certification Program

**Mr. Abraham Garza Alvarez**

SCHEME	STATUS	VALID UNTIL
CDM	Assessor (Validation, Verification)	2015-03-01
VCS	Assessor	2015-03-01


Authorization status for technical areas within sectoral scopes:

CODE	TECHNICAL AREA
1.2	Renewable Energies
3.1	Energy Demand
4.1	Cement Sector
13.1	Waste Handling and Disposal

235 – Rev. 3, Date: 2012-03-02

235\_S01-F003\_2012-03-02\_rev3.doc

S01-F003 rev1 / 2011-08-02



**Statement of Competence**  
Appointment and authorization according to the procedures  
of the TÜV NORD JI/CDM Certification Program

**Mr. Emilio Martin**

SCHEME	STATUS	VALID UNTIL
CDM	Lead Assessor (Validation, Verification) Technical Reviewer	2013-11-30
VCS	Lead Assessor Technical Reviewer	2013-11-30


Authorization status for technical areas within sectoral scopes:

CODE	TECHNICAL AREA	TR SUBCATEGORIES
1.2	Renewable Energies	1.2.1 Hydro 1.2.2 Wind 1.2.3 Geothermal 1.2.4 Solar 1.2.5 Tidal
13.1	Waste handling and disposal	13.1.1 Waste management 13.1.2 Waste water management

157 – Rev. 2, Date: 2011-08-10

157\_901-F003\_2011-08-10\_m2

S01-F003 rev1 / 2011-08-02



**Statement of Competence**  
Appointment and authorization according to the procedures  
of the TÜV NORD JI/CDM Certification Program

**Ms. Alexandra Nebel**

SCHEME	STATUS	VALID UNTIL
CDM	Senior Assessor (Validation, Verification) Technical Reviewer	2014-08-24
Ji	Senior Assessor Technical Reviewer	2014-08-24
VCS	Senior Assessor Technical Reviewer	2014-08-24

Authorization status for technical areas within sectoral scopes:

CODE	TECHNICAL AREA
14.1	Forestry

095 – Rev. 3, Date: 2011-08-25

095\_901-F003\_2011-08-25\_m3

S01-F003 rev1 / 2010-04-19