VALIDATION REPORT

CHUMBAGUA COGENERATION PROJECT

REPORT NO. 2006-9009

REVISION NO. 02

DET NORSKE VERITAS

VALIDATION REPORT

Date of first issue: 2005-11-20	Project No.: 28624550
Approved by: Einar Telnes Director	Organisational unit: DNV Certification, International Climate Change Services
Client: Energia Chumbagua S.A. de C.V Honduras	Client ref.: Orlando Maldonado

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Summary:

Det Norske Veritas Certification Ltd. (DNV) has performed a validation of the "Chumbagua Cogeneration Project" in Honduras on the basis of UNFCCC criteria for the CDM, as well as criteria given to provide for consistent project operations, monitoring and reporting. UNFCCC criteria refer to Article 12 of the Kyoto Protocol, the CDM modalities and procedures and the subsequent decisions by the CDM Executive Board.

The validation consists of the following three phases: i) a desk review of the project design documents, ii) follow-up interviews with project stakeholders and iii) the resolution of outstanding issues and the issuance of the final validation report and opinion.

In summary, it is DNV's opinion that the project, as described in the project design document of 27 March 2007, meets all relevant UNFCCC requirements for the CDM and correctly applies the approved baseline and monitoring methodology ACM0006 - version 04 of 02 November 2006. Hence, DNV will request the registration of the Chumbagua Cogeneration Project as a CDM project.

Report No.: 2006-9009	Subject Group: Environment	
Report title: Chumbagua Cogeneration Project in Honduras		
Work carried out by: Mario Epstein, Luis Filipe Tavares, Andrea Leiroz, Michael Lehmann		
Work verified by: Miguel Rescalvo (acting) Einar Telnes		
Date of this revision: 2007-03-27	Rev. No.: 02	Number of pages: 15

Indexing terms

Key words Climate Change Kyoto Protocol Validation Clean Development Mechanism	Service Area Verification Market Sector Process Industry

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Abbreviations

BM	Build Margin
CAR	Corrective Action Request
CDM	Clean Development Mechanism
CEF	Carbon Emission Factor
CER	Certified Emission Reduction
CH_4	Methane
CL	Clarification request
CO_2	Carbon dioxide
CO_2e	Carbon dioxide equivalent
DNV	Det Norske Veritas
DNA	Designated National Authority
ENEE	Empresa Nacional de Energía Eléctrica (National Electric Energy Company)
GHG	Greenhouse gas(es)
GWP	Global Warming Potential
IPCC	Intergovernmental Panel on Climate Change
MP	Monitoring Plan
MVP	Monitoring and Verification Plan
N_2O	Nitrous oxide
NGO	Non-governmental Organisation
ODA	Official Development Assistance
OM	Operating margin
PDD	Project Design Document
PPA	Purchase Power Agreement
SERNA	Secretaria de Recursos Naturales y Ambiente (Environment and Natural Resources Secretary)
SIN	Sistema Interconectado Nacional (National Interconnected System)
SINEIA	Sistema Nacional de Evaluación de Impacto Ambiental (National System of Evaluation of Environmental Impact)
UNFCCC	United Nations Framework Convention on Climate Change

1 INTRODUCTION

Energia Chumbagua S.A. de C.V has commissioned Det Norske Veritas Certification Ltd. (DNV) to perform a validation of the "Chumbagua Cogeneration Project", located in the city of San Marcos, Department of Santa Barbara, Honduras.

This report summarises the findings of the validation of the project, performed on the basis of UNFCCC and host Party criteria for CDM projects, as well as criteria given to provide for consistent project operations, monitoring and reporting.

The validation team consists of the following personnel:

Mr. Luis Filipe Tavares	DNV Certification Brazil	CDM validator, Team leader
Ms. Andréa Teixeira Leiroz	DNV Certification Brazil	GHG auditor
Mr. Mario Epstein	DNV Certification Brazil	GHG auditor
Mr. Michael Lehmann	DNV Certification Oslo	Energy sector expert
Mr. Miguel Rescalvo	DNV Certification Oslo	Technical reviewer (acting)
Mr. Einar Telnes	DNV Certification Oslo	Technical reviewer

1.1 Validation Objective

The purpose of a validation is to have an independent third party assess the project design. In particular, the project's baseline, monitoring plan, and the project's compliance with relevant UNFCCC and host Party criteria are validated in order to confirm that the project design, as documented, is sound and reasonable and meets the identified criteria. Validation is a requirement for all CDM projects and is seen as necessary to provide assurance to stakeholders of the quality of the project and its intended generation of certified emission reductions (CERs).

1.2 Scope

The validation scope is defined as an independent and objective review of the project design document (PDD). The PDD is reviewed against the criteria stated in Article 12 of the Kyoto Protocol, the CDM modalities and procedures as agreed in the Marrakech Accords and the relevant decisions by the CDM Executive Board, including the approved baseline and monitoring methodology ACM0006 (version 04 of 02 November 2006). The validation team has, based on the recommendations in the Validation and Verification Manual /21/ employed a risk-based approach, focusing on the identification of significant risks for project implementation and the generation of CERs.

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

1.3 Chumbagua Cogeneration Project

The "Chumbagua Cogeneration Project" located in the city of San Marcos, Department of Santa Barbara, Honduras proposes to increase the efficiency in the production of electricity from bagasse, a by-product during production of sugar at the Azucarera Chumbagua sugar cane mill.

With the implementation of this project, the mill is able to sell the surplus electricity to the Honduran interconnected system (SIN), avoiding the dispatch of the same amount of electricity produced by fossil-fuelled thermal plants to that grid. The project has already been implemented and started operation on 29 October 2004.

Emission reductions are claimed from displacing grid electricity with electricity generated by the sugarcane mill and supplied to the grid. The estimated amount of GHG emission reductions from the project are 156 267 tonnes CO_2 equivalents (tCO_2e) during the first renewable 7-year crediting period (with the potential of being renewed twice), resulting in estimated average annual emission reductions of 22 324 tCO_2e.

2 METHODOLOGY

The validation consisted of the following three phases:

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

In order to ensure transparency, a validation protocol was customised for the project, according to the Validation and Verification Manual /21/. The protocol shows, in a transparent manner, criteria (requirements), means of verification and the results from validating the identified criteria. The validation protocol serves the following purposes:

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

The validation protocol consists of three tables. The different columns in these tables are described in Figure 1.

The completed validation protocol for the "Chumbagua Cogeneration Project" is enclosed in Appendix A to this report.

Findings established during the validation are seen as either a non-fulfilment of validation criteria or where a risk to the fulfilment of project objectives is identified. *Corrective action requests* (CARs) are issued, where:

i) mistakes have been made with a direct influence on project results;

ii) validation protocol requirements have not been met; or

iii) there is a risk that the project would not be accepted as a CDM project or that emission reductions will not be certified.

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

Validation Protocol Table 1: Mandatory Requirements for CDM Project Activities			
Requirement	***Reference***	***Conclusion***	***Cross reference***
The requirements the project must meet.	*Gives reference to the legislation or agreement where the requirement is found.*	*This is either acceptable based on evidence provided (**OK**), a **Corrective Action Request (CAR)** of risk or non-compliance with stated requirements or a request for **Clarification (CL)** where further clarifications are needed.*	*Used to refer to the relevant checklist questions in Table 2 to show how the specific requirement is validated. This is to ensure a transparent Validation process.*

Validation Protocol Table 2: Requirement Checklist				
Checklist Question	***Reference***	***Means of verification (MoV)***	***Comment***	***Draft and/or Final Conclusion***
The various requirements in Table 1 are linked to checklist questions the project should meet. The checklist is organised in seven different sections. Each section is then further sub-divided. The lowest level constitutes a checklist question.	*Gives reference to documents where the answer to the checklist question or item is found.*	*Explains how conformance with the checklist question is investigated. Examples of means of verification are document review (DR) or interview (I). N/A means not applicable.*	*The section is used to elaborate and discuss the checklist question and/or the conformance to the question. It is further used to explain the conclusions reached.*	*This is either acceptable based on evidence provided (**OK**), or a **Corrective Action Request (CAR)** due to non-compliance with the checklist question (See below).A request for **Clarification (CL)** is used when the validation team has identified a need for further clarification.*

Validation Protocol Table 3: Resolution of Corrective Action Requests and Requests for Clarification			
Draft report corrective action requests and requests for clarifications	***Ref. to Table 2***	***Summary of project participants' response***	***Final conclusion***
If the conclusions from the draft Validation are either a Corrective Action Request or a Clarification Request, these should be listed in this section.	*Reference to the checklist question number in Table 2 where the Corrective Action Request or Clarification Request is explained.*	*The responses given by the project participants during the communications with the validation team should be summarised in this section.*	*This section should summarise the validation team's responses and final conclusions. The conclusions should also be included in Table 2, under "Final Conclusion".*

Figure 1 Validation protocol tables

2.1 Review of Documents

The initial Project Design Document (PDD) version 1.0 of 15 August 2005 /1/ submitted by Energia Chumbagua S.A. de C.V and Ecoinvest, formatted according to version 2 of the CDM-PDD, was assessed by DNV. However, this PDD was based on the baseline and monitoring methodology AM0015 which on 28 November 2005 was replaced by the consolidated baseline and monitoring methodology ACM0006. Hence, a revised version of the PDD applying ACM0006 (version 2.0 of 30 March 2005) was submitted by the client and subsequently assessed by DNV /2/. Moreover, three revised versions of the PDD (version 3.0 of 10 October 2006 /3/, version 4.0 of 17 November 2006 /4/ and version 5.0 of 30 November 2006 /5/) applying ACM0006 were also submitted by Energia Chumbagua S.A. de C.V and Ecoinvest in order to properly address DNV's validation findings. Due to the approval of the version 04 of the methodology the PDD version 6.0 was revised on 26 December 2006 /6/ After the assessment of this new version of the PDD by DNV a further revised PDD formatted according to version 3 of the CDM-PDD (Version 7 of 27 March 2007 /7/) was assessed for the completion of this final validation report.

In addition, have spreadsheets containing the project's IRR /8/, CERs calculations /9/ and detailed calculations for the combined margin emission coefficient /10/ been assessed as a part of the validation.

In order to ensure the accuracy and of the relevant information, other project documents were sent by Energia Chumbagua S.A. de C.V and assessed by DNV during the phases of desk review and the resolution of outstanding issues. Such documents include, among others, evidences of project starting date /11/, evidences that incentive from the CDM was considered in the decision to proceed with the project activity /12/, Letter of Approval issued by the Designated National Authorities (DNA) of Honduras and Japan /16/ /17/, evidences of equipment lifetime /19/ and evidences that local stakeholders were invited for comments /20/. The assessed documents are listed in the section "References" below.

2.2 Follow-up Interviews

On 26 May 2006 DNV performed interviews with a representative of Ecoinvest.

The main topics of the interviews were:

Table 1 Interview topics

Interviewed organisation	Interview topics
Ecoinvest	➢ Environment licenses compliance
	➢ Local Stakeholders consultation process
	➢ Additionality of the project
	➢ Cash flow analysis and IRR
	➢ Baseline emission calculations
	➢ Calibration requirements
	➢ Monitoring, reporting and QA/QC procedures

2.3 Resolution of Clarification and Corrective Action Requests

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

The initial validation of the project identified some *corrective action requests* and requests for *clarification.* The project participant's responses to the findings presented in DNV's draft validation report were resolved during communications between the project participants and DNV leading to the issuance of different revisions of the PDD. The PDD of 27 March 2007 addressed the *corrective action requests* and requests for *clarification* to DNV's satisfaction and incorporated the requirements of the latest version of the applied methodology.

To guarantee the transparency of the validation process, the concerns raised and the response provided by the project participants are documented in more detail in the validation protocol in Appendix A.

2.4 Internal Quality Control

The draft validation report including the initial validation findings underwent a technical review before being submitted to the project participants. The final validation report underwent another technical review before requesting registration of the project activity. The technical review was performed by a technical reviewer qualified in accordance with DNV's qualification scheme for CDM validation and verification.

3 VALIDATION FINDINGS

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

The final validation findings relate to the project design as documented and described in the revised PDD of 27 March 2007.

3.1 Participation Requirements

The project participants are Energia Chumbagua S.A. de C.V of Honduras and Mitsui & Co. Ltd. of Japan. The participating Parties, Honduras as the host Party and Japan as Annex I Party, meet

all relevant participation requirements and have provided written approval of voluntary participation in the project. The "Chumbagua Cogeneration Project" received the Letters of Approval from the DNA of Honduras (dated 07 December 2006) /16/ and from the DNA of Japan (dated 13 December 2005) /17/.

The project is expected to bring social (provision of funds to local schools and local police), environmental (protection of flora and fauna and reduction of the use of agrochemical products) and economic (providing its employees sons with scholarships and transportation to school) benefits, thus contributing to the sustainable development objectives of the Honduran Government. DNA of Honduras provided confirmation that the project assists in achieving sustainable development. /16/

The project does not involve any public funding and the validation did not reveal any information that indicates that the project can be seen as a diversion of ODA funding towards Honduras.

3.2 Project Design

The "Chumbagua Cogeneration Project" is a grid-connected renewable energy project activity, displacing grid electricity with electricity generated from renewable sources (bagasse) and thus resulting in the reduction of emissions of greenhouse gases in the energy sector. The project aims to increase the efficiency of the prevailing bagasse based energy generation, by installing one new 900 psig boiler and one 20 MW turbo generator, allowing any excess electricity to be dispatched to the Honduran grid (SIN). The project also involves the electrification of some of the sugar production mills previously run by steam. At full capacity, Chumbagua is expected to generate 44 400 MWh per sugar production campaign, of this 28 000MWh are to be delivered to the grid.

The cogeneration project envisages replacing the existing plant altogether. The old equipment (three backpressure turbogenerators, one of 2 MW and two of 1.0 MW) will be deactivated.

The project design engineering reflects good practice applying the steam Rankine cycle technology for steam and power generation.

Energia Chumbagua S.A. de C.V signed a PPA with ENEE that guarantee the sale of electricity.

A 7-year renewable crediting period is selected (with the potential of being renewed twice), starting on 01 January 2007. The starting date of the project activity is 29 October 2004. The expected operational lifetime of the project is 25 years.

3.3 Project Baseline

The project applies the approved consolidated baseline methodology ACM0006 (version 04 of 02 November 2006) - *"Consolidated baseline methodology for grid-connected electricity generation from biomass residues"* /22/ in combination with ACM0002, (version 06 of 19 May 2006), *"Consolidated baseline methodology for grid-connected electricity generation from renewable sources"*

This methodology is applicable to the Chumbagua Cogeneration Project as this project consists of a renewable energy generation plant for supplying electricity to the Honduran grid (SIN). The project meets the applicability conditions of ACM0006 as i) only bagasse is used in the cogeneration plant; ii) it has been justified that the increase in sugar production is not attributed

to the CDM project activity but to the normal development of the sugar mill's business; iii) only small quantities of bagasse are stored from one season to another (always less than one year) and iv) the bagasse do not require any preparation before being used as fuel.
The project boundary is defined as: 1) baseline energy grid: the Honduran grid (SIN) and 2) baseline cogeneration plant: the whole site where the cogeneration facility (Energia Chumbagua S.A. de C.V-Chumbagua mill) is located.

Baseline scenario 14 of ACM0006 has been selected and is justified as follow:

Power generation: in the baseline scenario the electricity would have been generated in existing and/or new grid connected power plants (P4) and some electricity would have been generated in the existing power plant (P5).

Heat generation: the baseline scenario is the continuation of heat generation in an existing cogeneration plant, fired with the same type of biomass (bagasse) (H5).

The baseline scenario for power and heat generation assumes the project activity would have been implemented, not undertaken as a CDM project activity, at the end of the lifetime of the existing plant. The old boiler was installed in 1991 and the old turbos were installed in 1983 and in 1996. The dates of installation were verified through different documents provided by the project developer. Due to the seasonal characteristics of the sugar production and the maintenance practices it can be assumed a lifetime over 60 years for the boilers. This has been confirmed by the Honduras Sugar Producers Association /19/ and is also referenced in technical literature /19/. Hence, the remaining lifetime for the installed equipment before the project activity is justified to be extended after the end of the crediting period.

The analysis of the historic increases in sugar production by Energia Chumbagua S.A. de C.V included in the PDD, together with the strategic plan 2002 document /19/ provided by the company together with the expected increase in sugar production in developing countries and more specifically Honduras, show that the increase in the baggasse firing capacity in the project scenario would have also occurred in the baseline scenario due to the increase in sugar demand (increasing the thermal demand in the baseline configuration). Hence, the increase is not attributed to the CDM project activity but to the normal development of the sugar mill's business. It can be concluded that the project activity does not increase the generation of thermal energy (steam) and that the increase in the bagasse use and thermal energy generation would have also occurred in the absence of the project.

3.4 Additionality

In accordance with ACM0006, the additionality of the project is demonstrated through the "*Tool for the demonstration and assessment of additionality*" /24/ which includes the following steps:

Step 0 - Preliminary screening based on the starting date of the project activity: The starting date of the CDM project activity, 29 October 2004, falls between 1 January 2000 and the date of the registration of the first CDM project activity (November 2004). Evidence provided for this is a contract of construction services for building which was agreed between Energia Chumbagua S.A. de C.V and a local construction company and is dated 29 October 2004. The project was commissioned on 01 January 2007. Evidence that Energia Chumbagua S.A. de C.V seriously considered the CDM in the decision to proceed with the project was presented as a message that Pedro Rachadell from Ecoinvest sent to Hector Portillo and Orlando Maldonado, from Chumbagua on February 18, 2004, asking for information (energy generated, days of operation,

capacity factor) for the calculation of the carbon credits of the project. Since the project requested validation prior to 31 December 2005 (version 01 of the PDD was published for comments in November 2005), the project thus may claim retroactive credits.

Step 1 - Identification of alternatives to the project activity consistent with current laws and regulations: The possible scenarios are identified, i.e. i) baseline scenario: the generation of an equivalent amount of electricity by the generation mix of the Honduran electricity system; a system that continuously increases its dependency on thermal plants (using diesel and bunker); ii) project scenario: renewable thermal energy as a source of power.

The provided alternatives are in compliance with the legal and regulatory requirements.

Step 2 -. The project IRR has been verified to be 10.7% which is below the benchmark IRR selected i.e. 30% as the lowest value for the active interest rates in local currency in Honduras in 2004, year when the investment decision was made. (http://www.bch.hn/esteco/monetaria/tasamax.pdf). The project involves an investment above 215 millions Lempira in phase one.

A sensitive analysis has been done increasing the project revenues by 10% and decreasing the operational costs. In the best case the IRR reaches 11.9 %, below the benchmark. Hence, it can be concluded that the project is not financially attractive under normal financial conditions.

Step 3 - Barrier analysis:

a) Technological and logistic barriers. Rankine Cycle steam turbines and the electricity transfer equipment are not available in Honduras and need to be imported. The operating staff of the project proponent is not sufficiently skilled and the usage of the equipment represents a technological barrier.

b) Core Business Barrier: The production of electricity to supply electricity to the grid is not the principal business of Energia Chumbagua S.A. de C.V and supplementary knowledge needed to be acquired for this additional service provision.

c) Regulatory Barrier: In Honduras there are several incentives to implement thermal units to generate electricity which will conclude that thermal plants will be the most likely source of power to meet the increasing demand of the country.

Step 4 - Common practice analysis: It has been argued that while cogeneration projects are wide spread among the sugar cane producers in Honduras, this power generation is only for self consumption, which then represents the prevailing practice. The Honduran sugar producers association has confirmed that six out of seven sugar producers are generating electricity for own consumption only. There are only 5 cogeneration projects in Honduras selling energy to ENEE. All of these are undertaken as CDM projects.

Step 5 - Impact of CDM registration: The project participants were able to demonstrate that the sale of CERs will provide the complementary incentives for the project to alleviate the above presented barriers.

Given the above, it is sufficiently demonstrated that the project is not a likely baseline scenario and that emission reductions are thus additional.

3.5 Monitoring Plan

The project applies the approved consolidated monitoring methodology *ACM0006* (version 04 of 02 November 2006) - *"Consolidated baseline methodology for grid-connected electricity generation from biomass residues"* /22/

Data to be monitored includes the net quantity of electricity generated in the project, the net quantity of increased electricity generation as a result of the project activity, the average net efficiency of electricity generation, the quantity of bagasse burned and its NCV.

The electricity data will be monitored by two meters at the project site and one meter owned by the electricity company (ENEE). The meters calibration is planned to be done as per the ENEE regulations (annually). The NCV of the bagasse is planned to be measured every six months in line with the methodology.

The data will be archived in electronic form and be kept for two years after the end of the last crediting period.

Energia Chumbagua S.A. de C.V is responsible for the project management, monitoring and reporting as well as for organising and training of the staff in the appropriate monitoring, measurement and reporting techniques.

The monitoring plan is straightforward and no specific procedures beyond the established QA/QC procedures will be necessary. The established procedures reflect good monitoring and reporting practices.

3.6 Calculation of GHG Emissions

The emissions reduction is calculated as the net quantity of increased electricity generation by the project activity times an *ex-ante* determined emission factor for the Honduran electricity grid.

It has been demonstrated that the project emissions are zero as the biomass is not transported and no fossil fuels are used.

According to scenario 14 of ACM0006 the most likely baseline scenario is the use of the biomass for energy generation and the diversion of biomass to the project activity is already considered in the calculation of baseline reductions. In this case, leakage effects do not need to be considered.

The thermal efficiency in the project plant is higher than in the baseline plant and thus, it is not necessary to account for emissions from this source.

According to ACM0006 scenario 14, the net quantity of increased electricity generation as a result of the project activity shall be determined as follows:

$$EG_y = EG_{projectplant,y} * \left(1 - \frac{\varepsilon_{el,preproject}}{\varepsilon_{el,projectplant,y}}\right)$$

The average net efficiency of electricity generation in the project plant prior to project implementation ($\varepsilon_{el,pre\ project}$) is 0.033 calculated *ex-ante* (average for the last three seasons) using the total electricity generated by the power plant and the amount of bagasse burned.

The average net energy efficiency of electricity in the project plant (εel,project plant,y) is calculated by dividing the electricity generation during the year y by the amount of bagasse

burned, expressed in energy units. The bagassse NCV value estimation is 1.93 MWh/tonnes. This will be monitored every six months.

The system boundary for the grid electricity system affected by the project is defined as the system of the Honduran grid. The combined margin emission coefficient for the grid is determined *ex-ante* in accordance with *ACM0002* version 06 of 19 May 2006. The calculations /10/ are based on electricity generation data provided by the Empresa Nacional de Energía Eléctrica (ENEE) and Sistema Interconectado Nacional (SIN) for the electricity generated in grid in the years 2003-2005. Data for the years 2003-2005 are the most recent statistics available at the time of PDD submission and the data was verified against the data published on the ENEE/SIN website.

As the Honduran electric grid has less than 50% of low-cost must run, the simple OM method was considered for the determination of the operating margin (OM). The build margin emission coefficient (BM) was calculated considering the most recent 20% power plants capacity additions (in MWh) in the electricity system. Both calculations considered electricity generated and fuel consumed based on data provided by ENEE/SIN and evidenced in the baseline EF calculations /10/. The simple operating margin (OM) emission coefficient is calculated to be 0.670 tCO_2e/MWh and the build margin (BM) emission coefficient is 0.667 tCO_2e/MWh, resulting in a combined margin emission coefficient of 0.668 tCO_2e/MWh (weighted average of the build and operating margin).

The estimated amount of GHG emission reductions from the project is calculated to be 156 267 tCO_2e during the selected first 7-year crediting period (with the potential of being renewed twice), resulting in estimated average annual emission reductions of 22 324 tCO_2e.

In summary, the GHG calculations are complete and transparent, and the data accuracy has been verified.

3.7 Environmental Impacts

Energia Chumbagua S.A. de C.V was granted the Environmental License (nº 008-2005) issued on 26 January 2005 which was updated in the document nº 193-2206, of 07/09/2006. This license was issued by the national environmental agency (SERNA - Secretaria de Recursos Naturales y Ambiente) after all possible environmental impacts were analyzed, through an EIA (Environmental Impact Assessment).

The project design did not identify any adverse environmental impacts, which seems reasonable given the nature of the project design. Transboundary environmental impacts are not foreseen.

3.8 Comments by Local Stakeholders

The process of obtaining the environmental license in Honduras includes visits to the project site by the National System of Evaluation of Environmental Impacts (SINEIA), integrated by different government agencies. Furthermore, the Cogeneration Project Operation Contract was published in an official newspaper (La Gaceta) /13/. The SINEIA issued comments related to the disposal of the ashes after the burning of the bagasse and were solved before the environmental license was granted.

With a view to carrying out a more specific consultation process focused on the CDM project, the project developer invited for comments to the Municipality of San Marcos on 1 March 2007

sending letters to the town hall and specific people on the municipality. The letters and the confirmation of receipt have been assessed by DNV. Two positive comments were received.

4 COMMENTS BY PARTIES, STAKEHOLDERS AND NGOS

The PDD version 01 of the PDD (15 August 2005) applying AM0015 was made publicly available on DNV's climate change website and Parties, stakeholders and NGOs were, through the CDM website, invited to provide comments during a 30 days period from 01 November 2005 to 30 November 2005. No comments were received in this earlier call.

Even when it was not required, a new version of the PDD applying ACM0006 was made publicly available on DNV's climate change website (www.dnv.com/certification/climatechange) and Parties, stakeholders and NGOs were through the CDM website invited to provide comments during a 30 days period from 22 April 2006 to 21 May 2006. No comments were received.

5 VALIDATION OPINION

Det Norske Veritas Certification Ltd. (DNV) has performed a validation of the Chumbagua Cogeneration Project located in the city of San Marcos, Department of Santa Barbara, Honduras. The validation was performed on the basis of UNFCCC criteria for CDM project activities and relevant Honduran criteria, as well as criteria given to provide for consistent project operations, monitoring and reporting.

The project participants are Energia Chumbagua S.A. de C.V of Honduras and Mitsui & Co. Ltd. of Japan. The participating Parties, Honduras as the host Party and Japan as Annex 1 Party meet all relevant participation requirements and have provided written approval of voluntary participation in the project.

The Chumbagua Cogeneration Project received the Letters of Approval from the DNA of Honduras (dated 07 December 2006) and from the DNA of Japan (dated 13 December 2005). The DNA of Honduras has confirmed that the project assists in achieving sustainable development.

The project is a grid-connected renewable energy project activity, displacing grid electricity that is partly generated based on fossil fuels with electricity generated from renewable sources (bagasse) and thus resulting in the reduction of emissions of greenhouse gases in the energy sector. The project aims to increase the efficiency of the prevailing bagasse based energy generation through the installation of a high pressure boiler and a 20 MW generator, which will allow Energia Chumbagua S.A. de C.V to generate excess electricity to be dispatched to the national grid.

The project applies the approved consolidated baseline and monitoring methodology ACM0006 - version 04 of 02 November 2006 - "Consolidated baseline methodology for grid-connected electricity generation from biomass residues". The baseline methodology has been correctly applied and the assumptions made for the selected baseline scenario are sound. It is sufficiently demonstrated that the project is not a likely baseline scenario and that emission reductions attributable to the project are additional to any that would occur in the absence of the project activity.

The monitoring methodology is correctly applied. The monitoring plan sufficiently specifies the monitoring requirements of the main project indicators.

By displacing partly fossil fuel-based electricity with electricity generated from a renewable source, the project results in reductions of CO_2 emissions that are real, measurable and give long-term benefits to the mitigation of climate change. The annual estimated emissions reduction is 22 324 tCO2e/year during the first seven year crediting period starting on 01 January 2007. Given that the project operates as designed, the project is likely to achieve the estimated amount of emission reductions.

Local stakeholder comments were received. No major issues were raised and comments received were incorporated into the final design and operation of the system.

Parties, stakeholders and NGOs were invited to comment on the validation requirements via the UNFCCC web-site. No comments were received.

In summary, it is DNV's opinion that the Chumbagua Cogeneration Project, as described in the revised and resubmitted project design document of 27 March 2007*, meets all relevant UNFCCC requirements for the CDM and correctly applies the approved baseline and monitoring methodology ACM0006 - version 04 of 02 November 2006. Hence, DNV requests the registration of the Chumbagua Cogeneration Project as a CDM project.*

REFERENCES

Documents provided by the project proponent that relate directly to the project:

/1/ Ecoinvest: *Project Design Document for the "Chumbagua Cogeneration Project"*, Version 1.0 of 15 August 2005.

/2/ Ecoinvest: *Project Design Document for the "Chumbagua Cogeneration Project"*, Version 2.0 of 30 March 2005.

/3/ Ecoinvest: *Project Design Document for the "Chumbagua Cogeneration Project"*, Version 3.0 of 10 October 2006.

/4/ Ecoinvest: *Project Design Document for the "Chumbagua Cogeneration Project"*, Version 4.0 of 17 November 2006.

/5/ Ecoinvest: *Project Design Document for the "Chumbagua Cogeneration Project"*, Version 5.0 of 30 November 2006.

/6/ Ecoinvest: *Project Design Document for the "Chumbagua Cogeneration Project"*, Version 6.0 of 26 December 2006.

/7/ Ecoinvest: *Project Design Document for the "Chumbagua Cogeneration Project"*, Version 7.0 of 27 March 2007.

/8/ Ecoinvest: Free cash flow analyses Chumbagua (*Chumbagua IRR 2007 03 27.xls*)

/9/ Ecoinvest: Spreadsheets for the calculation of emission reductions *(Chumbagua_calculation_CERs_2006.11.16.xls).*

/10/ Ecoinvest: Spreadsheets for calculation of Baseline Emission Factor (*Baseline Emission Factor - Honduras - Ecoinvest v.05.31.06.xls*).

/11/ Energia Chumbagua S.A. de C.V: Contract for construction services (Chumbagua construction start.mdi) .

/12/ E-mail from Pedro Rachadell (Ecoinvest) to Hector Portillo and Orlando Maldonado(Chumbagua) on February 18, 2004 (Chumbagua CDM evidence.htm)

/13/ Newspaper La Gaceta 29 November 2006 with description of the Chumbagua Cogeneration Project.

/14/ Licencia Ambiental # 008-2005 issued by Secretaria de Recursos Naturales y Ambiente on 26 January 2005.

/15/ Licencia Ambiental # 193-2206 issued by Secretaria de Recursos Naturales y Ambiente on 07 September 2006.

/16/ Secretaria de Recursos Naturales Y Ambiente (SERNA) (DNA of Honduras): Letter of Approval dated 07 December 2006.

/17/ The Liaisons committee for the Utilization of the Kyoto Mechanisms' (DNA of Japan): Letter of Approval dated 13 December 2005 (*LOA Chumbagua_Buyer_English.doc*).

/18/ Capacity increase planning (Honduras_Estimation Sugar Production.jpg and Chumbagua Strategic Plan 2002.mdi)

/19/ Letter from the Honduras sugar producers association.
Technical literature:
- Babcock & Wilcox Corporation. "Our boilers and environment equipment. (catalog);
- Perez, G. L. "La remodelación de la caldera alemana de 25t/h". Energia, no. 5, pp. 14-27, 1985;

Foster Wheeler Corporation. "Heat engineering. CFB technology aids in redevelopment", 1999.

/20/ Energia Chumbagua S.A. de C.V - Copy of letters sent to local stakeholders

Background documents related to the design and/or methodologies employed in the design or other reference documents:

/21/ International Emission Trading Association (IETA) & the World Bank's Prototype Carbon Fund (PCF): *Validation and Verification Manual*. http://www.vvmanual.info

/22/ CDM-EB: *Approved Consolidated Baseline and Monitoring Methodology ACM0006 - "Consolidated baseline methodology for grid-connected electricity generation from biomass residues"*, version 04 of 02 November 2006.

/23/ CDM-EB: *Approved Consolidated Baseline and Monitoring Methodology ACM0002 - "Consolidated baseline methodology for grid-connected electricity generation from renewable sources"*, version 06 of 19 May 2006.

/24/ CDM EB: *Tool for the demonstration and assessment of additionality*. Version 02 of 28 November 2005.

Persons interviewed during the validation, or persons who contributed with other information that are not included in the documents listed above:

/25/ Ricardo Besen - Ecoinvest

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APPENDIX A

CDM VALIDATION PROTOCOL

Table 1 Mandatory Requirements for Clean Development Mechanism (CDM) Project Activities

Requirement	Reference	Conclusion	Cross Reference / Comment
1. The project shall assist Parties included in Annex I in achieving compliance with part of their emission reduction commitment under Art. 3	Kyoto Protocol Art.12.2	NA	Table 2, Section E.4.1 The PDD identifies Japan, as annex I project participant.
2. The project shall assist non-Annex I Parties in achieving sustainable development and shall have obtained confirmation by the host country thereof	Kyoto Protocol Art. 12.2, CDM Modalities and Procedures §40a	OK	Table 2, Section A.3 DNA of Honduras: Letter of Approval dated 07 December 2006.
3. The project shall assist non-Annex I Parties in contributing to the ultimate objective of the UNFCCC	Kyoto Protocol Art.12.2.	OK	Table 2, Section E.4.1 DNA of Honduras: Letter of Approval dated 07 December 2006.
4. The project shall have the written approval of voluntary participation from the designated national authority of each party involved	Kyoto Protocol Art. 12.5a, CDM Modalities and Procedures §40a	OK	DNA of Honduras: Letter of Approval dated 07 December 2006. DNA of Japan: Letter of Approval dated 13 December 2005.
5. The emission reductions shall be real, measurable and give long-term benefits related to the mitigation of climate change	Kyoto Protocol Art. 12.5b	OK	Table 2, Section E
6. Reduction in GHG emissions shall be additional to any that would occur in absence of the project activity, i.e. a CDM project activity is additional if anthropogenic emissions of greenhouse gases by sources are reduced below those that would have occurred in the absence of the registered CDM project activity	Kyoto Protocol Art. 12.5c, CDM Modalities and Procedures §43	OK	Table 2, Section B.2
7. In case public funding from Parties included in Annex I is used for the project activity, these Parties shall provide an affirmation that such funding does not result in a diversion of official development assistance and is separate from and is not counted towards the financial obligations of these Parties.	Decision 17/CP.7, CDM Modalities and Procedures Appendix B, § 2	OK	The validation did not reveal any information that indicates that the project can be seen as a diversion of ODA funding towards Honduras.

Requirement	Reference	Conclusion	Cross Reference / Comment
8. Parties participating in the CDM shall designate a national authority for the CDM	CDM Modalities and Procedures §29	OK	The DNA of Honduras is the Secretaria de Recursos Naturales y Ambiente and the DNA of the Annex-1 country Japan is 'the Liaisons committee for the Utilization of the Kyoto Mechanisms.
9. The host Party and the participating Annex I Party shall be a Party to the Kyoto Protocol	CDM Modalities §30/31a	OK	Honduras ratified the Kyoto Protocol on 19 July 2000. Japan ratified the Kyoto Protocol on 04 June 2002.
10. The participating Annex I Party's assigned amount shall have been calculated and recorded	CDM Modalities and Procedures §31b	N/A	The assigned amount of Japan is 94% of the emissions in 1990.
11. The participating Annex I Party shall have in place a national system for estimating GHG emissions and a national registry in accordance with Kyoto Protocol Article 5 and 7	CDM Modalities and Procedures §31b	N/A	Japan has in place a national registry and regularly reports its latest inventory to the UNFCCC.
12. Comments by local stakeholders shall be invited, a summary of these provided and how due account was taken of any comments received	CDM Modalities and Procedures §37b	OK	Table 2, Section G
13. Documentation on the analysis of the environmental impacts of the project activity, including transboundary impacts, shall be submitted, and, if those impacts are considered significant by the project participants or the Host Party, an environmental impact assessment in accordance with procedures as required by the Host Party shall be carried out.	CDM Modalities and Procedures §37c	OK	Table 2, Section F
14. Baseline and monitoring methodology shall be previously approved by the CDM Executive Board	CDM Modalities and Procedures §37e	OK	Table 2, Section B.1.1 and D.1.1
15. Provisions for monitoring, verification and reporting shall be in accordance with the modalities described in the Marrakech Accords and relevant decisions of the COP/MOP	CDM Modalities and Procedures §37f	OK	Table 2, Section D

Requirement	Reference	Conclusion	Cross Reference / Comment
16. Parties, stakeholders and UNFCCC accredited NGOs shall have been invited to comment on the validation requirements for minimum 30 days, and the project design document and comments have been made publicly available	CDM Modalities and Procedures §40	OK	The PDD version 1.0 of the PDD (15 August 2005) applying AM0015 was made publicly available on DNV's climate change website and Parties, stakeholders and NGOs were, through the CDM website, invited to provide comments during a 30 days period from 01 November 2005 to 30 November 2005. No comments were received. A new version of the PDD applying the methodology ACM0006 was made publicly available on DNV's climate change website and Parties, stakeholders and NGOs were through the CDM website invited to provide comments during a 30 days period from 22 April 2006 to 21 May 2006. No comments were received.
17. A baseline shall be established on a project-specific basis, in a transparent manner and taking into account relevant national and/or sectoral policies and circumstances	CDM Modalities and Procedures §45c,d	OK	Table 2, Section B.2
18. The baseline methodology shall exclude to earn CERs for decreases in activity levels outside the project activity or due to force majeure	CDM Modalities and Procedures §47	OK	Table 2, Section B.2
19. The project design document shall be in conformance with the UNFCCC CDM-PDD format	CDM Modalities and Procedures Appendix B, EB Decision	OK	The PDD is in conformance with the UNFCCC CDM-PDD format.

Table 2 Requirements Checklist

Checklist Question	Ref.	MoV*	Comments	Draft Concl	Final Concl
A. General Description of Project Activity *The project design is assessed.*					
A.1. Project Boundaries *Project Boundaries are the limits and borders defining the GHG emission reduction project.*					
A.1.1. Are the project's spatial (geographical) boundaries clearly defined?	/1/	DR	The project is located in the city of San Marcos, Department of Santa Barbara, Honduras The coordinates of the project site are 15°13'60" N and 88°30'0" W.		OK
A.1.2. Are the project's system (components and facilities used to mitigate GHGs) boundaries clearly defined?	/1/	DR	The project system's boundary is limited to the Chumbagua cogeneration facilities for activities related to the cogeneration, and is also limited to the interconnected system of the Honduran National grid, at which Chumbagua Cogeneration Project exports electricity using bagasse as fuel (renewable energy displacement).		OK
A.2. Technology to be employed *Validation of project technology focuses on the project engineering, choice of technology and competence/ maintenance needs. The validator should ensure that environmentally safe and sound technology and know-how is used.*					
A.2.1. Does the project design engineering reflect current good practices?	/1/	DR	Yes. The project design engineering reflects good practice applying the Rankine technology for steam rising and power		OK

Checklist Question	Ref.	MoV*	Comments	Draft Concl	Final Concl
			generation.		
A.2.2. Does the project use state of the art technology or would the technology result in a significantly better performance than any commonly used technologies in the host country?	/1/	DR	The project uses direct combustion technology for simultaneous heat and power generation. It involves the oxidation of biomass with excess air in a process that yields hot gases that are used to produce steam in boilers. The steam produced in these boilers is used to produce electricity using a Rankine cycle turbine.		OK
A.2.3. Is the project technology likely to be substituted by other or more efficient technologies within the project period?	/1/	DR	The technology is being successfully used since many years for steam turbines and so it is unlikely to be substituted by other more efficient technologies, at least during the project lifetime.		OK
A.2.4. Does the project require extensive initial training and maintenance efforts in order to work as presumed during the project period?	/1/	DR	The Rankine Cycle steam turbines will be imported from Brazil, USA and Germany. The project will also be using new equipment to transmit electricity to the grid and new control systems for this facility, which are not usually used in a sugar industry. Hence, initial training in operations and maintenance was required in order to carry out the project as planned.		OK
A.2.5. Does the project make provisions for meeting training and maintenance needs?	/1/	DR	The project documentation does not detail provisions for training and maintenance.	~~CL 1~~	OK
A.3. Contribution to Sustainable Development *The project's contribution to sustainable development is assessed.*					
A.3.1. Is the project in line with relevant legislation and plans in the host country?	/1/	DR	Energia Chumbagua S.A. de C.V has obtained the environmental license from the	~~CL 2~~	OK

Checklist Question	Ref.	MoV*	Comments	Draft Concl	Final Concl
			National Environmental Ministry (Secretaria de Recursos Naturales y Ambiente) after the successful completion of the environmental impact assessment and stakeholder consultation with the local authorities. The environmental license Nº 008-2005 was granted on 26 January 2005 and was updated in the document nº 193-2206 on 07 September 2006. Documented evidence(s) of the Environmental License(s), a short summary of the EIA and the requirements established by the environmental authority in order to issue the environmental licenses should be provided.		
A.3.2. Is the project in line with host-country specific CDM requirements?	/1/	DR	This is confirmed by the DNA of Honduras through the letter of approval issued on 07 December 2006.		OK
A.3.3. Is the project in line with sustainable development policies of the host country?	/1/	DR	See A.3.2.		OK
A.3.4. Will the project create other environmental or social benefits than GHG emission reductions?	/1/	DR	The project is expected to bring social (provision of funds to local schools and local police), environmental (protection of flora and fauna and reduction of the use of agrochemical products) and economic (providing its employees sons with scholarships and transportation to school) benefits, thus contributing to the sustainable development objectives of the Honduran Government.		OK

Checklist Question	Ref.	MoV*	Comments	Draft Concl	Final Concl
B. Project Baseline *The validation of the project baseline establishes whether the selected baseline methodology is appropriate and whether the selected baseline represents a likely baseline scenario.*					
B.1. Baseline Methodology *It is assessed whether the project applies an appropriate baseline methodology.*					
B.1.1. Is the baseline methodology previously approved by the CDM Executive Board?	/1/	DR	The project applies the approved baseline methodology ACM0006 - "Consolidated baseline methodology for grid-connected electricity generation from biomass residues" (version 04 of 02 November 2006) and ACM0002 – "Consolidated baseline methodology for grid-connected electricity generation from renewable sources". The methodology ACM0002 was not addressed in the item "*B.1. Title and reference of the approved baseline and monitoring methodology applied to the project activity*" of the PDD.	~~CL 3~~	OK
B.1.2. Is the baseline methodology the one deemed most applicable for this project and is the appropriateness justified?	/1/	DR	Yes, the project fulfils the conditions under which ACM0006 is applicable. Bagasse is the only type of biomass used in the project plant; the project activity will not result in an increase of bagasse production, the bagasse will not be stored for more than one year and the biomass (bagasse residues) is the predominant fuel used in this project and it is not treated in any way		OK

Checklist Question	Ref.	MoV*	Comments	Draft Concl	Final Concl
			before being used as a fuel. The project uses bagasse for the generation of heat and electricity.		
B.2. Baseline Determination *The choice of baseline will be validated with focus on whether the baseline is a likely scenario, whether the project itself is not a likely baseline scenario, and whether the baseline is complete and transparent.*					
B.2.1. Is the application of the methodology and the discussion and determination of the chosen baseline transparent?	/1/	DR	The project activity fulfils the applicability conditions of the methodology ACM0006. Baseline scenario no 14 has been selected. For power generation: The generation of power in existing and/or new grid connected power plants(P4) and continuation of power generation in an existing power plant, where the old generators were put as stand by (P5). The continuation of heat generation in an, existing cogeneration plant, fired with the same type of biomass (bagasse) (H5). For Biomass use: The biomass is used for heat and/or electricity generation at the project site (B4). According to ACM0006 scenario 14 ,the net quantity of increased electricity generation as a result of the project activity shall be determined as follows:		OK

Checklist Question	Ref.	MoV*	Comments	Draft Concl	Final Concl
			$EG_y = EG_{projectplant,y} * \left(1 - \frac{\varepsilon_{el,preproject}}{\varepsilon_{el,projectplant,y}}\right)$		
B.2.2. Has the baseline been determined using conservative assumptions where possible?	/1/	DR	The project uses generation data from the National Electric Energy Company (ENEE) and includes imported generation data.		OK
B.2.3. Has the baseline been established on a project-specific basis?	/1/	DR	Yes.		OK
B.2.4. Does the baseline scenario sufficiently take into account relevant national and/or sectoral policies, macro-economic trends and political aspirations?	/1/	DR	Yes, the baseline scenario takes into account the recent change in the legislation. As per this change in the legislation electricity can be produced and exported to the grid by independent energy producers like Chumbagua mill.		OK
B.2.5. Is the baseline determination compatible with the available data?	/1/	DR	See B.2.2.		OK
B.2.6. Does the selected baseline represent the most likely scenario among other possible and/or discussed scenarios?	/1/	DR	See B.2.1.		OK
B.2.7. Is it demonstrated/justified that the project activity itself is not a likely baseline scenario?	/1/	DR, I	In accordance with ACM0006, the additionality of the project is demonstrated through the "*Tool for the demonstration and assessment of additionality*" which includes the following steps: *Step 0 - Preliminary screening based on the starting date of the project activity:* The starting date of the CDM project activity, 29 October 2004, falls between 1 January 2000 and the date of the registration of the first CDM project activity (November 2004).	~~CL 4~~ ~~CL 5~~ ~~CL 10~~	OK

Checklist Question	Ref.	MoV*	Comments	Draft Concl	Final Concl
			Evidence provided for this is a contract of construction services for building which was agreed between Energia Chumbagua S.A. de C.V and a local construction company and is dated 29 October 2004. The project was commissioned on 01 January 2007. Evidence that Energia Chumbagua S.A. de C.V seriously considered the CDM in the decision to proceed with the project was presented as a message that Pedro Rachadell from Ecoinvest sent to Hector Portillo and Orlando Maldonado, from Chumbagua on February 18, 2004, asking for information (energy generated, days of operation, capacity factor) for the calculation of the carbon credits of the Project. *Step 1 - Identification of alternatives to the project activity consistent with current laws and regulations*: The possible scenarios are identified, i.e. i) baseline scenario: current generation system; a system that continuously increases its dependency on thermal plants (using diesel and bunker) ii) project scenario: renewable thermal energy as a source of power. The alternatives (baseline scenarios) to the project activity for power, heat and biomass, consistent with current laws and regulations, are not clearly addressed. DNV requests clarifications on these alternatives. *Step 2 - Investment analysis:* Not applicable (Only Step 3 is selected). Refer to the point		

Checklist Question	Ref.	MoV*	Comments	Draft Concl	Final Concl
			b) below. *Step 3 - Barrier analysis:* Institutional and political barriers, economic barriers and cultural barriers are presented in the PDD: a) *Technological barriers*. Rankine Cycle steam turbines and the electricity transfer equipment are not available in Honduras and need to be imported. The operating staff of the project proponent is not skilled enough and the usage of the equipment represents a technological barrier. b) *Investment barriers*. The evaluation of the project's IRR against an investment benchmark in Honduras does not directly relate to an investment barrier (lack of capital). The presented IRR analysis should be presented in accordance of the benchmark analysis given in step 2 of the Tool for the demonstration and assessment of additionality *Step 4 - Common practice analysis:* It has been argued that while cogeneration projects are wide spread among the sugar cane producers in Honduras, power generation is only for self consumption, which is the prevailing practice. The Honduran sugar producers association has confirmed that six out of seven sugar producers are generating electricity for own		

Checklist Question	Ref.	MoV*	Comments	Draft Concl	Final Concl
			consumption only. There are only 5 cogeneration projects in Honduras selling energy to ENEE. All of these are undertaken as CDM projects. *Step 5 - Impact of CDM registration:* The project participants were able to demonstrate that the sale of CERs will provide the complementary incentives for the project to alleviate the above presented barriers. Given the above, it is sufficiently demonstrated that the project is not a likely baseline scenario and that emission reductions are thus additional. The Tool for the demonstration and assessment of additionality was not addressed in the item "*B.1. Title and reference of the approved baseline and monitoring methodology applied to the project activity*" of the PDD.		
B.2.8. Have the major risks to the baseline been identified?	/1/	DR	The baseline does not have any major risks.		OK
B.2.9. Is all literature and sources clearly referenced?	/1/	DR	See B.2.7.	~~CL 4~~ ~~CL 5~~ ~~CL 10~~	OK

Checklist Question	Ref.	MoV*	Comments	Draft Concl	Final Concl
C. *Duration of the Project/ Crediting Period* *It is assessed whether the temporary boundaries of the project are clearly defined.*					
C.1.1. Are the project's starting date and operational lifetime clearly defined and reasonable?	/1/	DR, I	The project start date is 29 October 2004 with an expected lifetime of 25 years.		OK
C.1.2. Is the assumed crediting time clearly defined (renewable crediting period of seven years with two possible renewals or fixed crediting period of 10 years with no renewal)?	/1/	DR, I	A renewable 7-year crediting period (with the potential of being renewed twice) was selected, starting on 01 January 2007.		OK
D. *Monitoring Plan* *The monitoring plan review aims to establish whether all relevant project aspects deemed necessary to monitor and report reliable emission reductions are properly addressed ((Blue text contains requirements to be assessed for optional review of monitoring methodology prior to submission and approval by CDM EB).*					
D.1. Monitoring Methodology *It is assessed whether the project applies an appropriate baseline methodology.*					
D.1.1. Is the monitoring methodology previously approved by the CDM Executive Board?	/1/	DR	Yes. The project applies the approved consolidated monitoring methodology ACM0006 (version 04 of 02 November 2006) - *"Consolidated monitoring methodology for grid-connected electricity generation from biomass residues".*		OK
D.1.2. Is the monitoring methodology applicable for this project and is the appropriateness justified?	/1/	DR	Yes. The methodology is applicable for the following reasons: The same type of		OK

Checklist Question	Ref.	MoV*	Comments	Draft Concl	Final Concl
			biomass as used in the existing unit will be used in the project activity. The increase in the sugar production is not attributed to the project activity but to business demand. The biomass used in the project activity will not be stored for more than one year.		
D.1.3. Does the monitoring methodology reflect good monitoring and reporting practices?	/1/	DR	The monitoring plan for emissions reductions, occurring within the project boundary, is primarily based on monitoring the net quantity of electricity generated in the project plant and the quantity of bagasse used yearly, considering the quality control and quality assurance for data monitoring. Details of the data to be collected, the frequency of data recording, its certainty, and format and storage location are not clear described. The table D.2.1.3 is not mentioning all data to be monitored and there are mistakes in the parameters mentioned.	~~CAR 1~~	OK
D.1.4. Is the discussion and selection of the monitoring methodology transparent?	/1/	DR	Yes.		OK
D.2. Monitoring of Project Emissions *It is established whether the monitoring plan provides for reliable and complete project emission data over time.*					
D.2.1. Does the monitoring plan provide for the collection and archiving of all relevant data	/1/	DR	See D.1.3.	~~CAR 1~~	OK

Checklist Question	Ref.	MoV*	Comments	Draft Concl	Final Concl
necessary for estimation or measuring the greenhouse gas emissions within the project boundary during the crediting period?					
D.2.2. Are the choices of project GHG indicators reasonable?	/1/	DR	See D.2.1.	~~CAR 1~~	OK
D.2.3. Will it be possible to monitor / measure the specified project GHG indicators?	/1/	DR	See D.2.1.	~~CAR 1~~	OK
D.2.4. Will the indicators give opportunity for real measurements of project emissions?	/1/	DR	See D.2.1.	~~CAR 1~~	OK
D.2.5. Will the indicators enable comparison of project data and performance over time?	/1/	DR	See D.2.1.	~~CAR 1~~	OK
D.3. Monitoring of Leakage *It is assessed whether the monitoring plan provides for reliable and complete leakage data over time.*					
D.3.1. Does the monitoring plan provide for the collection and archiving of all relevant data necessary for determining leakage?	/1/	DR	No leakage is considered to happen in this project activity.		OK
D.3.2. Are the choices of leakage indicators reasonable?	/1/	DR	See D.3.1.		OK
D.3.3. Will it be possible to monitor / measure the specified leakage indicators?	/1/	DR	See D.3.1.		OK
D.3.4. Will the indicators give opportunity for real measurements of leakage effects?	/1/	DR	See D.3.1.		OK

Checklist Question	Ref.	MoV*	Comments	Draft Concl	Final Concl
D.4. Monitoring of Baseline Emissions *It is established whether the monitoring plan provides for reliable and complete project emission data over time.*					
D.4.1. Does the monitoring plan provide for the collection and archiving of all relevant data necessary for determining baseline emissions during the crediting period?	/1/	DR	The baseline emissions will be estimated as the product of the project electricity supplied to the grid and the CO_2 emission factor of the grid (OM and BM emission coefficient). See D.1.3.	~~CAR 1~~	OK
D.4.2. Is the choice of baseline indicators, in particular for baseline emissions, reasonable?	/1/	DR	See D.4.1.	~~CAR 1~~	OK
D.4.3. Will it be possible to monitor / measure the specified baseline indicators?	/1/	DR	See D.4.1.	~~CAR 1~~	OK
D.4.4. Will the indicators give opportunity for real measurements of baseline emissions?			See D.4.1.	~~CAR 1~~	OK
D.5. Monitoring of Sustainable Development Indicators/ Environmental Impacts *It is checked that choices of indicators are reasonable and complete to monitor sustainable performance over time.*					
D.5.1. Does the monitoring plan provide the collection and archiving of relevant data concerning environmental, social and economic impacts?	/1/	DR	The baseline and monitoring methodology ACM0006 and the Honduran DNA do not require the monitoring of social or environmental indicators.		OK
D.5.2. Is the choice of indicators for sustainability development (social, environmental, economic) reasonable?	/1/	DR	See D.5.1.		OK
D.5.3. Will it be possible to monitor the specified sustainable development indicators?	/1/	DR	See D.5.1.		OK

Checklist Question	Ref.	MoV*	Comments	Draft Concl	Final Concl
D.5.4. Are the sustainable development indicators in line with stated national priorities in the Host Country?	/1/	DR	See D.5.1.		OK
D.6. Project Management Planning *It is checked that project implementation is properly prepared for and that critical arrangements are addressed.*					
D.6.1. Is the authority and responsibility of project management clearly described?	/1/	DR, I	The authority and responsibility for registration, monitoring, measurement and reporting are not clearly described. Also the procedures for calibration of monitoring equipment are not clearly identified. DNV requests further clarifications about the procedures and responsibilities for the review of reported results/data and for instruments calibration.	~~CL 6~~	OK
D.6.2. Is the authority and responsibility for registration, monitoring, measurement and reporting clearly described?	/1/	DR	See D.6.1.	~~CL 6~~	ok
D.6.3. Are procedures identified for training of monitoring personnel?	/1/	DR	See D.6.1.	~~CL 6~~	
D.6.4. Are procedures identified for emergency preparedness for cases where emergencies can cause unintended emissions?	/1/	DR	No emergencies that can cause unintended emissions are expected to occur, given the nature of the project design.		OK
D.6.5. Are procedures identified for calibration of monitoring equipment?	/1/	DR	See D.6.1.	~~CL 6~~	OK
D.6.6. Are procedures identified for maintenance of monitoring equipment and installations?	/1/	DR	See D.6.1.	~~CL 6~~	OK
D.6.7. Are procedures identified for monitoring, measurements and reporting?	/1/	DR	See D.6.1.	~~CL 6~~	OK

* MoV = Means of Verification, DR= Document Review, I= Interview

Checklist Question	Ref.	MoV*	Comments	Draft Concl	Final Concl
D.6.8. Are procedures identified for day-to-day records handling (including what records to keep, storage area of records and how to process performance documentation)	/1/	DR, I	Details of the data to be collected, the frequency of data recording, its certainty, and format and storage location are not clear described. The table D.2.1.3 is not mentioning all data to be monitored and there are mistakes in the parameters mentioned.	~~CAR 1~~	OK
D.6.9. Are procedures identified for dealing with possible monitoring data adjustments and uncertainties?	/1/	DR	See D.6.1.	~~CL 6~~	OK
D.6.10. Are procedures identified for review of reported results/data?	/1/	DR, I	See D.6.1.	~~CL 6~~	OK
D.6.11. Are procedures identified for internal audits of GHG project compliance with operational requirements where applicable?	/1/	DR,I	See D.6.1.	~~CL 6~~	OK
D.6.12. Are procedures identified for project performance reviews before data is submitted for verification, internally or externally?	/1/	DR	See D.6.1.	~~CL 6~~	OK
D.6.13. Are procedures identified for corrective actions in order to provide for more accurate future monitoring and reporting?	/1/	DR	See D.6.1.	~~CL 6~~	OK

Checklist Question	Ref.	MoV*	Comments	Draft Concl	Final Concl
E. Calculation of GHG Emissions by Source *It is assessed whether all material GHG emission sources are addressed and how sensitivities and data uncertainties have been addressed to arrive at conservative estimates of projected emission reductions.*					
E.1. Project GHG Emissions *The validation of ex-ante estimated project GHG emissions focuses on transparency and completeness of calculations.*					
E.1.1. Are all aspects related to direct and indirect GHG emissions captured in the project design?	/1/	DR	Yes.		OK
E.1.2. Are the GHG calculations documented in a complete and transparent manner?	/1/	DR	See E.1.1.		OK
E.1.3. Have conservative assumptions been used to calculate project GHG emissions?	/1/	DR	See E.1.1.		OK
E.1.4. Are uncertainties in the GHG emissions estimates properly addressed in the documentation?	/1/	DR	See E.1.1.		OK
E.1.5. Have all relevant greenhouse gases and source categories listed in Kyoto Protocol Annex A been evaluated?	/1/	DR	See E.1.1.		OK

Checklist Question	Ref.	MoV*	Comments	Draft Concl	Final Concl
E.2. Leakage *It is assessed whether there leakage effects, i.e. change of emissions which occurs outside the project boundary and which are measurable and attributable to the project, have been properly assessed and estimated ex-ante.*					
E.2.1. Are potential leakage effects beyond the chosen project boundaries properly identified?	/1/	DR	As per the ACM0006 methodology, leakage needs not to be identified.		OK
E.2.2. Have these leakage effects been properly accounted for in calculations?	/1/	DR	See E.2.1.		OK
E.2.3. Does the methodology for calculating leakage comply with existing good practice?	/1/	DR	See E.2.1.		OK
E.2.4. Are the calculations documented in a complete and transparent manner?	/1/	DR	See E.2.1.		OK
E.2.5. Have conservative assumptions been used when calculating leakage?	/1/	DR	See E.2.1.		OK
E.2.6. Are uncertainties in the leakage estimates properly addressed?	/1/	DR	See E.2.1.		OK
E.3. Baseline Emissions *The validation of ex-ante estimated baseline GHG emissions focuses on transparency and completeness of calculations.*					
E.3.1. Have the most relevant and likely operational characteristics and baseline indicators been chosen as reference for baseline emissions?	/1/	DR, I	Baseline emissions are from displacement of grid electricity. For the displacement of grid electricity, the electricity baseline emission coefficient of the grid is estimated by determining an OM and BM emission coefficient in accordance with ACM0002 as required by ACM0006. In	~~CL 7~~ ~~CL 8~~	OK

Checklist Question	Ref.	MoV*	Comments	Draft Concl	Final Concl
			spite of the emission factor has been determined following the guidance in the section "Baselines" in the methodology ACM0002 as required by ACM0006, the PDD not report this. The calculations of the OM and BM emission coefficient used to estimate emission reductions have not been given. The worksheets for the same have to be provided. The dispatch data analysis method was not applied due to lack of data. Additionally, in Honduras 50% of the total grid generation from past 5 years comes from low cost/must run resources. Hence, simple OM method was chosen for the calculation of the EF of OM and BM. The data used for calculation has to be provided along with the data sources.		
E.3.2. Are the baseline boundaries clearly defined and do they sufficiently cover sources and sinks for baseline emissions?	/1/	DR	The system boundary includes the electricity supplied to grid, the electricity system of grid (In reference to OM and BM).		OK
E.3.3. Are the GHG calculations documented in a complete and transparent manner?	/1/	DR	See E.3.1.	~~CL 7~~ ~~CL 8~~	OK
E.3.4. Have conservative assumptions been used when calculating baseline emissions?	/1/	DR	Yes.		OK
E.3.5. Are uncertainties in the GHG emission estimates properly addressed in the documentation?	/1/	DR	See E.3.1.	~~CL 7~~ ~~CL 8~~	OK
E.3.6. Have the project baseline(s) and the project emissions been determined using the same appropriate methodology and conservative	/1/	DR	For project baseline, see E.3.1. For project emissions, see E.1.1.	~~CL 7~~ ~~CL 8~~	OK

Checklist Question	Ref.	MoV*	Comments	Draft Concl	Final Concl
assumptions?					
E.4. Emission Reductions *Validation of ex-ante estimated emission reductions*.					
E.4.1. Will the project result in fewer GHG emissions than the baseline scenario?	/1/	DR	The project is expected to reduce CO_2 emissions to the extent of 156 267 tCO2e (22 324 tCO2e/year on average) during the first renewable 7-year crediting period. However the table A.4.4.1 format is not according to the template of the guideline.	~~CL 9~~	OK
F. Environmental Impacts *Documentation on the analysis of the environmental impacts will be assessed, and if deemed significant, an EIA should be provided to the validator.*					
F.1.1. Has an analysis of the environmental impacts of the project activity been sufficiently described?	/1/	DR, I	Energia Chumbagua S.A. de C.V was granted the Environmental License (nº 008-2005) issued on 26 January 2005 which was updated in the document nº 193-2206, of 07/09/2006. This license was issued by the national environmental agency (SERNA - Secretaria de Recursos Naturales y Ambiente) after all possible environmental impacts were analyzed, through an EIA (Environmental Impact Assessment). See A.3.1.	~~CL 2~~	OK
F.1.2. Are there any Host Party requirements for an Environmental Impact Assessment (EIA), and if yes, is an EIA approved?	/1/	DR	See F.1.1	~~CL 2~~	OK
F.1.3. Will the project create any adverse environmental effects?	/1/	DR	The project design document did not identify/address any environmental impact. However, no significant adverse		OK

Checklist Question	Ref.	MoV*	Comments	Draft Concl	Final Concl
			environmental effects are expected to be created, given the nature of the project design.		
F.1.4. Are transboundary environmental impacts considered in the analysis?	/1/	DR	Transboundary environmental impacts are not foreseen.		OK
F.1.5. Have identified environmental impacts been addressed in the project design?	/1/	DR	The project is unlikely to create any adverse environmental impacts		OK
F.1.6. Does the project comply with environmental legislation in the host country?	/1/	DR	See F.1.1.	~~CL 2~~	OK
G. Stakeholder Comments *The validator should ensure that a stakeholder comments have been invited and that due account has been taken of any comments received.*					
G.1.1. Have relevant stakeholders been consulted?	/1/	DR, I	The environment licence evidence the approval of the Government agencies consulted, however the linkage between the environmental licensing and the stakeholders invitation on commenting the CDM project is not clearly evidenced.	~~CAR 2~~	OK
G.1.2. Have appropriate media been used to invite comments by local stakeholders?	/1/	DR	Yes. See G.1.1.	~~CAR 2~~	OK
G.1.3. If a stakeholder consultation process is required by regulations/laws in the host country, has the stakeholder consultation process been carried out in accordance with such regulations/laws?	/1/	DR	Yes. See G.1.1.	~~CAR 2~~	OK
G.1.4. Is a summary of the stakeholder comments received provided?	/1/	DR	Yes. See G.1.1.	~~CAR 2~~	OK
G.1.5. Has due account been taken of any stakeholder comments received?	/1/	DR	Yes. See G.1.1.	~~CAR 2~~	OK

* MoV = Means of Verification, DR= Document Review, I= Interview

* MoV = Means of Verification, DR= Document Review, I= Interview

Table 3 Resolution of Corrective Action and Clarification Requests

Draft report corrective action requests and requests for clarifications	Ref. to Table 2	Summary of project participants' response	Final conclusion
CAR 1 Details of the data to be collected, the frequency of data recording, its certainty, and format and storage location are not clear described. The table D.2.1.3 is not mentioning all data to be monitored and there are mistakes in the parameters mentioned.	D.1.3 D.2.1 D.2.2 D.2.3 D.2.4 D.2.5 D.4.1 D.4.2 D.4.3 D.4.4	In the PDD the table D.2.1.3 has been completed.	The required information has been correctly provided in the section B.7 of the is information is correct in the revised PDD of 27 March 2007. This CAR is closed.
CAR 2 The environment licence evidence the approval by the Government agencies consulted, however the linkage between the environmental licensing process and the stakeholders invitation on providing comments on the CDM project was not clearly evidenced.	G.1.1G.1.2 G.1.3G.1.4 G.1.5	Several actions were done: 1) The process of obtaining the environmental license in Honduras includes visits to the project site by the National System of Evaluation of Environmental Impacts (SINEIA), integrated by different government agencies. 2) Furthermore, the Cogeneration Project Operation Contract was published in an official newspaper (La Gaceta). 3) Letters were sent to the the municipalities affected by the project on 01 March 2007.	Public comments were invited by a letter asking for general comments and not only linked to environmental facts thus it can be acknowledge that stakeholders were invited for comments. This action complements the consultation process to the stakeholder involves in obtaining the environmental licence, which represent a broad spectrum of parties that could be affected by the project. This CAR is therefore closed
CL 1 The project documentation does not detail provisions for training and maintenance.	A.2.5	Provisions for training and maintenance are identified in section D.4.	The last version of PDD was assessed. This CL is closed.
CL 2 Documented evidence(s) of the	A.3.1	See annexed documents "Chumbagua Licencia Ambiental.mdi" and	Complementary documentation evidences the compliance

Draft report corrective action requests and requests for clarifications	Ref. to Table 2	Summary of project participants' response	Final conclusion
Environmental License(s), a short summary of the EIA and the requirements established by the environmental authority in order to issue the environmental licenses should be provided.	F.1.1 F.1.2 F.1.6	"Chumbagua Licencia Ambiental_update.mdi".	Environmental issues. This CL is therefore closed
CL 3 The methodology ACM0002 was not addressed in the item "*B.1. Title and reference of the approved baseline and monitoring methodology applied to the project activity*" of the PDD.	B.1.1	The reference at the approved methodology ACM0002 has been included in the version 6.0 of the PDD, in the item *"B.1 Title and reference of the approved baseline and monitoring methodology applied to the project activity*".	PDD version 6.0 addressed the information adequately. This CL is therefore closed
CL 4 The alternatives (baseline scenarios) to the project activity for power, heat and biomass, consistent with current laws and regulations, are not clearly addressed. DNV requests clarifications on these alternatives.	B.2.7	Further explanations were included in section B.3 of the PDD.	The PDD identifies the following alternatives as the baseline scenario: a) power generation: in the absence of the project, energy would have been generated partially in existing and new grid-connected power plants (alternative P4) and partially in the existing cogeneration plant using the same biomass until the end of the lifetime of the existing plant. (alternative P5); b) biomass: the biomass would have been used for heat and electricity generation in the project site (alternative B4); c) Heat: heat would have been generated in boilers using the same type of biomass until the existing plant would have been replaced without the incentives of the CDM (alternative H5). This CL is therefore closed.

Draft report corrective action requests and requests for clarifications	Ref. to Table 2	Summary of project participants' response	Final conclusion
CL 5 The Tools for the demonstration and assessment of additionality was not addressed in the item "*B.1. Title and reference of the approved baseline and monitoring methodology applied to the project activity*" of the PDD.	B.2.7	The reference at the version 02 of the Tool for the demonstration and assessment of additionality has been included in the version 6.0 of the PDD, in the item *"B.1 Title and reference of the approved baseline and monitoring methodology applied to the project activity*".	PDD version 6.0 addressed the information adequately. This CL is therefore closed.
CL 6 The authority and responsibility for registration, monitoring, measurement and reporting are not clearly described. Also the procedures for calibration of monitoring equipment are not clearly identified. DNV requests further clarifications about the procedures and responsibilities for the review of reported results/data and for instruments calibration.	D.6.1 D.6.2 D.6.3 D.6.5 D.6.6 D.6.7 D.6.9 D.6.10 D.6.11 D.6.12 D.6.13	Chumbagua is responsible for the project registration, monitoring, measurement and reporting, as stated in section D.4.	The last version of PDD was assessed. The project developer is directly responsible for the monitoring and reporting. The calibration of the monitoring instruments will be done according to the regulations of ENEE This CL is closed.
CL 7 • The data used for the baseline determination has not been provided. The same needs to be submitted for validation. • The calculation sheet for the grid emission factor is to be submitted for validation. • The calculations of the OM and BM emission coefficient used to estimate emission reductions have not been given. These worksheets have to be provided. The data used for calculation has to be provided along with the data sources.	E.3.1 E.3.3 E.3.5 E.3.6	See Annex 3 and the spreadsheet "Baseline EF-Honduras-2006.05.31.xls".	The spreadsheet for the calculation of emission reductions *(Chumbagua_calculation_CERs_2006 .11.16.xls)* includes the baseline data. The accuracy on these were checked during the interviews (database used, monitoring practices, etc) The spreadsheet "Baseline EF-Honduras-2006.05.31.xls" correcty calculates the grid emission factor as per ACM0002 version 06. This CL is therefore closed
CL 8 In spite of the emission factor has been	E.3.1	The PDD mentions that the emission factor has been determined following the	The spreadsheet "Baseline EF-Honduras-2006.05.31.xls" correcty

Draft report corrective action requests and requests for clarifications	Ref. to Table 2	Summary of project participants' response	Final conclusion
determined following the guidance in the section "Baselines" in the methodology ACM0002 as required by ACM0006, the PDD not report this.	E.3.3 E.3.5 E.3.6	guidance of methodology ACM0002.	calculates the grid emission factor as per ACM0002 version 06. This CL is closed.
CL 9 The table A.4.4.1 format is not according to the template of the guideline.	E.4.1	In the PDD the table A.4.4.1 has been formated.	The last version of PDD was assessed. This CL is closed.
CL 10 The evaluation of the project's IRR against an investment benchmark in Honduras does not directly relate to an investment barrier (lack of capital). The presented IRR analysis should be presented in accordance of the benchmark analysis given in step 2 of the Tool for the demonstration and assessment of additionality	B.2.7	An investment benchmark analysis was done in step 2, section B.5.	PDD version 7 addressed the information adequately. This CL is therefore closed

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APPENDIX B

CERTIFICATES OF COMPETENCE

CERTIFICATE OF COMPETENCE

Michael Lehmann

Qualification in accordance with DNV's Qualification scheme for CDM/JI (ICP-9-8-i1-CDMJI-i1

GHG Auditor:	Yes		
CDM Validator:	Yes	***JI Validator:***	Yes
CDM Verifier:	Yes	***JI Verifier:***	Yes
Industry Sector Expert for Sectoral Scope(s):	Sectoral scope 1,2,3 & 9		
Technical Reviewer for (group of) methodologies:			
ACM0001, AM0002, AM0003, AM0010, AM0011, AM0012, AMS-III.G	Yes	*AM0021*	Yes
ACM002, AMS-I.A-D, AM0019, AM0026, AM0029	Yes	*AM0023*	Yes
ACM003, ACM0005, AM0033, AM0040	Yes	*AM0024*	Yes
ACM0004	Yes	*AM0027*	Yes
ACM0006, AM0007, AM0015, AM0036, AM0042	Yes	*AM0028, AM0034*	Yes
ACM0007	Yes	*AM0030*	Yes
ACM0008	Yes	*AM0031*	Yes
ACM0009, AM0008, AMS-III.B	Yes	*AM0032*	Yes
AM0006, AM0016, AMS-III.D	Yes	*AM0035*	Yes
AM0009, AM0037	Yes	*AM0038*	Yes
AM0013, AM0022, AM0025, AM00379, AMS-III.H, AMS-III.I	Yes	*AM0041*	Yes
AM0014	Yes	*AM0034*	Yes
AM0017	Yes	*AMS-II.A-F*	Yes
AM0018	Yes	*AMS-III.A*	Yes
AM0020	Yes	*AMS-III.E, AMS-III.F*	Yes

CERTIFICATE OF COMPETENCE

Einar Telnes

Qualification in accordance with DNV's Qualification scheme for CDM/JI (ICP-9-8-i1-CDMJI-i1

GHG Auditor:	Yes		
CDM Validator:	Yes	***JI Validator:***	Yes
CDM Verifier:	Yes	***JI Verifier:***	Yes
Industry Sector Expert for Sectoral Scope(s):	Sectoral scope 1,2,3 & 9		
Technical Reviewer for (group of) methodologies:			
ACM0001, AM0002, AM0003, AM0010, AM0011, AM0012, AMS-III.G	Yes	*AM0021*	Yes
ACM002, AMS-I.A-D, AM0019, AM0026, AM0029	Yes	*AM0023*	Yes
ACM003, ACM0005, AM0033, AM0040	Yes	*AM0024*	Yes
ACM0004	Yes	*AM0027*	Yes
ACM0006, AM0007, AM0015, AM0036, AM0042	Yes	*AM0028, AM0034*	Yes
ACM0007	Yes	*AM0030*	Yes
ACM0008	Yes	*AM0031*	Yes
ACM0009, AM0008, AMS-III.B	Yes	*AM0032*	Yes
AM0006, AM0016, AMS-III.D	Yes	*AM0035*	Yes
AM0009, AM0037	Yes	*AM0038*	Yes
AM0013, AM0022, AM0025, AM00379, AMS-III.H, AMS-III.I	Yes	*AM0041*	Yes
AM0014	Yes	*AM0034*	Yes
AM0017	Yes	*AMS-II.A-F*	Yes
AM0018	Yes	*AMS-III.A*	Yes
AM0020	Yes	*AMS-III.E, AMS-III.F*	Yes

CERTIFICATE OF COMPETENCE

Miguel Rescalvo Santandreu

Qualification in accordance with DNV's Qualification scheme for CDM/JI (ICP-9-8-i1-CDMJI-i1

GHG Auditor:	Yes		
CDM Validator:	Yes	***JI Validator:***	--
CDM Verifier:	--	***JI Verifier:***	--
Industry Sector Expert for Sectoral Scope(s):			
Technical Reviewer for (group of) methodologies:			
ACM0001, AM0002, AM0003, AM0010, AM0011, AM0012, AMS-III.G	--	*AM0021*	--
ACM002, AMS-I.A-D, AM0019, AM0026, AM0029	--	*AM0023*	--
ACM003, ACM0005, AM0033, AM0040	--	*AM0024*	--
ACM0004	--	*AM0027*	--
ACM0006, AM0007, AM0015, AM0036, AM0042	--	*AM0028, AM0034*	--
ACM0007	--	*AM0030*	--
ACM0008	--	*AM0031*	--
ACM0009, AM0008, AMS-III.B	--	*AM0032*	--
AM0006, AM0016, AMS-III.D	--	*AM0035*	--
AM0009, AM0037	--	*AM0038*	--
AM0013, AM0022, AM0025, AM00379, AMS-III.H, AMS-III.I	--	*AM0041*	--
AM0014	--	*AM0034*	--
AM0017	--	*AMS-II.A-F*	--
AM0018	--	*AMS-III.A*	--
AM0020	--	*AMS-III.E, AMS-III.F*	--

CERTIFICATE OF COMPETENCE

Luis Filipe Tavares

Qualification in accordance with DNV's Qualification scheme for CDM/JI (ICP-9-8-i1-CDMJI-i1

GHG Auditor:	Yes		
CDM Validator:	Yes	***JI Validator:***	No
CDM Verifier:	Yes	***JI Verifier:***	No
Industry Sector Expert for Sectoral Scope(s):	Sectoral scope 13		
Technical Reviewer for (group of) methodologies:			
ACM0001, AM0002, AM0003, AM0010, AM0011, AM0012, AMS-III.G	No	*AM0021*	No
ACM002, AMS-I.A-D, AM0019, AM0026, AM0029	No	*AM0023*	No
ACM003, ACM0005, AM0033, AM0040	No	*AM0024*	No
ACM0004	No	*AM0027*	No
ACM0006, AM0007, AM0015, AM0036, AM0042	No	*AM0028, AM0034*	No
ACM0007	No	*AM0030*	No
ACM0008	No	*AM0031*	No
ACM0009, AM0008, AMS-III.B	No	*AM0032*	No
AM0006, AM0016, AMS-III.D	No	*AM0035*	No
AM0009, AM0037	No	*AM0038*	No
AM0013, AM0022, AM0025, AM00379, AMS-III.H, AMS-III.I	No	*AM0041*	No
AM0014	No	*AM0034*	No
AM0017	No	*AMS-II.A-F*	No
AM0018	No	*AMS-III.A*	No
AM0020	No	*AMS-III.E, AMS-III.F*	No

CERTIFICATE OF COMPETENCE

Andrea Teixeira Leiroz

Qualification in accordance with DNV's Qualification scheme for CDM/JI (ICP-9-8-i1-CDMJI-i1

GHG Auditor:	Yes		
CDM Validator:	No	***JI Validator:***	No
CDM Verifier:	No	***JI Verifier:***	No
Industry Sector Expert for Sectoral Scope(s):	Sectoral scope		
Technical Reviewer for (group of) methodologies:			
ACM0001, AM0002, AM0003, AM0010, AM0011, AM0012, AMS-III.G	No	*AM0021*	No
ACM002, AMS-I.A-D, AM0019, AM0026, AM0029	No	*AM0023*	No
ACM003, ACM0005, AM0033, AM0040	No	*AM0024*	No
ACM0004	No	*AM0027*	No
ACM0006, AM0007, AM0015, AM0036, AM0042	No	*AM0028, AM0034*	No
ACM0007	No	*AM0030*	No
ACM0008	No	*AM0031*	No
ACM0009, AM0008, AMS-III.B	No	*AM0032*	No
AM0006, AM0016, AMS-III.D	No	*AM0035*	No
AM0009, AM0037	No	*AM0038*	No
AM0013, AM0022, AM0025, AM00379, AMS-III.H, AMS-III.I	No	*AM0041*	No
AM0014	No	*AM0034*	No
AM0017	No	*AMS-II.A-F*	No
AM0018	No	*AMS-III.A*	No
AM0020	No	*AMS-III.E, AMS-III.F*	No

CERTIFICATE OF COMPETENCE

Mario Epstein

Qualification in accordance with DNV's Qualification scheme for CDM/JI (ICP-9-8-i1-CDMJI-i1

GHG Auditor:	Yes		
CDM Validator:	No	***JI Validator:***	No
CDM Verifier:	No	***JI Verifier:***	No
Industry Sector Expert for Sectoral Scope(s):	Sectoral scope		
Technical Reviewer for (group of) methodologies:			
ACM0001, AM0002, AM0003, AM0010, AM0011, AM0012, AMS-III.G	No	*AM0021*	No
ACM002, AMS-I.A-D, AM0019, AM0026, AM0029	No	*AM0023*	No
ACM003, ACM0005, AM0033, AM0040	No	*AM0024*	No
ACM0004	No	*AM0027*	No
ACM0006, AM0007, AM0015, AM0036, AM0042	No	*AM0028, AM0034*	No
ACM0007	No	*AM0030*	No
ACM0008	No	*AM0031*	No
ACM0009, AM0008, AMS-III.B	No	*AM0032*	No
AM0006, AM0016, AMS-III.D	No	*AM0035*	No
AM0009, AM0037	No	*AM0038*	No
AM0013, AM0022, AM0025, AM00379, AMS-III.H, AMS-III.I	No	*AM0041*	No
AM0014	No	*AM0034*	No
AM0017	No	*AMS-II.A-F*	No
AM0018	No	*AMS-III.A*	No
AM0020	No	*AMS-III.E, AMS-III.F*	No

Høvik, 6 November 2006

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