



VALIDATION REPORT

COMPAÑÍA AZUCARERA HONDUREÑA S.A. COGENERATION PROJECT IN HONDURAS

REPORT No. 2006-1242

REVISION No. 01

DET NORSKE VERITAS



VALIDATION REPORT

Date of first issue: 2006-07-17	Project No.: 28624550
Approved by: Einar Telnes Director	Organisational unit: DNV Certification, International Climate Change Services
Client: Compañía Azucarera Hondureña S.A. de C.V.	Client ref.: Mrs. Saad de Rivera

DET NORSKE VERITAS AS

DNV Certification

Veritasveien 1,
1322 HØVIK, Norway
Tel: +47 67 57 99 00
Fax: +47 67 57 99 11
http://www.dnv.com
Org. No: NO 945 748 931 MVA

Summary:

Det Norske Veritas Certification Ltd. (DNV) has performed a validation of the Compañía Azucarera Hondureña S.A. 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 consisted 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. Hence, DNV requests the registration of the Compañía Azucarera Hondureña S.A. Cogeneration Project as a CDM project.

Report No.: 2006-1242		Subject Group: Environment					
Report title: Compañía Azucarera Hondureña S.A. Cogeneration Project in Honduras							
Work carried out by: Luis Filipe Tavares, Subhendu Biswas, Michael Lehmann.							
Work verified by: Miguel Rescalvo (acting) Einar Telnes							
Date of this revision: 2007-03-28	Rev. No.: 01	Number of pages: 13					
Indexing terms <table border="1"> <tr> <td rowspan="3">Key words Climate Change Kyoto Protocol Validation Clean Development Mechanism</td> <td>Service Area Verification</td> </tr> <tr> <td>Market Sector</td> </tr> <tr> <td>Process Industry</td> </tr> </table>				Key words Climate Change Kyoto Protocol Validation Clean Development Mechanism	Service Area Verification	Market Sector	Process Industry
Key words Climate Change Kyoto Protocol Validation Clean Development Mechanism	Service Area Verification						
	Market Sector						
	Process Industry						
<input checked="" type="checkbox"/> No distribution without permission from the client or responsible organisational unit <input type="checkbox"/> free distribution within DNV after 3 years <input type="checkbox"/> Strictly confidential							
© 2002 Det Norske Veritas AS All rights reserved. This publication or parts thereof may not be reproduced or transmitted in any form or by any means, including photocopying or recording, without the prior written consent of Det Norske Veritas AS.							



<i>Table of Content</i>	<i>Page</i>
1 INTRODUCTION	1
1.1 Validation Objective	1
1.2 Scope	1
1.3 Compañía Azucarera Hondureña S.A. Cogeneration Project	1
2 METHODOLOGY	2
2.1 Review of Documents	4
2.2 Follow-up Interviews	4
2.3 Resolution of Clarification and Corrective Action Requests	4
2.4 Internal Quality Control	5
3 VALIDATION FINDINGS	5
3.1 Participation Requirements	5
3.2 Project Design	5
3.3 Project Baseline	6
3.4 Additionality	7
3.5 Monitoring Plan	8
3.6 Calculation of GHG Emissions	9
3.7 Environmental Impacts	10
3.8 Comments by Local Stakeholders	10
4 COMMENTS BY PARTIES, STAKEHOLDERS AND NGOS.....	10
5 VALIDATION OPINION	11
REFERENCES.....	12
Appendix A Validation Protocol	
Appendix B Certificates of Competence	

***Abbreviations***

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 ₂ e	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
NGO	Non-governmental Organisation
ODA	Official Development Assistance
PDD	Project Design Document
PPA	Purchase Power Agreement
SERNA	Secretaría 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

Compañía Azucarera Hondureña S.A. de C.V. has commissioned Det Norske Veritas Certification Ltd. (DNV) to perform a validation of the Compañía Azucarera Hondureña S.A. Cogeneration Project (also called the “SANTA MATILDE project”) located in the city of Villanueva, Department of Cortes, Honduras.

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

The validation team consisted of the following personnel:

Mr Luis Filipe Tavares	DNV Rio de Janeiro	CDM validator, Team leader
Mr. Subhendu Biswas	DNV Bangalre	GHG auditor
Mr. Michael Lehman	DNV Oslo	Sector expert
Mr. Miguel Rescalvo	DNV Oslo	Technical reviewer (acting)
Mr Einar Telnes	DNV 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. The validation team has, based on the recommendations in the Validation and Verification Manual /12/ 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 Compañía Azucarera Hondureña S.A. Cogeneration Project

The Compañía Azucarera Hondureña S.A. Cogeneration Project proposes to increase the efficiency in the production of electricity from bagasse, a by-product during production of sugar. The power generation capacity at the Santa Matilde sugar mill will be increased



through the installation of higher efficiency boilers and turbo-generators. The project is already implemented and its starting date was 12 May 2003.

The estimated amount of GHG emission reductions from the project is calculated to be 230 927 tCO₂e during the selected first 7-year crediting period (with the potential of being renewed twice), resulting in estimated average annual emission reductions of 32 990 tCO₂e.

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 /12/. 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 Compañía Azucarera Hondureña S.A. 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* (CAR) are issued, where:

- i) mistakes have been made with a direct influence on project results;
- ii) CDM or host Party 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 *clarification* (CL) is 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
<i>The requirements the project must meet.</i>	<i>Gives reference to the legislation or agreement where the requirement is found.</i>	<i>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.</i>	<i>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.</i>

Validation Protocol Table 2: Requirement Checklist

Checklist Question	Reference	Means of verification (MoV)	Comment	Draft and/or Final Conclusion
<i>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.</i>	<i>Gives reference to documents where the answer to the checklist question or item is found.</i>	<i>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.</i>	<i>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.</i>	<i>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.</i>

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
<i>If the conclusions from the draft Validation are either a Corrective Action Request or a Clarification Request, these should be listed in this section.</i>	<i>Reference to the checklist question number in Table 2 where the Corrective Action Request or Clarification Request is explained.</i>	<i>The responses given by the project participants during the communications with the validation team should be summarised in this section.</i>	<i>This section should summarise the validation team's responses and final conclusions. The conclusions should also be included in Table 2, under "Final Conclusion".</i>

Figure 1 Validation protocol tables



2.1 Review of Documents

The initial PDD (version 01 of 16 October 2005) submitted by Compañía Azucarera Hondureña S.A. de C.V. was initially assessed. 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 02 of 22 May 2005) was submitted by the client and assessed by DNV. Due to the revision to version 04 of the methodology ACM0006 the PDD was revised on 21 November 2006. After the assessment of this new version of the PDD by DNV a further revised PDD (Version 6 of 27 March 2007 /1/) was submitted by Ecoinvest for validation.

In addition, spreadsheets containing detailed calculations for the combined margin emission coefficient/2/, project's IRR /4/ and CERs calculations /6/ were assessed as a part of the validation. Other assessed documents are listed in the section "references" below.

2.2 Follow-up Interviews

On 09 October 2006, DNV performed interviews with a representative of Ecoinvest:

The main topics of the interviews were:

- Environment licenses compliance,
- Local Stakeholders consultation process,
- Additionality of the project,
- Cash flow analysis and IRR,
- Baseline emission assessment and 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 version 06 of 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 Compañía Azucarera Hondureña S.A. 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 PDD of 27 March 2007

3.1 Participation Requirements

The project participants are Compañía Azucarera Hondureña S.A. de C.V. of Honduras and The Tokyo Electric Power Co., Inc. of Japan. The participating Parties Honduras and Japan meet all relevant participation requirements and have provided written approval of voluntary participation in the project. The Compañía Azucarera Hondureña S.A. Cogeneration Project received the Letters of Approval from the DNA of Honduras (dated 13 December 2005) /8/ and from the DNA of Japan (dated 15 August 2006) /9/.

The project is expected to bring social (employment), and economic benefits, thus contributing to the sustainable development objectives of the Honduran Government. The DNA of Honduras confirmed the project contribution to the sustainable development of the country /8/.

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 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 new boilers and turbo generators.

This project activity will be implemented in four phases. Phase one was implemented in 2005 with the installation of a 900 Psig boiler and two 12 MW turbo generators. The second phase was implemented in 2006 with the installation of one 6 MW turbo generator. This generator will be put in stand by after the completion of the third phase. The third phase of the project is expected to start in 2009 and will consist of the installation of another 900 Psig boiler and 12 MW turbo generator. The last phase of the project will start



in 2011 with the installation of a 10 MW turbo generator. The old generators with capacities of 1.5, 2.5 MW and the new 6 MW will be kept as a stand-by option in order to support the production in case the sugar production increases beyond the foreseen levels. The final installed capacity (not considering the equipment in stand by) after the completion of the four phases will be 46 MW. The project developer has already secured a power purchase agreement for delivering the electricity to the Honduran grid.

The project design engineering reflects good practice through the use of Rankine steam cycle technology for steam rising and power generation.

A 7-year renewable crediting period is selected (with the potential of being renewed twice), starting on 11 February 2005. The starting date of the project activity is 12 May 2003. 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, *“Consolidated baseline methodology for grid-connected electricity generation from biomass residues”* /13/ in combination with ACM0002, version 06, *“Consolidated baseline methodology for grid-connected electricity generation from renewable sources”*.

This methodology is applicable to the Compañía Azucarera Hondureña S.A. Cogeneration Project as the project consists of the improvement of the energy efficiency of an existing power 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 does not require any preparation before being used as fuel.

The project boundaries are defined as: 1) baseline energy grid: the Honduran grid (SIN) and 2) baseline cogeneration plant: the whole site where the cogeneration facility (Compañía Azucarera Hondureña S.A. de C.V.-Santa Matilde mill) is located.

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

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).

For biomass use: In the baseline scenario the biomass would have been used for heat and/or electricity generation at the project site (B4).

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 boilers and one 1.5 MW turbo boiler were installed in 1968, the third boiler and the 2.5. MW turbo were installed in 1974. These equipments were retrofitted in the years 2002 and 2003, 2005 and will be kept in stand-by. The dates of



installation and retrofit 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 /10/ and is also referenced in technical literature /10/. 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 Compañía Azucarera Hondureña S.A. de C.V. included in the PDD, together with the expected increase in sugar production in developing countries and more specifically Honduras, show that the increase in the bagasse 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*” /13/, which includes the following steps:

Step 0. Preliminary screening based on the starting date of the project activity: The project was contracted on 12 May 2003. Evidence provided for this is the receipt of service for the design of the generating system /11/. The project was commissioned on 11 February 2005. Evidence that Compañía Azucarera Hondureña S.A. de C.V. seriously considered the CDM in the decision to proceed with the approval of the project in an internal meeting of the technical committee of the Grupo Tauro (owner of Compañía Azucarera Hondureña S.A.) on 22 April 2003 /5/. The meeting minutes refer to the possible revenues to be obtained from carbon credits. 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. Benchmark analysis: The project IRR has been verified /4/ to be 13.4% which is below the benchmark IRR selected (30% as the lowest value for the active interest rates in the local currency in Honduras for 2004, year when the investment decision was taken). The project involves an investment above 370 millions Lempiras in four phases. The electricity tariff applied in the IRR is taken from the PPA.



A sensitive analysis has been done increasing the project revenues by 10% and decreasing the operational costs. In the best case the IRR reaches 13.7%. 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 skilled enough and the usage of the equipment represents a technological barrier.

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

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, power generation is only for self consumption, which is the prevailing practice. The Honduran sugar producers association has confirmed /10/ 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 monitoring methodology ACM0006 - version 04 "Consolidated baseline methodology for grid-connected electricity generation from biomass residues" /13/.

Data to be monitored includes the net quantity of electricity generated at the project site, 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 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.



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:

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

The average net efficiency of electricity generation in the project plant prior to project implementation ($\epsilon_{el,pre project}$) is 0.023, 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 ($\epsilon_{el,project plant,y}$) is calculated by dividing the electricity generation during the year y by the amount of bagasse burned, expressed in energy units. The bagasse NCV value obtained from historic measurements by the project developer 2.57 MWh/ton. This will be monitored every six month.

The system boundary for the grid electricity system affected by the project is defined as the Honduran grid. The combined margin emission coefficient for the grid is determined *ex-ante* in accordance with ACM0002 version 06. The calculations /2/ 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 the 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 /2/. The simple operating margin (OM) emission coefficient is calculated to be 0.670 tCO₂e/MWh and the build margin (BM) emission coefficient is 0.667 tCO₂e/MWh, resulting in a combined margin emission coefficient of 0.668 tCO₂e/MWh (weighted average of the build and operating margin).

The estimated amount of GHG emission reductions from the project is calculated to be 230 927 tCO₂e during the selected first 7-year crediting period (with the potential of being renewed twice), resulting in estimated average annual emission reductions of 32 990 tCO₂e.

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

3.7 Environmental Impacts

Compañía Azucarera Hondureña S.A. de C.V. was granted an Environmental License (n° 269-2003) issued on 08 December 2003 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). Complementarily, the PPA was signed with an additional condition of compliance with all the environmental regulation. It has been confirmed that the project itself does not required an environmental impact assessment.

The project design did not identify/address 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, comments from local stakeholders were invited through the publication of a note in a national newspaper (La Prensa) /6/ and sending letters to identified stakeholders (Municipality of San Pedro Sula, San Manuel, Potrerillos and Pimienta). The SINEIA issued comments related to the operation of the cogeneration facility that were solved before the environmental license was granted.

4 COMMENTS BY PARTIES, STAKEHOLDERS AND NGOS

DNV published the PDD (Version 02 of 22 May 2006) on the DNV Climate Change web site (<http://www.dnv.com/certification/ClimateChange>) and Parties, stakeholders and NGOs were, through the UNFCCC CDM web site, invited to provide comments during the period from 10 June 2006 to 09 July 2006. No comments were received.

Prior to this, the PDD (version 01 of 16 October 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.



5 VALIDATION OPINION

Det Norske Veritas Certification Ltd. (DNV) has performed a validation of the Compañía Azucarera Hondureña S.A. Cogeneration Project located in the city of Villanueva, Department of Cortes, 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 Compañía Azucarera Hondureña S.A. de C.V. of Honduras and The Tokyo Electric Power Co., Inc. 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 Compañía Azucarera Hondureña S.A. Cogeneration Project received the Letters of Approval from the DNA of Honduras (dated 13 December 2005) and from the DNA of Japan (dated 15 August 2006). 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 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 by adding an additional 46 MW generation capacity, which will allow Compañía Azucarera Hondureña S.A. de C.V. to generate excess electricity to be dispatched to the national grid.

The project applies the approved consolidated monitoring methodology ACM0006, version 04, "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 CO₂ emissions that are real, measurable and give long-term benefits to the mitigation of climate change. The annual estimated emissions reduction is 32 990 tCO₂/year during the first seven year crediting period starting on 11 February 2005. Given that the project operates as designed, the project is likely to achieve the estimated amount of emission reductions.

Local stakeholder comments were invited. 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 Compañía Azucarera Hondureña S.A. 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. Hence, DNV requests the registration of the Compañía Azucarera Hondureña S.A. Cogeneration Project as a CDM project.



REFERENCES

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

- /1/ Project Design Document for the Compañía Azucarera Hondureña S.A. Cogeneration Project, version 5 of 27 March 2007.
- /2/ Ecoinvest: Spreadsheet for calculation of Baseline Emission Factor (Baseline Emission Factor - Honduras - Ecoinvest v.2006.05.31.xls).
- /3/ SantaMatilde_calculation_CERs_scenario 14_2007.03.06.xls
- /4/ IRR analysis
Santa_Matilde_IRR_2007 03 27.xls
- /5/ Meeting minutes. 22 April 2004.
Santa Matilde CDM evidence 1.pdf
- /6/ Newspaper La Prensa 18 July 2003 with description of the Compañía Azucarera Hondureña S.A. Cogeneration Project.
- /7/ Licencia Ambiental # 269/2003 issued by Secretaria de Recursos Naturales y Ambiente on 08 December 2003.
- /8/ National Environmental Ministry (Secretaria de Recursos Naturales y Ambiente) (DNA of Honduras): Letter of Approval dated 13 December 2005.
- /9/ The Liaisons committee for the Utilization of the Kyoto Mechanisms' (DNA of Japan): Letter of Approval dated 15 August 2006.
- /10/ 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.
- /11/ Payment receipt for the first payment for the design of the cogeneration system.
Start of the project.pdf

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

- /12/ International Emission Trading Association (IETA) & the World Bank's Prototype Carbon Fund (PCF): *Validation and Verification Manual*. <http://www.vvmanual.info>
- /13/ CDM-EB: Approved Consolidated Baseline and Monitoring Methodology ACM0006 - "Consolidated baseline methodology for grid-connected electricity generation from biomass residues", version 04.
- /14/ 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.



/15/ CDM Executive Board: 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:

/16/ Ricardo Besen – Ecoinvest

- o0o -

APPENDIX A

CDM VALIDATION PROTOCOL

Table 1 Mandatory Requirement 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	OK	Table 2, Section E.4.1 The PDD identifies The Tokyo Electric Power Co., Inc, of 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 13 December 2005.
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
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 13 December 2005. DNA of Japan: Letter of Approval dated 15 August 2006.
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.
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 National Environmental Ministry

Requirement	Reference	Conclusion	Cross Reference / Comment
			(Secretaría de Recursos Naturales y Ambiente) and the DNA of the Annex I 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	OK	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	OK	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
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	CDM Modalities and Procedures §40	OK	The PDD was made publicly available on DNV's climate change website and Parties, stakeholders

Requirement	Reference	Conclusion	Cross Reference / Comment
comments have been made publicly available			and NGOs were through the CDM website invited to provide comments during a 30 days period from 10 June 2006 to 09 July 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 <i>The project design is assessed.</i>					
A.1. Project Boundaries <i>Project Boundaries are the limits and borders defining the GHG emission reduction project.</i>					
A.1.1. Are the project's spatial (geographical) boundaries clearly defined?	/1/	DR	The Compañía Azucarera Hondureña S.A. Cogeneration Project (also called as "SANTA MATILDE project") is located in the city of Villanueva, Department of Cortes, Honduras.		OK
A.1.2. Are the project's system (components and facilities used to mitigate GHGs) boundaries clearly defined?	/1//1/	DR	The project's system components mainly consist of the following equipments to be and/or already installed in four phases: Phase one was completed in 2005 with the installation of a 900 Psig boiler and two 12 MW turbo generators. The second phase was implemented on 2006 with the installation of one 6 MW turbo generator. The third phase of the project is expected to start in 2009 and will consist of the installation of another 900 psig boiler and an additional 12 MW turbo generator. The last phase of the project (fourth) will start in 2011 with the installation of a fifth turbo generator with an installed capacity of 10 MW. The old generators with capacities of 1.5 and 2.5 MW will be kept as a stand-by option. After the implementation of third	CL-3 CL-7 CL-8	OK

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

Page A-4

Checklist Question	Ref.	MoV*	Comments	Draft Concl	Final Concl
			<p>phase also the 6 MW turbo generator installed during the second phase will be phased out and used as stand-by only. The total increase in the cogeneration capacity due to this project is 46 MW.</p> <p>The system also includes sugar cane milling, steam production, on site use of heat, transmission of electricity to grid and on site use of electricity.</p> <p>The text in the description of the technology to be employed by the project activity is inconsistent with the table presented.</p> <p>In scenario 14, the remaining lifetime of the power plant that was already operated at the project site prior to the implementation of the project needs to be assessed. According to pg 13 of the PDD, the typical technical lifetime is 30 years. The 1.5 MW and 2.5 MW generators are from 1968 and 1974. Further information is requested to demonstrate the remaining lifetime of the equipment.</p> <p>'According to pg. 6 of the PDD, it seems that the 6 MW turbo generator installed in the second phase of the project in 2006, will already be phased out in the third phase of the project in 2009. It needs to be clarified the reasons for installing a new generator, only used in 3 years and then put on stand-by.</p>		

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

Checklist Question	Ref.	MoV*	Comments	Draft Concl	Final Concl
A.2. Technology to be employed <i>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.</i>					
A.2.1. Does the project design engineering reflect current good practices?	/1/	DR	The project involves the installation of boilers and cogeneration systems which reflect current good practices.		OK
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 better 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 and USA. 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

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

Checklist Question	Ref.	MoV*	Comments	Draft Concl	Final Concl
A.2.5. Does the project make provisions for meeting training and maintenance needs?	/1/	DR	The supplier(s) of the boiler(s), turbo generator(s) and the DCS (Distributed Control System) carried on the full training of the plant personnel.		OK
A.3. Contribution to Sustainable Development <i>The project's contribution to sustainable development is assessed.</i>					
A.3.1. Is the project in line with relevant legislation and plans in the host country?	/1/	DR	Compañía Azucarera Hondureña S.A. de C.V. has obtained the environmental license from the 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 N° 269-2003 was granted in Tegucigalpa on 08 December 2003. The specific CDM project activity has been confirmed not to require a specific environmental permit either an EIA.		OK
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 13 December 2005.		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	Since the project involves the installation of new boilers, turbo generators and control systems, it will create new jobs that are related to a technology (equipments) not yet well known (fabricated) in Honduras.		OK

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

Checklist Question	Ref.	MoV*	Comments	Draft Concl	Final Concl
B. Project Baseline <i>The validation of the project baseline establishes whether the selected baseline methodology is appropriate and whether the selected baseline represents a likely baseline scenario.</i>					
B.1. Baseline Methodology <i>It is assessed whether the project applies an appropriate baseline methodology.</i>					
B.1.1. Is the baseline methodology previously approved by the CDM Executive Board?	/1/	DR	<p>The project applies the approved baseline methodology ACM0006 - "Consolidated baseline methodology for grid-connected electricity generation from biomass residues" (version 04) and ACM0002 – "Consolidated baseline methodology for grid-connected electricity generation from renewable sources". (version 06)</p> <p>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". Also the version of the methodology ACM0006 was not addressed.</p>	CL-4	OK
B.1.2. Is the baseline methodology the one deemed most applicable for this project and is the appropriateness justified?	/1/	DR	<p>To confirm if scenario 14 is applicable for this project activity, a clear description of the project site along with the biomass power generation unit prior to the project activity has to be provided. The following clarifications should be included in the same.</p> <ul style="list-style-type: none"> • What was the scenario with the 	CAR-4	OK

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

Checklist Question	Ref.	MoV*	Comments	Draft Concl	Final Concl
			<p>original production capacity of the sugar plant?</p> <ul style="list-style-type: none"> • How much electricity was imported from the grid in that case and how much was self generated? • Whether the same type of biomass was used in the previous system. • Whether the equipment to be installed in the second and third phase was a part of the design plan in 2005. 		
<p>B.2. Baseline Determination</p> <p><i>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.</i></p>					
B.2.1. Is the application of the methodology and the discussion and determination of the chosen baseline transparent?	/1/	DR	<p>The project activity fulfils the applicability conditions of the methodology ACM0006. Baseline scenario no 14 has been selected.</p> <p>For power generation: The generation of power in existing and/or new grid connected power plants (P4) and continuation of power generation in the existing power plants, (P5).</p> <p>The continuation of heat generation in an, existing cogeneration plant, fired with the same type of biomass (bagasse) (H5).</p> <p>For biomass use: The biomass is used for heat and/or electricity generation at the project site (B4).</p> <p>According to ACM0006 scenario 14 ,the net</p>	CL-2	OK

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

Checklist Question	Ref.	MoV*	Comments	Draft Concl	Final Concl
			<p>quantity of increased electricity generation as a result of the project activity shall be determined as follows:</p> $EG_y = EG_{projectplant,y} * \left(1 - \frac{\mathcal{E}_{el,preproject}}{\mathcal{E}_{el,projectplant,y}} \right)$ <p>Clarification is required on whether electricity from the grid was being used for the sugar production facility. And, justification is required on why the project activity without CDM and business as usual scenarios were not considered as alternatives.</p>		
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 Santa Matilde mill.		OK
B.2.5. Is the baseline determination compatible with the available data?	/1/	DR	<p>The reference provided for the statistics of the growth and fall of the Hydro energy sector is</p> <p>http://www.enee.hn/Estadisticas2005/PDF/GraficoCP3.pdf</p>		OK

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

Checklist Question	Ref.	MoV*	Comments	Draft Concl	Final Concl
B.2.6. Does the selected baseline represent the most likely scenario among other possible and/or discussed scenarios?	/1/	DR	See B.2.2.		OK
B.2.7. Is it demonstrated/justified that the project activity itself is not a likely baseline scenario?	/1/	DR	<p>In accordance with ACM0006, the additionality of the project is demonstrated through the “<i>Tool for the demonstration and assessment of additionality</i>” /13/, which includes the following steps:</p> <p><i>Step 0. Preliminary screening based on the starting date of the project activity:</i> The project construction started in 12 May 2003 as evidenced through receipt of design service for generating system and was commissioned on 11 February 2005. Evidence that Compañía Azucarera Hondureña S.A. de C.V. seriously considered the CDM in the decision to proceed with the project was presented in the form of the commercial meeting record of 16 July 2003 in which the possible future carbon credits for the Compañía Azucarera Hondureña S.A. Cogeneration Project were mentioned.</p> <p><i>Step 1. Identification of alternatives to the project activity consistent with current laws and regulations:-</i> 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.</p>	CL-9 CL-10	OK

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

Checklist Question	Ref.	MoV*	Comments	Draft Concl	Final Concl
			<p>The provided alternatives are in compliance with the legal and regulatory requirements.</p> <p><i>Step 2.</i> The project developer has selected the step 3 for demonstrating the additionality. Regarding the financial barrier claimed and as the project is financed by CAHSA with 100 % equity, there is not really an investment barrier. In fact, the additionality is demonstrated through an investment benchmark analysis (step 2 of the additionality tool). Refer to CL in table 3</p> <p><i>Step 3: Barrier Analysis:</i></p> <p>a) <i>Technological and logistic barriers:</i> 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.</p> <p>b) <i>Core Business Barrier.</i> The production of electricity to supply national grid is not the principal business of the mill and the mill owner needed to acquire supplementary knowledge.</p> <p>c) <i>Regulatory Barrier:</i> On 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</p>		

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

Checklist Question	Ref.	MoV*	Comments	Draft Concl	Final Concl
			<p>increasing demand of the country.</p> <p><i>Step 4. Common Practice Analysis:</i> 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. There are only 5 cogeneration projects in Honduras selling energy to ENEC. All of them are participating in CDM activity (at various stages).</p> <p><i>Step 5. Impact of CDM registration:</i> 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.</p> <p>Given the above and in particular the technological and investment barriers the project faces, it is sufficiently demonstrated that the project is not a likely baseline scenario and that emission reductions are thus additional.</p>		
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.		OK
C. Duration of the Project/ Crediting Period <i>It is assessed whether the temporary boundaries of the project are clearly defined.</i>					
C.1.1. Are the project's starting date and operational	/1/	DR	Yes. The project start date is 12 May 2003	CL-5	OK

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

Page A-13

Checklist Question	Ref.	MoV*	Comments	Draft Concl	Final Concl
lifetime clearly defined and reasonable?			with an expected lifetime of 25 years. However, in the item "C.1.1. <i>Starting date of the project activity:</i> " the starting date is 12/05/2003 instead of 15/05/2003.		
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	A 7-year crediting period was defined, starting on 11 February 2005.		OK
D. Monitoring Plan <i>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).</i>					
D.1. Monitoring Methodology <i>It is assessed whether the project applies an appropriate baseline methodology.</i>					
D.1.1. Is the monitoring methodology previously approved by the CDM Executive Board?	/1/	DR	The project applies the approved consolidated monitoring methodology for "grid-connected electricity generation from biomass residues" ACM0006 (version 04). See B.1.1.	CL-4	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 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. Clarification is required on whether the same type of biomass was used in the	CAR-4	OK

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

Checklist Question	Ref.	MoV*	Comments	Draft Concl	Final Concl
			system prior to the project activity.		
D.1.3. Does the monitoring methodology reflect good monitoring and reporting practices?	/1/	DR	Yes, The monitoring intervals have been defined as well as the calibration requirements and QA/QC practices.		OK
D.1.4. Is the discussion and selection of the monitoring methodology transparent?	/1/	DR	Yes.		OK
D.2. Monitoring of Project Emissions <i>It is established whether the monitoring plan provides for reliable and complete project emission data over time.</i>					
D.2.1. Does the monitoring plan provide for the collection and archiving of all relevant data necessary for estimation or measuring the greenhouse gas emissions within the project boundary during the crediting period?	/1/	DR	The project does not use any fossil fuels for start up (1% of bagasse is stored between harvest seasons), and there is no transportation of biomass. Thus no project emissions need to be considered.		OK
D.3. Monitoring of Leakage <i>It is assessed whether the monitoring plan provides for reliable and complete leakage data over time.</i>					
D.3.1. Does the monitoring plan provide for the collection and archiving of all relevant data necessary for determining leakage?	/1/	DR	As per ACM0006, scenario 14, the leakage effects do not need to be addressed.		OK
D.4. Monitoring of Emissions Reduction <i>It is established whether the monitoring plan provides for reliable and complete project emission data over time.</i>					
D.4.1. Does the monitoring plan provide for the collection and archiving of all relevant data	/1/	DR	Data to be monitored includes the net electricity generated, the net increase	CL4	OK

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

Page A-15

Checklist Question	Ref.	MoV*	Comments	Draft Concl	Final Concl
necessary for determining the emissions reduction during the crediting period?			electricity due to the project activity, the average net efficiency of electricity generation, the bagasse burned and the bagasse NCV. The electricity supplied to the grid will not give the actual additional electricity produced by the project. As, some amount of electricity would have been imported from the grid in the absence of the project. This monitoring would not give that figure. The calculation sheet for the grid emission factor is to be submitted for validation.		
D.4.2. Is the choice of baseline indicators, in particular for baseline emissions, reasonable?	/1/	DR	Yes, the choice of the baseline indicators is reasonable.		OK
D.4.3. Will it be possible to monitor / measure the specified baseline indicators?	/1/	DR	Yes.		OK
D.4.4. Will the indicators give opportunity for real measurements of baseline emissions?	/1/	DR	Yes.		OK
D.5. Monitoring of Sustainable Development Indicators/ Environmental Impacts <i>It is checked that choices of indicators are reasonable and complete to monitor sustainable performance over time.</i>					
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 of ACM0006 does not require the monitoring of sustainable development indicators.		OK

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

Checklist Question	Ref.	MoV*	Comments	Draft Concl	Final Concl
D.6. Project Management Planning <i>It is checked that project implementation is properly prepared for and that critical arrangements are addressed.</i>					
D.6.1. Is the authority and responsibility of project management clearly described?	/1/	DR	Compañía Azucarera Hondureña S.A. de C.V. is responsible for the project management.		OK
D.6.2. Is the authority and responsibility for registration, monitoring, measurement and reporting clearly described?	/1/	DR	Compañía Azucarera Hondureña S.A. de C.V. is responsible for the registration, monitoring, measurement and reporting.		OK
D.6.3. Are procedures identified for training of monitoring personnel?	/1/	DR	The supplier(s) of the boiler(s), the turbo generator(s) and the DCS (Distributed Control System) will carry on the full training of the plant's personnel.		OK
D.6.4. Are procedures identified for emergency preparedness for cases where emergencies can cause unintended emissions?	/1/	DR	Not applicable.		OK
D.6.5. Are procedures identified for calibration of monitoring equipment?	/1/	DR	The calibration of the monitoring instruments will be carried out according to the regulations of ENEE, once a year. The NCV will be monitored every six months by a third party independent laboratory		OK
D.6.6. Are procedures identified for maintenance of monitoring equipment and installations?	/1/	DR	See D.6.3		OK
D.6.7. Are procedures identified for monitoring, measurements and reporting?	/1/	DR	Compañía Azucarera Hondureña S.A. de C.V. is responsible for the project monitoring and reporting.		OK
D.6.8. Are procedures identified for day-to-day records handling (including what records to keep,	/1/	DR	Compañía Azucarera Hondureña S.A. de C.V. is responsible for the project monitoring		OK

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

Checklist Question	Ref.	MoV*	Comments	Draft Concl	Final Concl
storage area of records and how to process performance documentation)			and reporting.		
D.6.9. Are procedures identified for dealing with possible monitoring data adjustments and uncertainties?	/1/	DR	The project sponsor will proceed with the necessary measures for the power control and monitoring.		OK
D.6.10. Are procedures identified for review of reported results/data?	/1/	DR	See D.6.8.		OK
D.6.11. Are procedures identified for internal audits of GHG project compliance with operational requirements where applicable?	/1/	DR	Compañía Azucarera Hondureña S.A. de C.V. is responsible for the project monitoring and reporting.		OK
D.6.12. Are procedures identified for project performance reviews before data is submitted for verification, internally or externally?	/1/	DR	See D.6.8.		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.6.8.		OK
E. Calculation of GHG Emissions by Source					
<i>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.</i>					
E.1. Project GHG Emissions					
<i>The validation of ex-ante estimated project GHG emissions focuses on transparency and completeness of calculations.</i>					
E.1.1. Are all aspects related to direct and indirect GHG emissions captured in the project design?	/1/	DR	The project does not use any fossil fuels for start up (1% of bagasse is stored between harvest seasons), and there is no		OK

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

Checklist Question	Ref.	MoV*	Comments	Draft Concl	Final Concl
			transportation of biomass. Thus no project emissions need to be considered.		
E.2.Leakage <i>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.</i>					
E.2.1. Are potential leakage effects beyond the chosen project boundaries properly identified?	/1/	DR	As per ACM0006, leakage needs not to be identified.		OK
E.3.Baseline Emissions <i>The validation of ex-ante estimated baseline GHG emissions focuses on transparency and completeness of calculations.</i>					
E.3.1. Have the most relevant and likely operational characteristics and baseline indicators been chosen as reference for baseline emissions?	/1/	DR	<p>Baseline emissions are from displacement of grid electricity.</p> <p>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 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 does 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.</p> <p>The dispatch data analysis method was not</p>	CL-4 CL-6	OK OK

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

Checklist Question	Ref.	MoV*	Comments	Draft Concl	Final Concl
			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.		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	Yes.		OK
E.3.6. Have the project baseline(s) and the project emissions been determined using the same appropriate methodology and conservative assumptions?	/1/	DR	Yes.		OK
E.4.Emission Reductions <i>Validation of ex-ante estimated emission reductions.</i>					
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 230 927 tCO ₂ e (32 990 tCO ₂ e / year average) over the first renewable 7-year crediting period.		OK

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

Checklist Question	Ref.	MoV*	Comments	Draft Concl	Final Concl
F. Environmental Impacts <i>Documentation on the analysis of the environmental impacts will be assessed, and if deemed significant, an EIA should be provided to the validator.</i>					
F.1.1. Has an analysis of the environmental impacts of the project activity been sufficiently described?	/1/	DR	On the successful completion of the EIA Compañía Azucarera Hondureña S.A. de C.V. obtained from the National Environmental Ministry (Secretaria de Recursos Naturales y Ambiente), the environmental license for operation (environmental license N° 269-2003) was granted in Tegucigalpa on 08 December 2003.		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.		OK
F.1.3. Will the project create any adverse environmental effects?	/1/	DR	See F.1.1.		OK
F.1.4. Are transboundary environmental impacts considered in the analysis?	/1/	DR	See F.1.1.		OK
F.1.5. Have identified environmental impacts been addressed in the project design?	/1/	DR	The environmental impacts have not been indicated in the PDD as they have not been considered significant.		OK
F.1.6. Does the project comply with environmental legislation in the host country?	/1/	DR	Yes.		OK

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

Checklist Question	Ref.	MoV*	Comments	Draft Concl	Final Concl
G. Stakeholder Comments <i>The validator should ensure that a stakeholder comments have been invited and that due account has been taken of any comments received.</i>					
G.1.1. Have relevant stakeholders been consulted?	/1/	DR	<p>The following stakeholders were consulted:</p> <ul style="list-style-type: none"> • Secretariat of National Resources and Environment (SERNA, in Spanish). • General Commission of Evaluation and Environment Control (DECA). • Water Resources Commission (DRH). • Honduran Association of Sugar Producers (APAH). • Center for Pollution Studies and Control. • Municipal Environmental Unit (UMA). • National Electric Company (ENEE). • Secretariat for Agricultural Sanitation (SENASA). • Secretariat for Agriculture and Cattle Rising (SAG). • Independent Service for Aqueducts and Sewer Systems (SANAA). • Local stakeholders. <p>Besides this, two visits from members of the National System of Evaluation of Environmental Impact (SINEIA), local stakeholders were invited, through the publication of a note in a national newspaper (La Prensa), to comment on any issues or conflicts of interest arising from the issuance of the Operational License (Permit). No major issues were raised and</p>		OK

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

Checklist Question	Ref.	MoV*	Comments	Draft Concl	Final Concl
			comments received were incorporated into the final design and operation of the system. The public consultation was evidenced in the newspaper La Prensa.		
G.1.2. Have appropriate media been used to invite comments by local stakeholders?	/1/	DR	See G.1.1.		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	See G.1.1		OK
G.1.4. Is a summary of the stakeholder comments received provided?	/1/	DR	See G.1.1.		OK
G.1.5. Has due account been taken of any stakeholder comments received?	/1/	DR	See G.1.1.		OK

* 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
<p>CAR 1</p> <p>To confirm if scenario 14 is applicable for this project activity, a clear description of the project site along with the biomass power generation unit prior to the project activity has to be provided. The following clarifications should be provided:</p> <ul style="list-style-type: none"> •What was the scenario with the original production capacity of the sugar plant? •How much electricity was imported from the grid in that case and how much was self generated? •Whether the same type of biomass was used in the previous system. •Whether the equipment to be installed in the second and third phases was a part of the design plan in 2005. 	<p>B.1.2</p> <p>D.1.2</p>	<p>In the PDD in section A.4.3 it has been given that old boilers were replaced for new highly efficient 900 psig boiler and steam-powered mills were electrified. Scenario 14 was chosen.</p> <ul style="list-style-type: none"> •What was the scenario with the original production capacity of the sugar plant? See PDD, Annex 3. •How much electricity was imported from the grid in that case and how much was self generated? See PDD, Annex 3. •Whether the same type of biomass was used in the previous system. Yes, the same type of biomass was used in the previous system. •Whether the equipment to be installed in the second and third phase was a part of the design plan in 2005. Yes, it was. 	<p>Complementary information justifies the scenario selection and was considered adequate. This CAR is therefore closed.</p>
<p>CL 1</p> <ul style="list-style-type: none"> •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. <p>The data used for calculation has to be provided along with the data sources.</p>	<p>D.4.1</p> <p>E.3.1</p>	<p>The PDD considers the period 2003-2005 for calculation of Baseline Emission Factor</p>	<p>PDD version 4 addressed the information adequately. The spreadsheet with calculation was presented.</p> <p>This CL is therefore closed</p>

Draft report corrective action requests and requests for clarifications	Ref. to Table 2	Summary of project participants' response	Final conclusion
CL 2 Clarification is required on whether electricity from the grid was being used for the sugar production facility. Moreover, justification is required on why the project activity without CDM and business as usual scenarios were not considered as alternatives.	B.2.1 E.3.1	Yes, electricity from the grid was being used before the Project (see Annex 3). As shown in spreadsheet "Free Cash Flow Analysis - Sta. Matilde.xls", Santa Matilde has incurred in big investments for this project and the possibility of receiving incentives in hard currency (through the sale of the CERs) has an enormous importance for the project owners. This revenue would help them to hedge against the devaluation of the Lempira, the currency that dominates the company's revenue. Beyond increasing the IRR in 604 basis points, the CERs bring the additional benefit of revenue in hard currencies (US dollars or Euro). That revenue allows the investors to hedge against currency devaluation risk. Moreover, the CER revenue in hard currency could be discounted at applicable lower interest rate, thus increasing the project leverage.	Complementary information was considered adequate. This CL is therefore closed.
CL 3 The text in the description of the technology to be employed by the project activity is inconsistent with the table presented.	A.1.2	The text in the description mentions that Santa Matilde project is divided into four phases: Phase 1 (2005), Phase 2 (2007), Phase 3 (2009) and Phase 4 (2011).	Complementary information was considered adequate. This CL is therefore closed
CL 4 The methodology ACM0002 was not addressed in the item " <i>B.1. Title and reference of the approved baseline and monitoring methodology applied to the project activity</i> ". Also the version of the methodology ACM0006 was not addressed. (The version should be indicated by the number or date not by year, once it could be happen more	B.1.1 D.1.1	Methodology ACM0002 was addressed in the item B.1	PDD version 4 addressed the information adequately. 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
than once a year).			
CL 5 However, in the item "C.1.1. <i>Starting date of the project activity:</i> " the starting date is 12/05/2003 instead of 15/05/2003.	C.1.1	The starting date of the project is May 12, 2003. It was corrected in item B.3.	PDD version 4 addressed the information adequately. This CL is therefore closed
CL 6 In 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.	E.3.1	The PDD mentions that the emission factor has been determined following the guidance of methodology ACM0002.	PDD version 4 addressed the information adequately. This CL is therefore closed
CL 7 In scenario 14, the remaining lifetime of the power plant that was already operated at the project site prior to the implementation of the project needs to be assessed. According to pg 13 of the PDD, the typical technical lifetime is 30 years. The 1.5 MW and 2.5 MW generators are from 1968 and 1974. Further information is requested to demonstrate the remaining lifetime of the equipment.	A.1.2	The term "conservatively" was inappropriately used. Common practice in Honduras shows that sugar mill equipment can be used, with good maintenance, for over 60 years. Since most of the older equipments have been recently retrofitted, as stated in section B.4, their remaining lifetime was estimated over 20 years.	Complementary information and review on section B4 of PDD justifies the lifetime of equipment and was considered adequate. This CL is therefore closed
CL 8 According to pg. 6 of the PDD, it seems that the 6 MW turbo generator installed in the second phase of the project in 2006, will already be phased out in the third phase of the project in 2009. It needs to be clarified the reasons for installing a new generator, only used in 3 years and then put on stand-by.	A.1.2	This turbo was purchased with the intention of using it as back up after 2009, as stated in section A.4.3. In case the sugar production increases beyond the foreseen levels, this turbo will operate together with the 10 and 12 MW turbos.	Complementary information explains the condition of 6 MW turbo and was considered adequate. 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
<p>CL 9</p> <p>Since the project is financed by CAHSA with 100 % equity, there is not really an investment barrier. In fact, the additionality is demonstrated through an investment benchmark analysis (step 2 of the additionality tool).</p>	B.2.7	<p>An investment benchmark analysis was done in step 2, section B.5.</p>	<p>PDD version 6 addressed the information adequately.</p> <p>This CL is therefore closed</p>
<p>CL 10</p> <p>The IRR analysis given on pg 20 of the PDD assumes that all investments are in 2005. However, this is not correct as the project is implemented in several phases. Hence, some of the investment 2006, 2009 and 2011 only.</p>	B.2.7	<p>The IRR analysis was done according to your recommendation. Results are shown in step 2, section B.5. See also annexed spreadsheet "Free Cash Flow Analysis without CERs- Sta. Matilde_2007.02.23.xls" and "Free Cash Flow Analysis with CERs- Sta. Matilde_2007.02.23.xls"</p>	<p>PDD version 6 addressed the information adequately.</p> <p>This CL is therefore closed</p>

- o0o -

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-CDMJ1-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

Høvik, 6 November 2006

Einar Telnes
Director, International Climate Change Services

Michael Lehmann
Technical Director



CERTIFICATE OF COMPETENCE

Michael Lehmann

Qualification in accordance with DNV's Qualification scheme for CDM/JI (ICP-9-8-i1-CDMJ1-i1)

GHG Auditor:	Yes		
CDM Validator:	Yes	JI Validator:	--
CDM Verifier:	Yes	JI Verifier:	--
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	AM0027	Yes
ACM002, AMS-I.A-D, AM0019, AM0026, AM0029, AM0045	Yes	AM0028, AM0034	Yes
ACM003, ACM0005, AM0033, AM0040	Yes	AM0030	Yes
ACM0004	Yes	AM0031	Yes
ACM0006, AM0007, AM0015, AM0036, AM0042	Yes	AM0032	Yes
ACM0007	Yes	AM0035	Yes
ACM0008	Yes	AM0038	Yes
ACM0009, AM0008, AMS-III.B	Yes	AM0041	Yes
AM0006, AM0016, AMS-III.D, ACM0010	Yes	AM0034	Yes
AM0009, AM0037	Yes	AM0043	
AM0013, AM0022, AM0025, AM00379, AMS-III.H, AMS-III.I	Yes	AM0046	
AM0014	Yes	AM0047	
AM0017	Yes	AMS-II.A-F, AM0044	Yes
AM0018	Yes	AMS-III.A	Yes
AM0020	Yes	AMS-III.E, AMS-III.F	Yes
AM0021	Yes		
AM0023	Yes		
AM0024	Yes		

Høvik, 5 February 2007

Einar Telnes
Director, International Climate Change Services

Michael Lehmann
Technical Director



CERTIFICATE OF COMPETENCE

Einar Ternes

Qualification in accordance with DNV's Qualification scheme for CDM/JI (ICP-9-8-i1-CDMJ1-i1)

GHG Auditor:	Yes		
CDM Validator:	Yes	JI Validator:	--
CDM Verifier:	Yes	JI Verifier:	--
Industry Sector Expert for Sectoral Scope(s):	Sectoral scope 1, 2, 3 6 & 10		
Technical Reviewer for (group of) methodologies:			
ACM0001, AM0002, AM0003, AM0010, AM0011, AM0012, AMS-III.G	Yes	AM0027	Yes
ACM002, AMS-I.A-D, AM0019, AM0026, AM0029, AM0045	Yes	AM0028, AM0034	Yes
ACM003, ACM0005, AM0033, AM0040	Yes	AM0030	Yes
ACM0004	Yes	AM0031	Yes
ACM0006, AM0007, AM0015, AM0036, AM0042	Yes	AM0032	Yes
ACM0007	Yes	AM0035	Yes
ACM0008	Yes	AM0038	Yes
ACM0009, AM0008, AMS-III.B	Yes	AM0041	Yes
AM0006, AM0016, AMS-III.D, ACM0010	Yes	AM0034	Yes
AM0009, AM0037	Yes	AM0043	
AM0013, AM0022, AM0025, AM00379, AMS-III.H, AMS-III.I	Yes	AM0046	
AM0014	Yes	AM0047	
AM0017	Yes	AMS-II.A-F, AM0044	Yes
AM0018	Yes	AMS-III.A	Yes
AM0020	Yes	AMS-III.E, AMS-III.F	Yes
AM0021	Yes		
AM0023	Yes		
AM0024	Yes		

Høvik, 5 February 2007

Einar Ternes
Director, International Climate Change Services

Michael Lehmann
Technical Director



CERTIFICATE OF COMPETENCE

Filipe Tavares

Qualification in accordance with DNV's Qualification scheme for CDM/JI (ICP-9-8-i1-CDMJ1-i1)

GHG Auditor:	Yes		
CDM Validator:	Yes	JI Validator:	--
CDM Verifier:	Yes	JI Verifier:	--
Industry Sector Expert for Sectoral Scope(s):	Sectoral scope 9 & 13		

Høvik, 6 November 2006

Einar Telnes
Director, International Climate Change Services

Michael Lehmann
Technical Director

Miguel Rescalvo

Qualification in accordance with DNV's Qualification scheme for CDM/JI (ICP-9-8-i1-CDMJ1-i1)

GHG Auditor:	Yes		
CDM Validator:	Yes	JI Validator:	--
CDM Verifier:	--	JI Verifier:	--
Industry Sector Expert for Sectoral Scope(s):	--		

Høvik, 6 November 2006

Einar Telnes
Director, International Climate Change Services

Michael Lehmann
Technical Director



CERTIFICATE OF COMPETENCE

Subhendu Biswas

Qualification in accordance with DNV's Qualification scheme for CDM/JI (ICP-9-8-i1-
CDMJ1-i1

<i>GHG Auditor:</i>	Yes		
<i>CDM Validator:</i>	Yes	<i>JI Validator:</i>	--
<i>CDM Verifier:</i>	--	<i>JI Verifier:</i>	--
<i>Industry Sector Expert for Sectoral Scope(s):</i>	Sectoral scope 10		

Høvik, 22 December 2006

Einar Telnes
Director, International Climate Change Services

Michael Lehmann
Technical Director