VALIDATION REPORT

"LA GRECIA COGENERATION PROJECT" IN HONDURAS

REPORT NO. 2005-0973

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DET NORSKE VERITAS

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VALIDATION REPORT

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Summary:

Det Norske Veritas Certification Ltd. (DNV) has performed a validation of the ”La Grecia 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 and the baseline and monitoring plan, 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 7 March 2007, meets all relevant UNFCCC requirements for the CDM and correctly applies the approved baseline and monitoring methodology ACM0006 - version 04. Hence, DNV will request the registration of the ”La Grecia Cogeneration Project” as a CDM project activity.

Report No.: 2005-0973	Subject Group: Environment	
Report title: ”La Grecia Cogeneration Project” in Honduras		
Work carried out by: Luis Filipe Tavares; Michael Lehmann		
Work verified by: Miguel Rescalvo (acting). Einar Telnes		
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Abbreviations

BAU	"Business as usual"
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
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

Azucarera La Grecia S.A. de C.V. has commissioned Det Norske Veritas Certification Ltd. (DNV) to perform a validation of the ”La Grecia Cogeneration Project”, located in the municipality of Marcovia, Department of Choluteca, Honduras (hereafter called “the project”).

This report summarizes the findings of the validation of the project, performed based on UNFCCC and host Party criteria’s 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. Michael Lehmann	DNV Oslo	Energy 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 assessing the project design. In particular, the project's baseline, the 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 (CER's).

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 relevant decisions by the CDM Executive Board, including the baseline and monitoring methodology ACM0006 - version 04. The validation team has employed, based on the recommendations in the Validation and Verification Manual /15/ a risk-based approach, focusing on the identification of significant risks for project implementation and the generation of CER’s.

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

1.3 Description of Proposed CDM Project

The ”La Grecia Cogeneration Project”, located in the municipality of Marcovia, Department of Choluteca, in the Southeast region of Honduras, proposes to increase the efficiency in the production of electricity from bagasse, a by product during production of sugar. The project allows Azucarera La Grecia S.A. de C.V. to supply electricity to the grid, increasing its efficiency from 30 kWh/ton of sugar cane to 67.78 kWh/ton of sugar cane. 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 energy produced by

fossil-fuelled thermal plants to that grid. The construction of LA Grecia Cogeneration Project started on 1 June 2002.

Emission reductions are claimed from displacing grid electricity with electricity generated by the mill and supplied to the grid. The estimated amount of GHG emission reductions from the project is calculated to be 367 000 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 52 429 tCO_2e.

2 METHODOLOGY

The validation consisted of the following three phases:

i) a desk review of the project design and the baseline and monitoring methodology;
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 /15/. 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 ”La Grecia Cogeneration Project” is enclosed in Appendix A to this report.

Findings established during the validation are seen as either a non-fulfilment of validation protocol 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 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 PDD /1/ submitted by Azucarera La Grecia S.A. de C.V. and Ecoinvest in 29 July 2005, was reviewed. However, this documentation was based on the baseline and monitoring methodology AM0015 which on 28 November 2005 was replaced by the consolidated baseline and monitoring methodology ACM0006. A revised version of the PDD /3/ applying ACM0006 (Version 2) was submitted and assessed by DNV. Due to the approval of the version 04 of the methodology the PDD was revised on 7 March 2007 /4/ was submitted by Ecoinvest for validation.

In addition, spreadsheets containing detailed calculations for the combined margin emission coefficient /5/ that is applied by the project and CERs calculations /6/ were assessed as a part of the validation.

Other documents like the Environmental Licence /10/ and a copy of the newspaper /9/ related to the local stakeholders' invitation for comments were verified during the interviews. Other assessed documents are listed in the section "references" below.

2.2 Follow-up Interviews

On 28 September 2006, DNV performed interviews with a representative of Ecoinvest and Azucarera la Grecia to confirm selected information and to resolve issues identified in the document review. The main topics of the interview are summarised in Table 1.

Table 1 Interview topics

Interviewed organisation	Interview topics
Ecoinvest Azucarera la Grecia	➢ 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 need to be clarified for DNV's positive conclusion on the project design.

The initial validation of the project identified some c*orrective action requests* and requests for c*larification.* 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 7 March 2007 addressed the *corrective action requests* and *requests* for *clarification* to DNV's satisfaction and incorporate 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 "La Grecia 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 7 March 2007.

3.1 Participation Requirements

The project participants are Azucarera La Grecia 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./13//14/

The "La Grecia Cogeneration Project" has received the Letters of Approval from the DNA of Honduras (dated 07 November 2005) /13/ and from the DNA of Japan (dated 27 October 2005) /14/.

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 /13/.

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 more efficient boilers and turbo generators. La Grecia is expected to increase efficiency from current 30 kWh/ ton of sugar cane to 67.78 kWh/ ton of sugar cane with a final installed capacity (not considering the equipment in stand by) of 34.75 MW.

The project envisages two phases. The first phase (2002) consisted in the installation of a new 600 psi boiler and a new 16 MW turbo generator. The second phase (2006) consists of the installation of a new 900 psi boiler and a new 18.75 turbo generator, phasing out two old 250 psi boilers. The old generators are kept in stand-by.

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 15 November 2002. The starting date of the project activity was 01 June 2002. 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"*. /16/ in combination with ACM0002, version 06, "*Consolidated baseline methodology for grid-connected electricity generation from renewable sources"*, /17/

The selected methodology is applicable to the "La Grecia Cogeneration Project" as this 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 do not require to be prepared before being used as fuel.

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 (Azucarera La Grecia S.A. de C.V.) is located.

Baseline scenario 14 has been selected and is justified:

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 were installed in 1978. The old turbos were installed in 1978 (turbo 1) and in 1996 (turbo 2). 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 /12/ and is also referenced in technical literature /12/. 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 Azucarera la Grecia 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*" /18/, which includes the following steps:

Step 0. Preliminary screening based on the starting date of the project activity: The project construction started in 01 June 2002 and the first phase was commissioned in November 2002. The evidence demonstrating that "Azucarera La Grecia S.A. de C.V." seriously considered the CDM in the decision to proceed with the project was verified trough the email from Guillermo Lippman , La Grecia President to Ecoinvest of 15 March 2001 which mention the proposal for the future carbon credit of Azucarera La Grecia S.A. de C.V. Furthermore, the company staff participated in a number of events related to the commercialization of emissions reduction derived from cogeneration activities during 2001 and 2002. Since the project requested validation prior to 31 December 2005 (version 01 of the PDD was published for comments in August 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 baseline scenarios are 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 /7/ to be 20.3% which is below the benchmark IRR selected i.e. the active interest rates in Honduras (around 31%) at the time the investment decision was made. This benchmark value has been confirmed by Banco Atlántida /7/and similar values can be found in publicly available literature as the Estudio Económico de America Latina y el Caribe, 2003-2004 by ECLAC /7/.. The project involves an investment above 266 millions Lempiras in two phases. The electricity tariff applied in the IRR is taken from the PPA.

A sensitivity analysis has been performed by increasing the project revenues by 10% and decreasing the operational costs. In the best case the IRR reaches 22.8%, below the benchmark. Hence, it can be concluded that the project is not financially attractive and thus is additional under normal financial conditions.

Step 3: Barrier Analysis: Technological barriers, and investment barriers presented in the PDD:

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 staffs of the project proponent are not skilled enough 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 Azucarera La Grecia 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 widespread among the sugar cane producers in Honduras, this power generation is only for self consumption, which is the prevailing practice. The Honduras sugar producers association has confirmed /12/ that six out of seven sugar producers are generating electricity for own consumption and selling energy to ENEE. There are 5 cogeneration projects undertaken as CDM projects. All of them are aiming to participate in the CDM (at various stages of implementation).

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 demmed 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*"." /16/.

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 fossil fuel used for start ups, 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.

Azucarera La Grecia S.A. de C.V. is responsible for the project monitoring and reporting.

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.

Algorithms and formulas used for emission reduction calculations are clearly established.

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 minus the emissions attributable to the project activity.

A small amount of bunker oil was used for start-up in 2003 and 2004. The emissions from co-firing fossil fuels for start-ups are calculated as per the methodology (159 tCO_{2e} in 2003 and 524 tCO_2e in 2004). The project utilizes the bagasse produce at the site and this has no transportation needs. No other project emissions are foreseen.

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 ($\varepsilon_{el,pre\ project}$) 0.010 $MWh_{el}/MWh_{biomass}$, is calculated *ex-ante* (average for the last three seasons, 1999-2001) 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 bagasse NCV value is 2.58 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 system of the Honduran grid. The combined margin emission coefficient for the grid is determined *ex-ante* in accordance with ACM0002 version 06. The calculations /5/ 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 during 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 /5/. 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).

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

3.7 Environmental Impacts

Azucarera La Grecia S.A. de C.V. was granted an Environmental License (nº 203-2002) issued on 11 November 2002 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) and the emission of the Mitigation Contract. /10/

The project design did not identified/addressed 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 Tribuna) /9/. The SINEIA issued comments related to the operation of the cogeneration facility and were solved before the environmental license was granted. With a view to carrying out a more specific process focused on the CDM project, the project developer invited for comments to the several Municipalities of Cortes Department on 1 March 2007 sending letters to the Sugar Producers Association of Honduras, Environment Unit of Marcovia municipality and to National Animal Health Service. The letters and the confirmation of receipt have been assessed by DNV. Four comments were received, all supporting the project.

4 COMMENTS BY PARTIES, STAKEHOLDERS AND NGOS

DNV Certification published the PDD of 15 March 2006 on the DNV Climate Change web site (http://www.dnv.com/certification/ClimateChange) and Parties, stakeholders and NGOs are, through the UNFCCC CDM web site, invited to provide comments during the period from 24 May 2006 to 22 June 2006. No comments were received.

Prior to this, The PDD of 29 July 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 15 August 2005 to 14 September 2005. No comments were received in this earlier call.

5 VALIDATION OPINION

Det Norske Veritas Certification Ltd. (DNV) has performed a validation of the ""La Grecia Cogeneration Project"" located in the municipality of Marcovia, Department of Choluteca, 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 Azucarera La Grecia 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 "La Grecia Cogeneration Project" received the Letters of Approval from the DNA of Honduras (dated 07 November 2005) and from the DNA of Japan (dated 27 October 2005).

By promoting renewable energy, the project is in line with the current sustainable development priorities of Honduras.

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 and capacity of the prevailing bagasse based energy generation by adding an additional generation capacity, which will allow Azucarera La Grecia 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 06- "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 average annual estimated emissions reduction is 52 429 tCO_{2e}/year during the first seven year crediting period starting on 15 November2002. Given that the project operates as designed, the project is likely to achieve the estimated amount of emission reductions.

Local stakeholder comments were invited trough the newspaper La Tribuna. 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 ""La Grecia Cogeneration Project"", as described in the revised and resubmitted project design document of 7 March 2007, meets all relevant UNFCCC requirements for the CDM and correctly applies the approved baseline and monitoring methodology ACM0006 - version 04. Hence, DNV will request the registration of the ""La Grecia 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 ”La Grecia Cogeneration Project”, Version 2 of 29 July 2005;

/2/ Ecoinvest: Project Design Document for the ”La Grecia Cogeneration Project” Version 4 of 15 March 2006;

/3/ Ecoinvest: Project Design Document for the ”La Grecia Cogeneration Project” Version 6 of 29 September 2006;

/4/ Ecoinvest: Project Design Document for the ”La Grecia Cogeneration Project” Version 8 of 7 March 2007;

/5/ Ecoinvest: Spreadsheet for calculation of Baseline Emission Factor (Baseline Emission Factor - Honduras - Ecoinvest v.2006.05.31.xls).

/6/ Ecoinvest: La Grecia_CERs_calculation_scenario 14_2006.09.14. and versions 2007.02.22 and 2007.03.07

/7/ Spreadsheet calculation IRR 2007.03.07

/8/ Banco Atlantida. Honduras interest rates.

/9/ Newspaper La Tribuna with description of ”La Grecia Cogeneration Project”.

/10/ Environmental License # 203/2002 issued by Secretaria de Recursos Naturales e Ambiente on 11 November 2002.

/11/ E-mail from Guillermo Lippman , La Grecia President to William Pazos of Ecoinvest on 15 March 2001 were was mentioned the proposal for the future carbon credit of Azucarera La Grecia S.A. de C.V..

/12/ Letter from the Honduras sugar producers association.
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- 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.

/13/ National Environmental Ministry (Secretaria de Recursos Naturales y Ambiente) (DNA of Honduras): *Letter of Approval* dated 07 November 2005.

/14/ The Liasons committee for the Utilization of the Kyoto Mechanisms’ (DNA of Japan): *Letter of Approval* dated 27 October 2005.

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

/15/ International Emission Trading Association (IETA) & the World Bank’s Prototype Carbon Fund (PCF): *Validation and Verification Manual*. http://www.vvmanual.info

/16/ CDM-EB: *Approved Consolidated Baseline and Monitoring Methodology ACM0006 - "Consolidated baseline methodology for grid-connected electricity generation from biomass residues"*, version 04.

/17/ CDM-EB: *Approved Consolidated Baseline and Monitoring Methodology ACM0002 - "Consolidated baseline methodology for grid-connected electricity generation from renewable sources"*, version 06.

/18/ CDM Executive Board: *Tool for the demonstration and assessment of additionality*. Version 03

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APPENDIX A

CDM VALIDATION PROTOCOL
”LA GRECIA COGENERATION PROJECT”

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	OK	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 This has been confirmed by the DNA of Honduras. (Letter of Approval of 7 November 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 DNA of Honduras: Letter of Approval dated 7 November 2005.
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 07 November 2005. DNA of Japan: Letter of Approval 27 October 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	Decision 17/CP.7, CDM Modalities	OK	The validation did not reveal any information that indicates that the project can be seen as a diversion of ODA funding

Requirement	Reference	Conclusion	Cross Reference / Comment
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.	and Procedures Appendix B, § 2		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 "Secretaría de Recursos Naturales y Ambiente" (SERNA). 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 Articles 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	CDM Modalities	OK	Table 2, Section B.1.1 and D.1.1

Requirement	Reference	Conclusion	Cross Reference / Comment
previously approved by the CDM Executive Board.	and Procedures §37e		
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 comments have been made publicly available	CDM Modalities and Procedures §40	OK	DNV Certification published the "La Grecia Cogeneration Project" PDD 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 24 May 2006 to 22 June 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 CER's for decreases in activity levels outside the project activity or due to force majored	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	PDD is in accordance with CDM-PDD (version 03 of 28 July 2006).

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	Yes. The "La Grecia Cogeneration Project", is located in the municipality of Marcovia, Department of Choluteca, Honduras.		OK
A.1.2. Are the project's system (components and facilities used to mitigate GHG's) boundaries clearly defined?	/1/	DR	The projects system boundaries have been clearly defined. The components of the project activity include a 600 PSIG boiler with a 16 MW backpressure turbo-generator and a 900 PSIG high pressure boiler with a condensing type 18.75 MW turbo generator, which will be installed in 2 phases. The systems also include al the accessories. The new systems will slowly phase out the existing boilers and the cogeneration system, also based on the same biomass.		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 I	Yes. The project design engineering reflects good practice through the use of Rankine steam cycle 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 I	Yes. The technology used is the Rankine technology adopted worldwide. The project involves expanding the cogeneration capacity of the sugar mill, which will allow for the generation of excess electricity to be supplied to the grid. Hence the technology will result in better performance than the existing biomass based cogeneration unit		OK
A.2.3. Is the project technology likely to be substituted by other or more efficient technologies within the project period?	/1/	DR I	The project is unlikely to be replaced by other more efficient technologies, at least within the first 7 years crediting period. However the lifetime of equipment was not evidenced.	~~CAR 2~~	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 I	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
A.2.5. Does the project make provisions for meeting training and maintenance needs?	/1/	DR	The PDD does not state if provisions have been made for the training and maintenance needs. These need clarification.	~~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	La Grecia has a signed a PPA with the National Electric Company (ENEE). Azucarera La Grecia S.A. de C.V. has been granted an Environmental License (nº 203-2002)		OK

Checklist Question	Ref.	MoV*	Comments	Draft Concl.	Final Concl.
			issued on 11 November 2002 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) and the emission of the Mitigation Contract.		
A.3.2. Is the project in line with host-country specific CDM requirements?	/1/	DR	The DNA of Honduras issue the Letter of Approval on 07 November 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 I	The project is expected to bring social (employment) and economic benefits and to reduce the dependency on fossil fuels in Honduras, thus contributing to the sustainable development objectives of the Honduran Government.		OK
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/ /16/	DR	The project applies the approved baseline methodology ACM0006 - version 04, *"Consolidated baseline methodology for grid-connected electricity generation from biomass residues"*.		OK

Checklist Question	Ref.	MoV*	Comments	Draft Concl.	Final Concl.
B.1.2. Is the baseline methodology the one deemed most applicable for this project and is the appropriateness justified?	/1/ /16/	DR	The project activity fulfils the applicability criteria of ACM0006. The project activity complies with scenario 14 instead of the selected scenario 12 of ACM0006. Clarification is required on the residual life of the existing biomass boiler and power generation system and its date of installation. Clarification and evidence is also required on whether the equipment to be installed in the second phase was a part of the design plan in 2002.	~~CAR 1~~ ~~CL 2~~	OK
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/ /16/	DR I	As per ACM0006, the applicability condition the project activity conforms to the energy efficiency baseline scenario among alternatives. The project activity also fulfils all the applicability conditions of the methodology. It has been demonstrated that the extra bagasse generation in the plant is not due to the project activity but due to increase in the demand of sugar. Baseline scenario 14 has been selected and is justified. 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).	~~CL 3~~	OK

Checklist Question	Ref.	MoV*	Comments	Draft Concl.	Final Concl.
			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: $EG_y = EG_{projectplant,y} * \left(1 - \frac{\varepsilon_{el,preproject}}{\varepsilon_{el,projectplant,y}}\right)$ The following clarifications are required: 1) there is no transportation of biomass used as raw material for this cogeneration plant. 2) no fossil fuel is being used for start up or any other project activity.		
B.2.2. Has the baseline been determined using conservative assumptions where possible?	/1/ /5/	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 La Grecia.		OK
B.2.5. Is the baseline determination compatible with the available data?	/1/ /5/ /16/	DR	The reference provided for the statistics of the growth and fall of the energy sector is http://www.enee.hn/Estadisticas2005/PDF/GraficoCP3.pdf		OK

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 I	The selected baseline scenario for the project activity is producing an equivalent amount of electricity by the current mix of the Honduran electricity grid. It is to be justified as to why the project activity without CDM revenues and business as usual scenarios were not considered for the baseline.	~~CL 4~~	OK
B.2.7. Is it demonstrated/justified that the project activity itself is not a likely baseline scenario?	/1/ /16/ /18/	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 project construction started in June 2002 and was commissioned in November 2002. Evidences have been provided the CDM was considered for deciding on the investment in this project. *Step 1. Identification of alternatives to the project activity consistent with current laws and regulations*:- The possible baseline scenarios are identified, i.e. i) the generation of an equivalent amount of electricity by the current mix in the Honduran grid system ii) the project itself. The provided alternative is in compliance with the legal and regulatory requirements. *Step 2.* The project's IRR is lower than the active interest rates in Honduras (around 31%) at the time the investment decision was made. A sensitive analysis shows that even when the operating costs decrease by 10% or the	~~CL 4~~	OK

Checklist Question	Ref.	MoV*	Comments	Draft Concl.	Final Concl.
			revenues increase by 10% the project's IRR is still below the benchmark. *Step 3: Barrier Analysis*: a number of barriers prevent the implementation of the project i.e. producing electricity is not the core business of the company; the technology is required to be imported and the regulatory situation in the country does not support this kind of inititatives. *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 is the prevailing practice. There are 5 cogeneration projects in Honduras selling energy to ENEE. All of them are aiming to participate in the CDM activity (various stages). *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.		
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	The reference for the statement of high interests being charged by local banks (31% for loans based in Lempiras and 15% for loans based in US dollars has not been given.	~~CL 4~~	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	The construction of the La Grecia Cogeneration Project started on 01/06/2002. The expected operational lifetime of the project activity is 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	The project applies a renewable crediting period of 7 years starting from 15th Nov 2002.		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/ /16/	DR	Yes. The project applies the approved monitoring methodology ACM0006 - version 04, *"Consolidated baseline 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/ /16/	DR	Yes. The methodology is applicable for the following reasons: The same type of biomass as used in the		OK

Checklist Question	Ref.	MoV*	Comments	Draft Concl.	Final Concl.
			existing unit will be used in the project activity. The increase in the biomass 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/ /16/	DR I	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 fossil fuel used for start ups, the quantity of bagasse burned and its NCV. The data will be archived in electronic form and be kept for two years after the end of the last crediting period.		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 necessary for estimation or measuring the greenhouse gas emissions within the project boundary during the crediting period?	/1/ /16/	DR I	Since the project is cogeneration using renewable biomass, there will not be any project emissions. However, it has to be clarified whether the project will use any fossil fuel during start up activities.	~~CL 3~~	OK
D.2.2. Are the choices of project GHG indicators reasonable?	/1/	DR	See D.2.1		OK
D.2.3. Will it be possible to monitor / measure the	/1/	DR	See D.2.1		OK

Checklist Question	Ref.	MoV*	Comments	Draft Concl.	Final Concl.
specified project GHG indicators?					
D.2.4. Will the indicators give opportunity for real measurements of achieved emission reductions?	/1/	DR	See D.2.1		OK
D.2.5. Will the indicators enable comparison of project data and performance over time?	/1/	DR	See D.2.1		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/ /16/	DR	As per ACM0006, scenario 14, the leakage effects do not need to be addressed.		OK
D.3.2. Are the choices of leakage indicators reasonable?	/1/ /16/	DR	NA		OK
D.3.3. Will it be possible to monitor / measure the specified leakage indicators?	/1/ /16/	DR	NA		OK
D.3.4. Will the indicators give opportunity for real measurements of leakage effects?	/1/ /16/	DR	NA		OK
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 I	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). Accordingly the following will be monitored. • electricity supply to the grid	~~CL 5~~	OK

Checklist Question	Ref.	MoV*	Comments	Draft Concl.	Final Concl.
			• Grid emission factor – fixed ex-ante for the crediting period. The calculation sheet for the grid emission factor is to be furnished for verification.		
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 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 *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/ /16/	DR	The baseline and monitoring methodology of ACM0006 does not require the monitoring of sustainable development indicators neither Honduras requires the sustainable development indicators to be monitored.		OK
D.5.2. Is the choice of indicators for sustainability development (social, environmental, economic) reasonable?	/1/ /16/	DR	See D.5.1		OK
D.5.3. Will it be possible to monitor the specified sustainable development indicators?	/1/ /16/	DR	See D.5.1		OK
D.5.4. Are the sustainable development indicators in line with stated national priorities in the Host Country?	/1/ /16/	DR	See D.5.1		OK

Checklist Question	Ref.	MoV*	Comments	Draft Concl.	Final Concl.
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	The authority and responsibility of the project management has been clearly described.		OK
D.6.2. Is the authority and responsibility for registration, monitoring, measurement and reporting clearly described?	/1/	DR	The authority and responsibility of the project management has been clearly described.		OK
D.6.3. Are procedures identified for training of monitoring personnel?	/1/	DR	Procedures for training of monitoring personnel have not been addressed and needs clarification.	~~CL 1~~	OK
D.6.4. Are procedures identified for emergency preparedness for cases where emergencies can cause unintended emissions?	/1/	DR	Procedures for emergency preparedness for cases where emergencies can cause unintended emissions have not been addressed and need clarification.	~~CL 1~~	OK
D.6.5. Are procedures identified for calibration of monitoring equipment?	/1/	DR	The equipment that will be used for monitoring has to be defined, along with the procedure for calibration.	~~CL 1~~	OK
D.6.6. Are procedures identified for maintenance of monitoring equipment and installations?	/1/	DR	Procedures for maintenance of equipment and installation have not been addressed and need clarification.	~~CL 1~~	OK
D.6.7. Are procedures identified for monitoring, measurements and reporting?	/1/	DR	Procedures for monitoring, measurements and reporting have not been addressed and need clarification.	~~CL 1~~	OK
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	Procedures for record handling have not been addressed.	~~CL 1~~	OK
D.6.9. Are procedures identified for dealing with	/1/	DR	Procedures for dealing with possible monitoring	~~CL 1~~	OK

Checklist Question	Ref.	MoV*	Comments	Draft Concl.	Final Concl.
possible monitoring data adjustments and uncertainties?			data adjustments and uncertainties have not been addressed.		
D.6.10. Are procedures identified for review of reported results/data?	/1/	DR	Procedures for review of reported results have not been addressed.	~~CL 1~~	OK
D.6.11. Are procedures identified for internal audits of GHG project compliance with operational requirements where applicable?	/1/	DR	Procedures for internal audits have not been addressed.	~~CL 1~~	OK
D.6.12. Are procedures identified for project performance reviews before data is submitted for verification, internally or externally?	/1/	DR	Procedures for project performance reviews have not been addressed.	~~CL 1~~	OK
D.6.13. Are procedures identified for corrective actions in order to provide for more accurate future monitoring and reporting?	/1/	DR	Procedures for corrective actions have not been addressed.	~~CL 1~~	OK
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/ /16/	DR I	Since the project is cogeneration using renewable biomass, there will not be any project emissions. However, it has to be clarified whether the project will use any fossil fuel during start up activities.	~~CL 3~~	OK
E.1.2. Are the GHG calculations documented in a complete and transparent manner?	/1/	DR	See D.2.1		OK

Checklist Question	Ref.	MoV*	Comments	Draft Concl.	Final Concl.
E.1.3. Have conservative assumptions been used to calculate project GHG emissions?	/1/	DR	See D.2.1		OK
E.1.4. Are uncertainties in the GHG emissions estimates properly addressed in the documentation?	/1/	DR	See D.2.1		OK
E.1.5. Have all relevant greenhouse gases and source categories listed in Kyoto Protocol Annex A been evaluated?	/1/	DR	See D.2.1		OK
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.*					
E.2.1. Are potential leakage effects beyond the chosen project boundaries properly identified?	/1/	DR	No potential emission sources of leakage were established by Azucarera La Grecia S.A. de C.V.		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

Checklist Question	Ref.	MoV*	Comments	Draft Concl.	Final Concl.
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/ /16/	DR	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 - version 06 as required by ACM0006. 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 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.	~~CL 5~~	OK
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	The GHG calculations are documented in a complete and transparent manner.		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	/1/	DR	Yes		OK

Checklist Question	Ref.	MoV*	Comments	Draft Concl.	Final Concl.
documentation?					
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 *Validation of ex-ante estimated emission reductions*.					
E.4.1. Will the project result in fewer GHG emissions than the baseline scenario?	/1/ /16/	DR	The estimated amount of GHG emission reductions from the project is calculated to be 367 000 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 52 429 tCO_2e.		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/		Azucarera La Grecia S.A. de C.V. has been granted an Environmental License (nº 203-2002) issued on 11 November 2002 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) and the emission of the Mitigation Contract.		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	/1/	DR	See F.1.1		OK

Checklist Question	Ref.	MoV*	Comments	Draft Concl.	Final Concl.
environmental effects?					
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	See F.1.1		OK
F.1.6. Does the project comply with environmental legislation in the host country?	/1/	DR	See F.1.1		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	The environment licence evidence the approval of Honduras DNA and all Government agencies consulted, however the linkage between the environmental licensing and the stakeholders invitation on starting of CDM project was not clearly evidenced.	~~CAR 3~~	OK
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

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 The project activity complies with scenario 14 instead of the selected scenario 12/11 of ACM0006.	B.1.2	PDD revised for scenario 14.	Revised PDD was corrected to address scenario 14. The project involves phasing out of the existing equipment by more energy efficient equipment which is the case of scenario 14. The increase in capacity is justified to be part of the sugar business development as highlighted in section 3.3 above. Furthermore, The phasing out of equipment over two phases result in efficiency improvement in phases and formulae applied in scenario 14 allows a better reflection of the emission reductions. This CAR is therefore closed.
CAR 2 The lifetime of project equipment is not evidenced	A.2.3	A letter from Honduras Sugar Producers Association clarify that 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 is also supported by literature provided in the PDD.	Complementary information evidenced the lifetime of equipment and was considered adequate. This CAR is therefore closed
CAR 3 The environment licence evidence the approval of Honduras DNA and all Government agencies consulted, however the linkage between the environmental licensing and the stakeholders invitation on starting of CDM project was not clearly evidenced	G.1.1	The public consultation was evidenced in the newspaper La Tribuna of 29 March 2002. Complementarily, new invitation to others stakeholders were issued on March 2007	With a view to carrying out a more specific process focused on the CDM project, the project developer invited for comments to the several Municipalities of Cortes Department on 1 March 2007 sending letters to the Sugar Producers Association of Honduras, Environment Unit of Marcovia municipality and to National Animal Health

Draft report corrective action requests and requests for clarifications	Ref. to Table 2	**Summary of project participants' response**	**Final conclusion**
			Service. The letters and the confirmation of receipt have been assessed by DNV. Four comments were received, all supporting the project. This CAR is therefore closed
CL 1 The PDD does not state if provisions have been made for the training and maintenance needs. These need clarification. • Procedures for training of monitoring personnel have not been addressed and needs clarification. • Procedures for emergency preparedness for cases where emergencies can cause unintended emissions have not been addressed and need clarification. • The equipment that will be used for monitoring has to be defined, along with the procedure for calibration. • Procedures for maintenance of equipment and installation have not been addressed and need clarification. • Procedures for monitoring, measurements and reporting have not been addressed and need clarification. • Procedures for record handling have not been addressed. • Procedures for dealing with possible monitoring data adjustments and uncertainties have not been addressed. • Procedures for review of reported results	A.3.1 D.6.3 D.6.4 D.6.5 D.6.6 D.6.7 D.6.8 D.6.9 D.6.10 D.6.12	Data that has to be monitored during the life of the contract are the total quantity of electricity generated at the project site (EG total,y), the net quantity of electricity generated in the project plant (EG project plant,y) and the quantity of bagasse (and its NCV) used yearly. The project owner will continuously measure these values. The electricity data will be monitored by the meters installed at the substation of the cogeneration system and compiled in a spreadsheet. The amount of electricity will be corroborated with the invoices to be electrical company and in case of discrepancies, the latter will prevail. The project sponsor will proceed with the necessary measures for the power control and monitoring, according to the information produced by ENEE. La Grecia are responsible for the project monitoring and reporting. The calibration of the monitoring	Complementary information evidenced the management and responsibility and training 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**
have not been addressed. • Procedures for internal audits have not been addressed. • Procedures for project performance reviews have not been addressed. • Procedures for corrective actions have not been addressed.		instruments will be done according to the regulations of ENEE The plant has oxygen monitoring to ensure that combustion is effective, and also hydrogen monitoring, to detect any leaks. And there is a system to capture solid particles generated in the boiler. The plant has a DCS (Distributed Control System) that monitors, reports and records all relevant process variables and manages corrective actions. There is full training of the plant personnel each season. To review project performance meetings are scheduled with staff engineers and consultants.	
CL 2 Additional information is requested with respect to: • Whether the equipment to be installed in the second phase was a part of the design plan in 2002. • The residual life of the existing biomass boiler and power generation system and its date of installation.	B.1.2	According to the manufacturers, the estimated lifetime of sugar mill equipment is 30 years. The common practice in Honduras shows that sugar mill equipment can be used, with good maintenance, for over 60 years. It can be added that the equipments are used at most 5 months per year, during the harvest period. The two old boilers in La Grecia have been working since 1978. The old turbo were installed in 1978 (turbo 1) and in 1996 (turbo 2). All the four equipments will continue	Complementary information evidenced the lifetime of facilities 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**
		to be used as stand-by. Yes, the equipment installed in the second phase was a part of the design plan in 2002.	
CL 3 As per the ACM0006 methodology, the transportation of biomass and use of fossil fuel in project activity should be taken into consideration for the calculation of the project emissions.	B.2.1 E.1.1	A small amount of bunker oil was used for the biomass plant start-up in 2002 and 2003. Project emissions were calculated as shown in section E.1 and include the emissions of this bunker.	Complementary information clarifies about the leakage and was considered adequate. This CL is therefore closed
CL 4 • Clarification is required on whether electricity from the grid was being used for the sugar production facility. • Justification is required on why the project activity without CDM and business as usual scenarios was not considered as alternatives. • The calculation sheet used to calculate the IRR has to be provided. • The data source for the La Grecia Cogeneration project free cash flow table (Fig 8) has to be provided • Justification on how the CDM revenues help in overcoming the barrier as the IRR of the project even though the CDM revenues are lower than the passive rates in Honduras. • The reference for the statement of high interests being charged by local banks (33% for loans based in Lempiras and 15%	B.2.6	Yes, electricity from the grid was being used for the sugar production facility. As shown in spreadsheet "La Grecia IRR_2006.09.15.xls", La Grecia 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. Even though the CER revenue increases the IRR in only 420 basis points, it brings 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	Complementary information and section B3 of PDD version 6 clarify about the additionality 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**
for loans based in US dollars has not been given. • Evidence is to be provided to justify that CDM was considered for the project activity prior to the start date of the project.		hard currency could be discounted at applicable lower interest rate, thus increasing the project leverage. The reference for the statement of high interests being charged by local banks (up to 32% (2002), for loans based in Lempiras and 9% (2002) for loans based in US dollars) can be seen at http://www.bch.hn/esteco/monetaria/tasamax.pdf and http://www.bch.hn/esteco/monetaria/tasapondme.pdf) See also file "honduras_interest rates.jpg".	
CL 5 • The calculation sheet for the grid emission factor is to be furnished for verification. • 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 data used for calculation has to be provided along with the data sources.	D.4.1 E.3.1	See calculation spreadsheet "Baseline EF-Honduras-2006.05.31.xls" annexed.	Complementary information and section E of PDD version 6 clarify about the CM calculations and was considered adequate. This CL is therefore closed

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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:***	--
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 Telnes

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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 Telnes
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-CDMJI-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-CDMJI-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

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