VALIDATION REPORT

TERMOELÉTRICA SANTA ADÉLIA COGENERATION PROJECT (TSACP)

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DET NORSKE VERITAS

VALIDATION REPORT

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Client: Termoelétrica Santa Adélia Ltda	Client ref.: Norberto Bellodi

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 "Termoelétrica Santa Adélia Cogeneration Project (TSACP)" (hereafter called "the project") in Brazil 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. This validation report summarizes the findings of the validation.

In summary, it is DNV's opinion that the "Termoelétrica Santa Adélia Cogeneration Project (TSACP)" as described in the revised PDD of September 2005, meets all relevant UNFCCC requirements for the CDM and all relevant host country criteria and correctly applies the baseline and monitoring methodology AM0015. Hence, DNV will request the registration of the "Termoelétrica Santa Adélia Cogeneration Project (TSACP)" as a CDM project activity. Prior to the submission of this validation report to the CDM Executive Board, DNV will have to receive the written approval of the DNA of Brazil, including confirmation by the DNA of Brazil that the project assists in achieving sustainable development.

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Report title: Termoelétrica Santa Adélia Cogeneration Project (TSACP)		
Work carried out by: Vicente San Valero, Cintia Dias, Luis Filipe Tavares		
Work verified by: Michael Lehmann		
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Abbreviations

ANEEL	Agência Nacional de Energia Elétrica (National Agency Electric Energy)
BAU	"Business as usual"
BNDES	Brazilian National Bank for Economic and Social Development
CAR	Corrective Action Request
CDM	Clean Development Mechanism
CEF	Carbon Emission Factor
CER	Certified Emission Reduction
CETESB	Companhia de Tecnologia de Saneamento Ambiental (São Paulo Environmental Agency)
CH_4	Methane
CL	Clarification request
CO_2	Carbon dioxide
CO_2e	Carbon dioxide equivalent
CPFL	Companhia Paulista de Força e Luz (Regional Electricity Company)
DNV	Det Norske Veritas
DNA	Designated National Authority
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
ONS	Operador Nacional do Sistema Elétrico (National Electricity System Operator)
PDD	Project Design Document
S-SE-CO	South-Southeast-Midwest (one of two regional grids in Brazil)
UNFCCC	United Nations Framework Convention on Climate Change
UNICA	União da Agroindústria Canavieira de São Paulo (São Paulo Sugarcane Agroindustry Union)

1 INTRODUCTION

Termoelétrica Santa Adélia Ltda have commissioned Det Norske Veritas Certification Ltd. (DNV) to validate the Termoelétrica Santa Adélia Cogeneration Project (TSACP), located in the municipality of Jaboticabal, State of São Paulo, Brazil.

This report summarises the findings of the validation of the project, performed based on 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	Team leader
Mr. Vicente San Valero	DNV Rio de Janeiro	CDM auditor
Mrs Cintia Dias	DNV Rio de Janeiro	CDM auditor
Mr. Michael Lehmann	DNV Oslo	Energy sector expert, 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 Kyoto Protocol criteria for the CDM, the CDM rules and modalities as agreed in the Marrakesh Accords and relevant decisions by the CDM Executive Board. The validation team has employed, based on the recommendations in the Validation and Verification Manual /5/ 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 actions may provide input for improvement of the project design.

1.3 Termoelétrica Santa Adélia Cogeneration Project (TSACP)

The "Termoelétrica Santa Adélia Cogeneration Project (TSACP)", located in the municipality of Jaboticabal, State of São Paulo, Brazil, involves an increase of the sugar cane mill's cogeneration capacity and the supply of the excess electricity to the grid.

The project has already been implemented and started operation in 07 May 2003.

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 161 583 tCO_2e during the fixed 7 year crediting period (with the potential of being renewed twice selected), resulting in estimated average annual emission reductions of 23 083 tCO_2e.

2 METHODOLOGY

The validation consisted of the following three phases:

i) a desk review of the project design documents;
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 /5/. 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 "Termoelétrica Santa Adélia Cogeneration Project (TSACP)" is enclosed in Appendix A to this report.

Findings established during the validation can be 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 Request* (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 PDD /1/ submitted by Termoelétrica Santa Adélia Ltda / Ecoinvest in April 2005 was reviewed by DNV. A further revised version of the PDD /2/ was submitted in September 2005 and was once more reviewed by DNV. In addition, a spreadsheet containing detailed calculations for the combined margin emission coefficient /4/, which is applied by the project, has been assessed during the validation.

Other documents, such as the Environmental Impact Assessment, the Environmental Licences and licence requirements as well as the letters sent to local stakeholders, have been assessed during the follow up interviews in order to ensure the accuracy of the relevant information.

2.2 Follow-up Interviews

On 28 June 2005 and 28 July 2005, DNV performed interviews with a representative of Ecoinvest /9/.

The main topics of the interviews were:

- Environment licenses compliance,
- Local Stakeholders invitation to comments,
- Additionality of the project,
- Cash flow analysis and IRR,
- Baseline emission calculations,
- Calibration requirements,
- The possibility of leakage effects due to a past practice of selling bagasse,
- Monitoring, reporting and QA/QC procedures.

2.3 Resolution of Clarification and Corrective Action Requests

The objective of this phase of the validation is 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 four *Corrective Action Requests* and two requests for *Clarification*. To guarantee the transparency of the validation process, the concerns raised are summarised in chapter 3 below and documented in more detail in the validation protocol in Appendix A. The project participant's response to DNV's draft validation report findings, including the submission of a revised PDD in September 2005, addressed the *Corrective Actions* and *Clarifications* to DNV's satisfaction. To guarantee the transparency of the validation process, the concerns raised are documented in Table 3 of the validation protocol in Appendix A.

3 VALIDATION FINDINGS

The findings of the validation 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 September 2005.

3.1 Participation Requirements

The project participants (PDD/A.3.) are Termoelétrica Santa Adélia (Credit Owner and Project Operator) of Brazil.

The host Party Brazil meets all relevant participation requirements.

Prior to the submission of this validation report to the CDM Executive Board, DNV will have to receive the written approval of the DNA of Brazil, including confirmation by the DNA of Brazil that the project assists in achieving sustainable development.

3.2 Project Design

Termoelétrica Santa Adélia Cogeneration Project (TSACP) 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 increased the efficiency and capacity of the previous bagasse based energy generation, by refurbishing low-pressure boilers with high-pressure boilers and by installing an additional 34 MW generation capacity. This will allow for excess electricity to be dispatched to the regional S-SE-CO grid.

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

As per ANEEL Resolutions, total installed capacity for Santa Adélia is 42 MW. Of these 42 MW, 8 MW is installed since 1990 and only 34 MW is the project expansion, thus, being considered as a CDM additional capacity .

A fixed 7 year renewable crediting period (with the potential of being renewed twice) is selected, and is deemed to start on 7 May 2003. This corresponds with the starting date of the project activity. The expected operational lifetime of the project is 25 years.

It is estimated that the project results in 161 583 tCO_2e (23 083 tCO_2e /year average) of emissions reduction over the selected 7 year crediting period.

Project boundaries were defined as the South-Southeast and Midwest (S-SE-CO) subsystem of the Brazilian grid being the grid electricity system affected by the project and the site where the cogeneration facilities are located (Santa Adélia) being the project boundary.

The project is expected to bring social (employment, sixty five permanent jobs), environmental (the company has environmental education programs, preserves its native forests and supports

communitarian agriculture) and economic benefits, thus contributing to the sustainable development objectives of the Brazilian Government.

The validation did not reveal any information that indicates that the project can be seen as a diversion of ODA funding towards Brazil.

3.3 Project Baseline and Additionality

The project applies the approved baseline methodology AM0015 - "Bagasse-based *cogeneration connected to an electricity grid"*. /6/

This methodology is applicable to the project as this project consists of a renewable energy generation unit that supplies electricity to the South-Southeast-Midwest (S-SE-CO) interconnected grid of Brazil and the project meets the applicability conditions of AM0015. The baseline scenario is that the current practice continues, i.e., the bagasse is not utilized to generate excess electricity to be supplied to the grid and an equivalent of electricity would in the absence of the project activity have been generated by the operation of grid-connected power plants and by the addition of new generation sources. In accordance with AM0015, an electricity baseline emission factor is calculated as a combined margin, consisting of the combination of operating margin (OM) and build margin (BM) factors (see section 3.5).

In accordance with AM0015, the additionality of the project is demonstrated through the "*Tool for the demonstration and assessment of additionality*" /8/, which includes the following steps:

Step 0 - -Preliminary screening based on the starting date of the project activity: The starting date of the CDM project activity, i.e. 07 May 2003, falls between 1 January 2000 and the date of the registration of the first CDM project activity (November 2004). Evidence for the project's starting date of 07 May 2003 has been presented. Documentation evidencing that the incentive from the CDM was seriously considered in the decision to proceed with the project activity was provided by means of an analysis of the Preliminary Environmental Report dated in September 2001 /3/.

Step 1 - Identification of alternatives to the project activity consistent with current laws and regulations: The possible baseline scenarios are: a) Business as usual which means producing electricity and steam for self consumption with low efficiency and b) investing in modifications of boilers and installing a new electricity generator. Both scenarios are in compliance with all applicable legal and regulatory requirements.

Step 2 - Investment analysis: Not applicable (Only Step 3 is selected)

Step 3. Step 3. *Barrier analysis: Investment barriers, institutional barriers and cultural barriers are presented in the PDD:*

a) *Investment barriers*. The project reaches a negative Net Present Value with a discount rate of 18% and an IRR of 15%. This average project IRR is lower than the SELIC rate in effect at the time of financing, 23,35% as of 2003. These figures were considered reliable and justified the additionality argumentation. DNV also confirmed as an investment barrier the fact that the revenues of the selling of energy represent not more than 5% of the core business revenues, i.e. production of sugar and alcohol, thus constituting a minor part of the project developer's total income. Therefore, it is clear that this investment was done considering the registering of the project as a CDM activity as it is not financially attractive under normal commercial conditions.

b) *Institutional barriers*. DNV could confirm that the regulatory environment for the electricity sector undergo frequent changes in Brazil, resulting in uncertainties for renewable energy generation. The project does not qualify for PROINFA, the Brazilian Programme of Incentives for Alternative Sources of Electric Energy, because it started operation before 2006.

d) *Cultural barriers*. DNV was able to confirm that the sugarcane production (traditionally production of sugar and alcohol) is different from energy production and that electricity revenues only constitute a minor part of the project developer's total income. Hence, there are cultural barriers for sugarcane mills to invest in increased cogeneration capacity in order to supply excess electricity to the grid.

Step 4 - Common practice analysis: DNV was able to confirm that the efficient production of energy and heat by sugarcane mills is not common practice in Brazil. Usually the sugarcane mills produce energy inefficiently and do not supply excess electricity to the grid.

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 overcome the above presented barriers.

Given the above and in particular the investment, institutional and cultural barriers the project faces, it is sufficiently demonstrated that the project is not a likely baseline scenario.

Step 4 - Common practice analysis: DNV was able to confirm that the efficient production of energy and heat by sugarcane mills is not common practice in Brazil. Usually the sugarcane mills produce energy inefficiently.

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

3.4 Monitoring Plan

The Termoelétrica Santa Adélia Cogeneration Project (TSACP) applies the Approved monitoring methodology AM0015, "Bagasse-based *cogeneration connected to an electricity grid*". /6/.

The monitoring plan for emission reductions occurring within the project boundary is based on monitoring the amount of electricity supplied to the grid. The reliability of this monitoring parameter is assured through second-party verification of the amount of electricity sold to CPFL (the electricity company) by Santa Adélia.

Details of the data to be collected, the frequency of data recording, its certainty, and format and storage location are described. The recording frequency of the data is appropriate for the project.

Termoelétrica Santa Adélia Ltda is responsible for the project management, monitoring and reporting as well as for organising and training of the staff in the appropriate monitoring, measurement and reporting techniques.

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

Algorithms and formulas used have been clearly presented.

3.5 Calculation of GHG Emissions

Baseline emissions due to displacement of electricity are calculated by multiplying the electricity supplied by the project activity to the S-SE-CO grid with the combined margin emission coefficient determined for this grid. The project is not expected to result in project GHG emissions due to the use of a renewable energy source (bagasse) for electricity generation.

The combined margin emission coefficient for the S-SE-CO grid is determined *ex-ante* in accordance with AM0015. The initial determination of the combined margin emission coefficient was based on an International Energy Agency (IEA) study on the Brazilian electricity grid carried out in 2002 (using data from 2000) /5/. The IEA study was based on installed capacity of plants built up to 2004 and assumptions regarding the plants' efficiency and load factors. However, the IEA study did not calculate the combined margin as required by AM0015 and DNV requested the project participants to recalculate the combined margin emission coefficient.

Recently, the project participants managed to obtain more accurate data on the Brazilian electricity grid from the National Electricity System Operator (ONS) and recalculated the combined margin emission coefficient based on actual electricity generation data provided by ONS for the S-SE-CO grid /4/ for the years 2002-2004. Average plant efficiencies for different power plant types established in the IEA study on the Brazilian grid /5/ and IPCC carbon emission factors for specific fuels were applied to calculate plant specific emission coefficients. It is recognised that in the absence of actual fuel consumption data, the calculated plant specific emission coefficients are sensitive to the assumed plant efficiency for each plant. Nonetheless, the applied average plant efficiencies for different power plant types established in the IEA study on the Brazilian grid /7/ is deemed to represent the best data that is currently available.

The simple-adjusted operating margin (OM) emission coefficient is calculated to be 0.413 tCO_2e/MWh (applying an average λ of 0.4961) and build margin (BM) emission coefficient of 0.1256 tCO_2e/MWh, resulting in a combined margin emission coefficient of 0.2783 tCO_2e/MWh (weighted average of the build and operating margin).

Even though the S-SE-CO grid is connected with the North-Northeast grid, the energy flow between these grids is heavily limited by the transmission lines capacity. It is hence appropriate to consider the S-SE-CO grid for the purpose of determining the BM and OM emission coefficient and to consider imports from the North-Northeast grid at 0 tCO_2/MWh in accordance with AM0015.

The ONS dataset does not include power plants that are locally dispatched. However, it is justified to only include plants dispatched by ONS although they only represent about 80% of the total installed capacity. Data for the remaining plants is not publicly available. Also, these plants operate either based on power purchase agreements which are not under control of the dispatch authority, or they are located in non-interconnected systems to which ONS has no access. Hence, these plants are not likely to be affected by a CDM project and the power plants dispatched by ONS are thus representative for the operating margin.

The build margin emission coefficient calculated for only power plants dispatched by ONS is 0.1256 tCO_2e/MWh and thus more conservative than the emission coefficient calculated based on IEA data (0.421 tCO_2e/MWh) or the combination of IEA and ONS data (0.205 tCO_2e/MWh).

The λ was calculated by interpolating daily dispatch data for thermal power plants and daily dispatch data for hydropower plants. The selected approach for calculating λ is in accordance with AM0015.

3.6 Environmental Impacts

Santa Adélia has an environmental license that has been granted (*Precarious Operating License 4000417 emitted in 26 October 2005*) by the state environmental agency (CETESB-Companhia de Tecnologia e Saneamento Ambiental) after all possible environmental impacts were analyzed by the State Secretary of Environment (SMA – Secretaria de Estado do Meio Ambiente) through a report called "Previous Environmental Report" (RAP – Relatório Ambiental Preliminar).

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.

3.7 Comments by Local Stakeholders

Local stakeholders were invited initially through public discussion during the environmental license issuing process. No comments were received.

Complementary, local stakeholders, such as the Municipal Government, the state and municipal agencies, the Brazilian forum of NGOs, neighbouring communities and the office of the attorney general, were invited to comment on the project, in accordance with the requirements of Resolution 1 of the Brazilian DNA. The letters sent to the local stakeholders were verified during the follow up interviews. No comments were received.

4 COMMENTS BY PARTIES, STAKEHOLDERS AND NGOS

DNV Certification published the PDD of April 2005 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 30 April 2005 to 30 May 2005.

One comment was received on 02/05/2005. The comment received (in unedited form) is given in the below text box.

Comment by: Axel Michaelowa, Hamburg Institute of International Economics (HWWA)

Inserted On: 2005-05-02

Subject: Build Margin weighting - Santa Adelia

Comment: The argument for weighting the build margin zero for the entire crediting period is unconvincing. The discussed dip in electricity demand after the end of the rationing will not persist throughout the crediting period. While there is a case for weighting the BM low, but certainly not zero for 2003, resumed growth in electricity demand since then makes the case invalid. Only if the project participants monitored the capacity factors of the recently built plants ex post, they could then derive an adjusted BM with a lower share.
The fuel use data from Bosi et al are outdated and should be replaced by more current ones.

***DNV's response**:*

The baseline for cogeneration considers the operating margin calculated based on the Simple Adjusted Operating Margin, methodology and data from ONS.

According to the default calculation for the combined margin, the wOM and wBM has been given a weight of 0,5 for each, giving an emission coefficient of 0.2783 Project participants revised the PDD and calculations according to these requirements of the methodology.

5 VALIDATION OPINION

Det Norske Veritas Certification Ltd. (DNV) has performed a validation of the "Termoelétrica Santa Adélia Cogeneration Project (TSACP)", at Jaboticabal, São Paulo State, Brazil. The validation was performed on the basis of UNFCCC criteria for CDM project activities and relevant Brazilian criteria, as well as criteria given to provide for consistent project operations, monitoring and reporting.

The project participants are Termoelétrica Santa Adélia (Credit Owner and Project Operator) of Brazil. The host Party Brazil meets all relevant participation requirements. No participating Annex I Party is yet identified.

The project is a bagasse-based cogeneration power generation activity which displaces fossil-based grid electricity. By installing two high-pressure boilers and by installing one 34MW generator at the Santa Adélia sugarcane mill, the project will allow Santa Adélia to generate excess electricity to be dispatched to the regional grid.

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

The project applies the approved baseline and monitoring methodology AM0015, i.e. "Bagasse-based cogeneration connected to an electricity grid". 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.

A combined margin emission coefficient of 0.2783 tCO_2e/MWh is calculated in accordance with AM0015, i.e. the average of the approximate operating margin and the build margin. The determination of this combined margin emission coefficient is based on actual electricity generation data provided by the National Electricity System Operator (ONS) for the years 2002-2004 for the South-Southeast-Midwest grid.

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

By displacing 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. Given that the project is implemented as designed, the project is likely to achieve the estimated amount of emission reductions.

Local stakeholder comments were invited according to the Brazilian DNA Resolution 1. No comments were received. Public stakeholder input has also been invited via the UNFCCC web-site. One comment has been received and was taken into account in the validation of the project.

In summary, it is DNV's opinion that the "Termoelétrica Santa Adélia Cogeneration Project (TSACP)" as described in the revised project design document of September 2005, meets all relevant UNFCCC requirements for the CDM and all relevant host country criteria and correctly applies the baseline and monitoring methodology for AM0015 CDM project activities.

Hence, DNV will request the registration of the "Termoelétrica Santa Adélia Cogeneration Project (TSACP)" as CDM project activity.

Prior to the submission of this validation report to the CDM Executive Board, DNV will have to receive the written approval of the DNA of Brazil, including confirmation that the project assists in achieving sustainable development.

REFERENCES

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

/1/ Ecoinvest: Project Design Document for the Termoelétrica Santa Adélia Cogeneration Project (TSACP), Version 1 (April 2005).

/2/ Ecoinvest: Project Design Document for the Termoelétrica Santa Adélia Cogeneration Project (TSACP), Version 4 (September 2005).

/3/ Termoelétrica Santa Adélia Cogeneration Project (TSACP), Preliminary Environmental Report, September 2001

/4/ Spreadsheet of Calculation of Combined Margin (ONS Emission Factor SSECO 2002-2004 v 2005-09-23).

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

/5/ International Emission Trading Association (IETA) & the World Bank's Prototype Carbon Fund (PCF): *Validation and Verification Manual*. http://www.vvmanual.info

/6/ Approved Baseline and Monitoring Methodology AM0015: "*Bagasse-based cogeneration connected to an electricity grid"*. Version 01 of 22 September 2004.

/7/ Bosi, M., A. Laurence, P. Maldonado, R. Schaeffer, A. F. Simoes, H. Winkler and J.-M. Lukamba: *Road testing baselines for greenhouse gas mitigation projects in the electric power sector*. OECD and IEA information paper, October 2002.

/8/ CDM-EB, *"Tool for the demonstration and assessment of additionality"*, Annex 1 of the report of the EB's 16th meeting.

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

/9/ Fernando Souza Machado – Ecoinvest

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APPENDIX A

CDM VALIDATION PROTOCOL

TERMOELÉTRICA SANTA ADÉLIA COGENERATION PROJECT (TSACP)

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	**Not Applicable**	Table 2, Section E.4.1 No Annex I party has yet been identified.
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	--	Table 2, Section A.3 Prior to the submission of this validation report to the CDM Executive Board, DNV will have to receive confirmation by the DNA of Brazil that the project assists in achieving sustainable development.
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	--	Prior to the submission of this validation report to the CDM Executive Board, DNV will have to receive the written approval of voluntary participation from the DNA of the participating Parties.
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	Kyoto Protocol Art. 12.5c, CDM Modalities and Procedures §43	**OK**	Table 2, Section B.2

Requirement	Reference	Conclusion	Cross Reference / Comment
the registered CDM project activity			
7. Potential public funding for the project from Parties in Annex I shall not be a diversion of official development assistance	Decision 17/CP.7	**OK**	The validation did not reveal any information that indicates that the project can be seen as a diversion of ODA funding towards Brazil.
8. Parties participating in the CDM shall designate a national authority for the CDM	CDM Modalities and Procedures §29	**OK**	The Brazilian designated national authority for the CDM is the "Comissão Interministerial de Mudança Global do Clima".
9. The host Party and the participating Annex I Party shall be a Party to the Kyoto Protocol	CDM Modalities §30/31a	**OK**	Brazil has ratified the Kyoto Protocol on 23 August 2002.
10. The participating Annex I Party's assigned amount shall have been calculated and recorded	CDM Modalities and Procedures §31b	**Not Applicable**	No Annex I party has yet been identified.
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	**Not applicable**	No Annex I party has yet been identified.
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	~~**CAR 3**~~ **OK**	Table 2, Section G Termoelétrica Santa Adélia Ltda has not invited local organizations and institutions to provide comments, according to the Resolution 1 of the Brazilian DNA. The names and details for further contacts should also be presented.
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	CDM Modalities and Procedures §37c	**OK**	Table 2, Section F Santa Adélia has an environmental license that has been granted (*Precarious Operating License 4000417 emitted in 26 October 2005*) by the state environmental agency (CETESB - Companhia de Tecnologia e Saneamento Ambiental) after all possible environmental impacts were analyzed by the State Secretary of Environment (SMA – Secretaria de

Requirement	Reference	Conclusion	Cross Reference / Comment
environmental impact assessment in accordance with procedures as required by the Host Party shall be carried out.			Estado do Meio Ambiente) through a report called "Previous Environmental Report" (RAP – Relatório Ambiental Preliminar)
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 comments have been made publicly available	CDM Modalities and Procedures §40	**OK**	DNV Certification published the initial Termoelétrica Santa Adélia Ltda 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 30 April 2005 to 30 May 2005. One comment has been received and was taken into account in the validation of the project.
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,	~~**CAR 2**~~ **OK**	PDD is in accordance with CDM-PDD (version 02 of 1 July 2004). However, the section heading H (Annexes) needs to be deleted, as the CDM-PDD shall be completed without modifying/adding headings.

Requirement	Reference	Conclusion	Cross Reference / Comment
	EB Decision		

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/ /2/	DR	The Termoelétrica Santa Adélia Cogeneration Project (TSACP), Brazil, is located in the municipality of Jaboticabal, State of São Paulo, within the area of Santa Adélia. The project's spatial boundaries are clearly defined.		**OK**
A.1.2. Are the project's system (components and facilities used to mitigate GHG's) boundaries clearly defined?	/1/ /2/	DR	Yes. The project system's boundary is limited to the Usina Santa Adélia area and the South-Southeast and Midwest section of the interconnected subsystem of the Brazilian grid, to which the project is connected. This system boundary is considered for determination of the baseline grid emission factor.		**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/ /2/	DR	Yes. The project design engineering reflects good practice through the use of steam Rankine cycle technology for steam and power generation.		**OK**

Checklist Question	Ref.	MoV*	Comments	Draft Concl.	Final Concl.
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/ /2/	DR	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. As per ANEEL Resolutions (authorizations to generate/sell electricity as an independent producer), total installed capacity for Santa Adélia is 42 MW.		**OK**
A.2.3. Is the project technology likely to be substituted by other or more efficient technologies within the project period?	/1/ /2/	DR	No. The project is unlikely to be replaced by other more efficient technologies, at least within the 7 year crediting period.		**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/ /2/	DR	The project will require minimal additional training for project maintenance since the project is only a modification of the currently used system. It is an expansion of the existent plant so it meant training on the following aspects: technical instruction for electric installation and services; for boilers and pressure vessels; and for boiler combustion (in accordance with the equipment supplier)		**OK**
A.2.5. Does the project make provisions for meeting training and maintenance needs?	/1/ /2/	DR	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.		**OK**

Checklist Question	Ref.	MoV*	Comments	Draft Concl.	Final Concl.
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/ /2/	DR	The licenses were not presented. Hence, DNV requires copies of the licenses.	~~CL 1~~	**OK**
A.3.2. Is the project in line with host-country specific CDM requirements?	/1/ /2/	DR	Brazil established the Resolution 1 in line with CDM requirements. Termoelétrica Santa Adélia Ltda has not invited local organizations and institutions to provide comments, according to the Resolution 1 of the Brazilian DNA. The names and details for further contacts should also be presented.	~~CAR 3~~	**OK**
A.3.3. Is the project in line with sustainable development policies of the host country?	/1/ /2/	DR	Prior to the submission of this validation report to the CDM Executive Board, DNV will have to receive confirmation by the DNA of Brazil that the project assists in achieving sustainable development.	--	--
A.3.4. Will the project create other environmental or social benefits than GHG emission reductions?	/1/ /2/	DR	The project is expected to bring social (employment, sixty five jobs), environmental (the company has environmental education programs, preserves its native forests and supports communitarian agriculture) and economic benefits, thus contributing to the sustainable development objectives of the Brazilian Government.		**OK**

Checklist Question	Ref.	MoV*	Comments	Draft Concl.	Final Concl.
B. Project Baseline *The validation of the project baseline establishes whether the selected baseline methodology is appropriate and whether the selected baseline represents a likely baseline scenario.*					
B.1. Baseline Methodology *It is assessed whether the project applies an appropriate baseline methodology.*					
B.1.1. Is the baseline methodology previously approved by the CDM Executive Board?	/1/ /2/ /6/	DR	Yes. The project applies the approved baseline methodology AM0015 - "Bagasse-based cogeneration connected to an electricity grid".		**OK**
B.1.2. Is the baseline methodology the one deemed most applicable for this project and is the appropriateness justified?	/1/ /2/ /6/	DR	Yes. The project fulfils the conditions under which AM0015 is applicable. The project uses: a) only the bagasse from the same facility where the project activity is implemented, b) the project is not foreseen to be implemented by the public sector, c) the project will not increase the bagasse production and d) the bagasse to be used will not be stored for more than one year.		**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/ /2/ /4/ /6/	DR	The baseline for cogeneration considers the operating margin calculated based on the Simple Adjusted Operating Margin, methodology and data from ONS. According to the default calculation for the	~~**CAR 1**~~	**OK**

Checklist Question	Ref.	MoV*	Comments	Draft Concl.	Final Concl.
			combined margin, the w_{OM} and w_{BM} has been given a weight of 0,5 for each, giving an emission coefficient of 0.2783 tCO_2e/MWh However the project applied a weight of w_{OM} = 1.0 and w_{BM} = 0. This new weight option was submitted to the EB but has not been approved up to now. DNV asks for new proper calculations which address the methodology requirements.		
B.2.2. Has the baseline been determined using conservative assumptions where possible?	/1/ /2/ /4/	DR	See B.2.2	~~CAR 1~~	**OK**
B.2.3. Has the baseline been established on a project-specific basis?	/1/ /2/	DR	See B.2.1	~~CAR 1~~	**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/ /2/	DR	Yes. All the national and/or sectoral policies implemented during the initial phase were considered. PROINFA (Programme of Incentives to the Alternative Sources of Electric Energy) was only implemented in 2004 and is applicable to projects to be installed from January to December of 2006.		**OK**
B.2.5. Is the baseline determination compatible with the available data?	/1/ /2/ /4/	DR	The project uses generation data from ONS for the years 2001 to 2003 for 120 generation units dispatched centrally by ONS in the South / Southeast / Midwest (S-SE-CO) interconnected grid. There is more updated data available and DNV asks for an update of these factors.	~~CAR 1~~	**OK**
B.2.6. Does the selected baseline represent the most likely scenario among other possible and/or discussed scenarios?	/1/ /2/	DR	See B.2.1	~~CAR 1~~	

Checklist Question	Ref.	MoV*	Comments	Draft Concl.	Final Concl.
B.2.7. Is it demonstrated/justified that the project activity itself is not a likely baseline scenario (e.g. through (a) a flow-chart or series of questions that lead to a narrowing of potential baseline options, (b) a qualitative or quantitative assessment of different potential options and an indication of why the non-project option is more likely, (c) a qualitative or quantitative assessment of one or more barriers facing the proposed project activity or (d) an indication that the project type is not common practice in the proposed area of implementation, and not required by a Party's legislation/regulations)?	/1/ /2/ /6/ /8/	DR	In accordance with AM0015, the additionality of the project is demonstrated through the "Tool for the demonstration and assessment of additionality" /8/, which includes the following steps: Step 0 - -Preliminary screening based on the starting date of the project activity: The starting date of the CDM project activity, i.e. May 2003, falls between 1 January 2000 and the date of the registration of the first CDM project activity (November 2004). Documented evidence(s) that the incentive from the CDM was seriously considered the in the decision to proceed with the project activity at, or prior to, the start of the project activity should be provided. Step 1 - Identification of alternatives to the project activity consistent with current laws and regulations: The possible baseline scenarios are: a) Business as usual which means producing electricity and steam for self consumption with low efficiency and b) investing in modifications of boilers and installing a new electricity generator. Both scenarios are in compliance with all applicable legal and regulatory requirements. Step 2 - Investment analysis: Not applicable (Only Step 3 is selected) Step 3. Step 3. Barrier analysis: Investment barriers, institutional barriers and cultural barriers are presented in the PDD:	~~CAR 4~~	**OK**

Checklist Question	Ref.	MoV*	Comments	Draft Concl.	Final Concl.
			a) Investment barriers. The project reaches a negative Net Present Value with a discount rate of 18% and an IRR of 15%. This average project IRR is lower than the SELIC rate in effect at the time of financing, 23,35% as of 2003. These figures were considered reliable and justified the additionality argumentation. DNV also confirmed as an investment barrier the fact that the revenues of the selling of energy represent not more than 5% of the core business revenues, i.e. production of sugar and alcohol, thus constituting a minor part of the project developer's total income. Therefore, it is clear that this investment was done considering the registering of the project as a CDM activity as it is not financially attractive under normal commercial conditions. b) Institutional barriers. DNV could confirm that the regulatory environment for the electricity sector undergo frequent changes in Brazil, resulting in uncertainties for renewable energy generation. The project does not qualify for PROINFA, the Brazilian Programme of Incentives for Alternative Sources of Electric Energy, because it started operation before 2006. d) Cultural barriers. DNV was able to confirm that the sugarcane production (traditionally production of sugar and alcohol) is different from energy production and that electricity revenues only constitute a minor part of the project developer's total income. Hence, there are cultural barriers for sugarcane mills to		

Checklist Question	Ref.	MoV*	Comments	Draft Concl.	Final Concl.
			invest in increased cogeneration capacity in order to supply excess electricity to the grid. Step 4 - Common practice analysis: DNV was able to confirm that the efficient production of energy and heat by sugarcane mills is not common practice in Brazil. Usually the sugarcane mills produce energy inefficiently and do not supply excess electricity to the grid. 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 overcome the above presented barriers. Given the above and in particular the investment, institutional and cultural barriers the project faces, it is sufficiently demonstrated that the project is not a likely baseline scenario. Step 4 - Common practice analysis: DNV was able to confirm that the efficient production of energy and heat by sugarcane mills is not common practice in Brazil. Usually the sugarcane mills produce energy inefficiently and do not supply excess electricity to the grid. 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 overcome the above presented barriers. Given the above and in particular the technological, institutional, and cultural barriers		

Checklist Question	Ref.	MoV*	Comments	Draft Concl.	Final Concl.
			the project faces, it is sufficiently demonstrated that the project is not a likely baseline scenario.		
B.2.8. Have the major risks to the baseline been identified?	/1/ /2/	DR	Yes.		**OK**
B.2.9. Is all literature and sources clearly referenced?	/1/ /2/	DR	Yes.		**OK**
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/ /2/	DR	Yes. The project start date is 07 May 2003 with an expected lifetime of 25 years.		**OK**
C.1.2. Is the assumed crediting time clearly defined (renewable crediting period of seven years with two possible renewals or fixed crediting period of 10 years with no renewal)?	/1/ /2/	DR	A fixed 7 year crediting period was defined, starting in 05/2003.		**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/ /2/ /6/	DR	Yes. The Termoelétrica Santa Adélia Cogeneration Project (TSACP) applies the Approved monitoring methodology AM0015, "Bagasse-based cogeneration connected to an		**OK**

Checklist Question	Ref.	MoV*	Comments	Draft Concl.	Final Concl.
			electricity grid".		
D.1.2. Is the monitoring methodology applicable for this project and is the appropriateness justified?	/1/ /2/ /6/	DR	Yes. The monitoring methodology is applicable as established in AM0015.		**OK**
D.1.3. Does the monitoring methodology reflect good monitoring and reporting practices?	/1/ /2/ /6/	DR	The monitoring methodology of AM0015 is correctly applied and calculation of emission reductions will use data based on electricity exported to the grid (energy meter)and consistency of the reporting will be ensured through check of electricity sales records.		**OK**
D.1.4. Is the discussion and selection of the monitoring methodology transparent?	/1/ /2/	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/ /2/ /6/	DR	Project emissions are considered zero in line with the AM0015 and IPCC guidelines, which stipulate that biomass combustion is assumed to equal its re-growth, i.e. to be climate neutral.		**OK**
D.2.2. Are the choices of project GHG indicators reasonable?	/1/ /2/	DR	See D.2.1		**OK**
D.2.3. Will it be possible to monitor / measure the specified project GHG indicators?	/1/ /2/	DR	See D.2.1		**OK**
D.2.4. Will the indicators give opportunity for real measurements of achieved emission reductions?	/1/ /2/	DR	See D.2.1		**OK**
D.2.5. Will the indicators enable comparison of project data and performance over time?	/1/ /2/	DR	See D.2.1		**OK**

Checklist Question	Ref.	MoV*	Comments	Draft Concl.	Final Concl.
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/ /2/ /6/	DR	According to the chosen methodology, the only foreseen potential source of leakage could come from organizations that used to buy bagasse from the sugar mill. However, Santa Adélia never sold bagasse prior to the project implementation.		**OK**
D.3.2. Have relevant indicators for GHG leakage been included?	/1/ /2/	DR	See D.3.1		**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/ /2/ /4/	DR	This coefficient is fixed ex-ante and hence no data needs to be collected in this regard.		**OK**
D.4.2. Is the choice of baseline indicators, in particular for baseline emissions, reasonable?	/1/ /2/	DR	See D.4.1		**OK**
D.4.3. Will it be possible to monitor the specified baseline indicators?	/1/ /2/	DR	See D.4.1		**OK**
D.5. Monitoring of Sustainable Development Indicators/ Environmental Impacts *It is checked that choices of indicators are reasonable and complete to monitor sustainable performance over time.*					
D.5.1. Does the monitoring plan provide the collection and archiving of relevant data concerning environmental, social and economic impacts?	/1/ /2/ /6/	DR	AM0015 and Resolution 1 of the Brazilian DNA do not require the monitoring of neither social nor the environmental indicators.		**OK**

Checklist Question	Ref.	MoV*	Comments	Draft Concl.	Final Concl.
D.5.2. Is the choice of indicators for sustainability development (social, environmental, economic) reasonable?	/1/ /2/	DR	See D.5.1.		**OK**
D.5.3. Will it be possible to monitor the specified sustainable development indicators?	/1/ /2/	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/ /2/	DR	See D.5.1.		**OK**
D.6. Project Management Planning *It is checked that project implementation is properly prepared for and that critical arrangements are addressed.*					
D.6.1. Is the authority and responsibility of project management clearly described?	/1/ /2/	DR	Project management authority and responsibility are clearly described.		**OK**
D.6.2. Is the authority and responsibility for registration, monitoring, measurement and reporting clearly described?	/1/ /2/	DR	Santa Adélia and the utility company (CPFL) will monitor data.		**OK**
D.6.3. Are procedures identified for training of monitoring personnel?	/1/ /2/	DR	Staff is trained in Special Predictive Maintenance: Vibration analysis (monthly), thermo inspections (twice during the season), analysis of the transformer's insolating oil (once during the season).		**OK**
D.6.4. Are procedures identified for emergency preparedness for cases where emergencies can cause unintended emissions?	/1/ /2/	DR	See D.6.3.		**OK**
D.6.5. Are procedures identified for calibration of monitoring equipment?	/1/ /2/	DR	See D.6.3.		**OK**
D.6.6. Are procedures identified for maintenance of monitoring equipment and installations?	/1/ /2/	DR	See D.6.3.		**OK**
D.6.7. Are procedures identified for monitoring,	/1/	DR	See D.6.3.		**OK**

Checklist Question	Ref.	MoV*	Comments	Draft Concl.	Final Concl.
measurements and reporting?	/2/				
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/ /2/	DR	See D.6.3.		**OK**
D.6.9. Are procedures identified for dealing with possible monitoring data adjustments and uncertainties?	/1/ /2/	DR	See D.6.3.		**OK**
D.6.10. Are procedures identified for review of reported results/data?	/1/ /2/	DR	Considering the simplicity of the monitoring plan, the verification by the second party (the electricity company) is considered sufficient.		**OK**
D.6.11. Are procedures identified for internal audits of GHG project compliance with operational requirements where applicable?	/1/ /2/	DR	See D.6.3.		**OK**
D.6.12. Are procedures identified for project performance reviews before data is submitted for verification, internally or externally?	/1/ /2/	DR	See D.6.3.		**OK**
D.6.13. Are procedures identified for corrective actions in order to provide for more accurate future monitoring and reporting?	/1/ /2/	DR	See D.6.3.		**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. Predicted Project GHG Emissions *The validation of predicted 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/ /2/ /6/	DR	Yes. Project emissions are considered zero in line with the AM0015 and IPCC guidelines, which stipulate that biomass combustion is		**OK**

Checklist Question	Ref.	MoV*	Comments	Draft Concl.	Final Concl.
			assumed to equal its re-growth, i.e. to be climate neutral.		
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/ /2/ /6/	DR	According to the chosen methodology, the only foreseen potential source of leakage could come from organizations that used to buy bagasse from the sugar mill. However, Santa Adélia never sold bagasse pror to the project commencement.		**OK**
E.3. Baseline Emissions *The validation of predicted 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/ /2/ /4/ /6/	DR	The baseline for cogeneration considers the operating margin calculated based on the Simple Adjusted Operating Margin, methodology and data from ONS. According to the default calculation for the combined margin, the wOM and wBM has been given a weight of 0,5 for each, giving an emission coefficient of 0.2783 tCO_2e/MWh	~~**CAR 1**~~	**OK**
E.3.2. Are the baseline boundaries clearly defined and do they sufficiently cover sources and sinks for baseline emissions?	/1/ /2/ /4/	DR	Yes. The project system's boundary is limited to the Usina Santa Adélia area and the South-Southeast and Midwest section of the interconnected subsystem of the Brazilian grid, to which the project is connected. This system boundary is considered for determination of		**OK**

Checklist Question	Ref.	MoV*	Comments	Draft Concl.	Final Concl.
			the baseline grid emission factor.		
E.3.3. Are the GHG calculations documented in a complete and transparent manner?	/1/ /2/	DR	See E.3.1	~~CAR 1~~	OK
E.3.4. Have conservative assumptions been used when calculating baseline emissions?	/1/ /2/	DR	See E.3.2		OK
E.3.5. Are uncertainties in the GHG emission estimates properly addressed in the documentation?	/1/ /2/	DR	See E.3.1	~~CAR 1~~	OK
E.3.6. Have the project baseline(s) and the project emissions been determined using the same appropriate methodology and conservative assumptions?	/1/ /2/	DR	For project baseline, see E.3.1. For project emissions, see E.1.1.	~~CAR 1~~	OK
E.4. Emission Reductions Validation of baseline GHG emissions will focus on methodology transparency and completeness in emission estimations.					
E.4.1. Will the project result in fewer GHG emissions than the baseline scenario?	/1/ /2/ /6/	DR	Emission reductions will have to be calculated according to the methodology.	~~CAR 1~~	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/ /2/		The licenses were not presented. Hence, DNV requires copies of the licenses.	~~CL 1~~	OK
F.1.2. Are there any Host Party requirements for an Environmental Impact Assessment (EIA), and if yes, is an EIA approved?	/1/ /2/	DR	See F.1.1	~~CL 1~~	OK
F.1.3. Will the project create any adverse environmental effects?	/1/ /2/	DR	Project design did not identified/addressed any environmental impact; however, no significant		OK

Checklist Question	Ref.	MoV*	Comments	Draft Concl.	Final Concl.
			adverse environmental effects are expected to be created, given the nature of the project design.		
F.1.4. Are transboundary environmental impacts considered in the analysis?	/1/ /2/	DR	Transboundary environmental impacts not foreseen.		**OK**
F.1.5. Have identified environmental impacts been addressed in the project design?	/1/ /2/	DR	The project is unlikely to create any adverse environmental impacts.		**OK**
F.1.6. Does the project comply with environmental legislation in the host country?	/1/ /2/	DR	See F.1.1	~~**CL 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/ /2/	DR	Termoelétrica Santa Adélia Ltda has not invited local organizations and institutions to provide comments, according to the Resolution 1 of the Brazilian DNA. The names and details for further contacts should also be presented.	~~**CAR 3**~~	**OK**
G.1.2. Have appropriate media been used to invite comments by local stakeholders?	/1/ /2/	DR	See G.1.1.	~~**CAR 3**~~	**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/ /2/	DR	See G.1.1	~~**CAR 3**~~	**OK**
G.1.4. Is a summary of the stakeholder comments received provided?	/1/ /2/	DR	See G.1.1.	~~**CAR 3**~~	**OK**
G.1.5. Has due account been taken of any stakeholder comments received?	/1/ /2/	DR	See G.1.1.	~~**CAR 3**~~	**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 baseline for cogeneration considers the operating margin calculated based on the Simple Adjusted Operating Margin, methodology and data from ONS. According to the default calculation for the combined margin, the wOM and wBM has been given a weight of 0,5 for each, giving an emission coefficient of 0.2783 tCO_2e/MWh The project uses generation data from ONS for the years 2001 to 2003 for 120 generation units dispatched centrally by ONS in the South / Southeast / Midwest (S-SE-CO) interconnected grid. There is more updated data available and DNV asks for an update of these factors.	B.2.1 B.2.3 B.2.6 E.3.1 E.3.3 E.3.5 E.3.6	PDD, dated September 2005, corrected this issue.	The revised baseline emission calculations are according to the baseline methodology AM0015 CDM project activities for energy production for the grid considering WOM = WBM = 0.5 weight. More update data was used in the calculations. This CAR is therefore closed.
CAR 2 The section heading H (PDD Annexes) needs to be deleted as the CDM-PDD shall be completed without modifying/adding headings. Also, at PDD Annexes, the two Annex 3 references should be corrected.	Table 1 - 19	PDD, dated September 2005, corrected this issue.	The revised PDD, dated September 2005, corrected the requested corrective action. This CAR is therefore closed.
CAR 3 Termoelétrica Santa Adélia Ltda has not invited local organizations and institutions to provide comments, according to the Resolution 1 of the Brazilian DNA. The names and details for further contacts	Table 1 - 12 A.3.2 G.1.1 to G.1.5	PDD, dated September 2005, corrected this issue.	Letters were sent according to the Resolution 1 of the Brazilian DNA. This CAR is therefore closed.

Draft report corrective action requests and requests for clarifications	Ref. to Table 2	Summary of project participants' response	Final conclusion
should also be presented.			
CAR 4 The barriers should be better accessed. Documented evidence(s) that the incentive from the CDM was seriously considered the in the decision to proceed with the project activity at, or prior to, the start of the project activity should be provided.	B.2.7.	Documents sent.	Document evidencing that the incentive from the CDM was seriously considered in the decision to proceed with the project activity was provided by means of an analysis of the Preliminary Environmental Report dated in September 2001. This CAR is therefore closed.
CL 1 The licenses were not presented. Hence, DNV requires copies of the licenses.	A.3.1 F.1.1 F.1.2 F.1.6	Copy of licenses sent.	Santa Adélia has an environmental license that has been granted (Precarious *Operating License 4000417 emitted in 26 October 2005)* by the state environmental agency (CETESB - Companhia de Tecnologia e Saneamento Ambiental) after all possible environmental impacts were analyzed by the State Secretary of Environment (SMA – Secretaria de Estado do Meio Ambiente) through a report called "Previous Environmental Report" (RAP – Relatório Ambiental Preliminar) This CL is therefore closed.

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