VALIDATION REPORT

SERRA BAGASSE COGENERATION PROJECT (SBCP)

REPORT NO. 2005-1020

REVISION NO. 01

DET NORSKE VERITAS

VALIDATION REPORT

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Client: COSAN S/A Indústria e Comércio – Filial Ibaté and Econergy Brasil Ltda	Client ref.: Guilherme Almeida Prado

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Summary:

Det Norske Veritas Certification Ltd. (DNV) has performed a validation of the "Serra Bagasse Cogeneration Project (SBCP)" (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 documents, ii) follow-up interviews with project stakeholders and iii) the resolution of outstanding issues and the issuance of the final validation report and opinion. This validation report summarizes the findings of the validation.

In summary, it is DNV's opinion that the "Serra Bagasse Cogeneration Project (SBCP)" as described in the revised PDD of October 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 "Serra Bagasse Cogeneration Project (SBCP)" 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 that the project assists in achieving sustainable development.

Report No.: 2005-1020	Subject Group: Environment	
Report title: Serra Bagasse Cogeneration Project (SBCP)		
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
PROINFA	Programme of Incentives to the Alternative Sources of Electric Energy
S-SE-CO	South-Southeast-Midwest (one of two regional grids in Brazil)
SMA	Secretaria de Estado do Meio Ambiente (State Environmental Secretary)
UNFCCC	United Nations Framework Convention on Climate Change

1 INTRODUCTION

COSAN S/A Indústria e Comércio – Filial Ibaté and Econergy Brasil Ltda (Econergy) has commissioned Det Norske Veritas Certification Ltd. (DNV) to perform a validation of the "Serra Bagasse Cogeneration Project (SBCP)", located in the municipality of Ibaté, São Paulo State, 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 consists of the following personnel:

Mr. Cintia Dias	DNV Rio de Janeiro	Team leader
Mr. Vicente San Valero	DNV Rio de Janeiro	CDM auditor
Mrs Luis Filipe Tavares	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 Marrakech Accords and relevant decisions by the CDM Executive Board. The validation team has employed, based on the recommendations in the Validation and Verification Manual /4/ 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 Serra Bagasse Cogeneration Project (SBCP) in Brazil

The "Serra Bagasse Cogeneration Project (SBCP)" is located in the municipality of Ibaté, São Paulo State, Brazil. The project involves an increase of generation capacity at the bagasse cogeneration facility at the Usina da Serra sugar cane mill, allowing Usina da Serra to supply 15 MW additional excess electricity to the grid.

The project has already been implemented and started operation in September 2002.

With the implementation of this project, the mill is able to sell the surplus electricity to the South-Southeast-Midwest (S-SE-CO) grid, avoiding the dispatch of the same amount of energy

produced by fossil-fuelled thermal plants to that grid. The estimated amount of GHG emission reductions from the project is 48 990 tCO_2e during the first 7-year crediting period, resulting in estimated average annual emission reductions of 6 999 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 /4/. 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 "Serra Bagasse Cogeneration Project (SBCP)" in Brazil 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 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 (Version July 2005) **/1/** submitted by COSAN S/A Indústria e Comércio – Filial Ibaté and Econergy Brasil Ltda and Econergy in July 2005 was reviewed by DNV. Moreover, a revised version of the PDD /2/, submitted on 11 October 2005 to address DNV's initial validation findings, was reviewed. In addition, a spreadsheet containing detailed calculations for the combined margin emission coefficient /3/ which is applied by the project was assessed during the validation.

DNV also assessed other project documents, such as the Environmental Impact Assessment/ Environmental Licenses and license requirements, in order to assure assessment of relevant environmental impacts of the project.

2.2 Follow-up Interviews

On 5 October 2005, DNV performed interviews with a representative of Econergy /9//10/. The main topics of the interviews were:

- Environment licenses compliance,
- Local stakeholders consultation process,
- Additionality argumentation,
- Cash flow analysis and IRR,
- Baseline emission calculations,
- Calibration requirements,
- The possibility of leakage effects due to a possible practice of selling bagasse in the past.

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 three *Corrective Action Requests* and two requests for *Clarification*. These were communicated to the project participants in the form of a draft validation report dated 5 October 2005 (rev. 0). The *Corrective Action Requests* and requests for *Clarification* raised by DNV were resolved through communications between the project participants and DNV and through the submission of a revised PDD on 11 October.

To guarantee the transparency of the validation process, the concerns raised and the response provided 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 October 2005.

3.1 Participation Requirements

The project participant is COSAN S/A Indústria e Comércio – Filial Ibaté and Econergy Brasil Ltda of Brazil. The host Party Brazil meets all relevant participation requirements. No participating Annex I Party is yet identified.

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 Brazil, including confirmation that the project assists it in achieving sustainable development.

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 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 15 MW generation capacity to the previously installed capacity of 2 x 1.2 MW. (The two 1,2 MW backpressure turbo generators previously used for captive electricity generation are now on stand-by). As per ANEEL Resolution No. 148, total installed capacity for Usina da Serra is 15 MW. This will allow for dispatch of excess electricity to the regional S-SE-CO grid.

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

A 7-year renewable crediting period is selected (with the potential of being renewed twice), starting on 18 September 2002. The starting date of the project activity is 18 September 2002. The expected operational lifetime of the project is 25 years.

It is estimated that the project results in 48 990 tCO_2e (6 999 tCO_2e /year average) of emissions reduction over the selected first 7 year crediting period.

The project is expected to bring social (employment and health assistance), environmental (fauna and flora preservation and recovery plans) 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"*. /5/. The project fulfils the conditions under which AM0015 is applicable..

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. September 2002, 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 September 2002 was presented to DNV. Documented evidence 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 potential emission reductions from the project dated in April 2002, carried out by a CDM consultant /7/.

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 production of electricity and steam for self consumption with low efficiency and b) Investing in modifications of boilers and installing a new electricity generator which will allow Usina da Serra to supply excess electricity to the grid. 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. *Barrier analysis:* Technological barriers, institutional and political barriers, economic and investment barriers and cultural barriers are presented in the PDD:

a) *Technological barriers*. The Rankine cycle technology is well known in Brazil and the implementation of the this technology does not face any barriers, although sugar cane units mainly operate with low-efficiency. However, there is a technological barrier because the project needs to supply energy at a certain quality to the grid, which requires better cogeneration technology than generally applied by sugarcane mills in Brazil today.

b) *Institutional and political 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.

c) *Economic and Investment barriers.* DNV was not able to confirm a general economic and investment barrier because sugarcane producers do normally not have problems with securing long-term financing as they have strong securities from their core activity, i.e. production of sugar and alcohol.

d) *Cultural barriers*. DNV was able to confirm that the sugarcane production 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 technological, institutional, and cultural barriers the project faces, it is sufficiently demonstrated that the project is not a likely baseline scenario.

3.4 Monitoring Plan

The project applies the approved monitoring methodology AM0015 - "Bagasse-based cogeneration connected to an electricity *grid"* /5/.

The methodology considers monitoring emissions reductions generated from cogeneration projects using sugarcane bagasse. The monitoring plan, for emission reductions occurring within the project boundary, is primarily based on monitoring the amount of electricity supplied to the grid. The reliability of this monitoring parameter is assured through two-party verification of the amount of electricity sold to CPFL (the grid operator) by Usina da Serra. The electricity baseline emission factor is determined *ex-ante* and will only be updated at renewal of the crediting period. The methodology asks for hourly measurement and monthly recording and these requirements were presented in Table D.2.1.3 of the revised PDD /2/.

COSAN S/A Indústria e Comércio – Filial Ibaté and Econergy Brasil 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 already 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 exported by the project activity to the S-SE-CO grid with an ex-ante determined baseline grid emissions factor. The project is not expected to result in project GHG emissions due to the use of a renewable energy source (bagasse) for electricity generation.

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. It was confirmed by the owners of the mill that no organizations were buying bagasse from Usina da Serra prior to project implementation,.

The emission reduction calculations have been presented in tabular form, the energy for internal consumption as well as the energy to be delivered to the grid, the operating hours per year and the months in which electricity is produced have been clearly demonstrated.

The combined margin emission coefficient for the S-SE-CO grid is determined *ex-ante* in accordance with AM0015. The calculations were based on electricity generation data provided by the Brazilian Electricity Agency (ANEEL) and the National Electricity System Operator (ONS) for the electricity generated in the South-Southeast-Midwest (S-SE-CO) regional Brazilian grid in the years 2002-2004. The ONS dataset does not include power plants that dispatch locally. Data for the years 2002-2004 are the most recent statistics available and the data was verified against the data published on the ONS website.

It is justified to only include plants dispatched in the ONS although these represent only about 80% of the total installed capacity. Data for the remaining plants is not publicly available, as these plants operate either based on power purchase agreements, which are not under control of the dispatch authority, or 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 simple-adjusted operating margin (OM) emission coefficient is calculated to be 0.4310 tCO_2e/MWh (applying an average λ of 0.4961) and the build margin (BM) emission coefficient is 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).

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 /6/ are deemed to represent the best data that is currently available.

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 λ calculations were transparently presented in spreadsheets /3/ submitted to and verified by DNV /3/. The selected approach for calculating λ is in accordance with AM0015.

3.6 Environmental Impacts

Usina da Serra has been granted an environmental license (Partial Operation License no28001049 emitted in 20/07/2004) by the state environmental agency (CETESB) after all possible environmental impacts were analyzed by the State Secretary of Environment (SMA) through a report called “Previous Environmental Report” (RAP – Relatório Ambiental Preliminar). Documented evidence of the Environmental License and the requirements established by the environmental authority in order to issue the environmental license were provided (Partial Operation License no 28001049 issued in 20/07/2004) by the state environmental agency.

Besides being involved in projects to improve the life conditions of less privileged communities, Usina da Serra has implemented several initiatives, such as the reforestation of native species, riverhead recovery, forest fire control programs, environmental, landscape planning and urban river reclamation and catchments area recovery projects.

No adverse environmental impacts are identified, which seems reasonable given the nature of the project design. Transboundary environmental impacts are not foreseen.

3.7 Comments by Local Stakeholders

Local stakeholders, such as the Municipal Government, the state and municipal agencies, the Brazilian forum of NGOs, neighboring 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 names and details of these contacts were presented.

No comments were received by these stakeholders.

4 COMMENTS BY PARTIES, STAKEHOLDERS AND NGOS

DNV published the PDD of the "Serra Bagasse Cogeneration Project (SBCP)" of July 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 23 August 2005 to 21 September 2005.

One comment was received on 21 September 2005. The comment received (in unedited form) is given in the below text box.

Comment by: Yimeng Zhang, ESI

Inserted on: 2005-09-21

Subject: Evidence of incentive from CDM was seriously considered

Comment:

In EB16 Annex 1 Tool for the demonstration and assessment of additionality, Step 0. Preliminary screening based on the starting date of the project activity, evidence that the incentive from the CDM was seriously considered in the decision to proceed with the project activity is required for project wants to have the crediting period starting prior to the registration of their project activity.

The project developer wishes to get the credit since year 2002 when the project was started, however, it only presented a fact that Mr. Carlos Murilo de Barros Mello from the logistics department of Cosan participated a CDM workshop. The fact doesn't show any documented evidence (preferably official, legal and/or other corporate) that CDM was "seriously considered" in Cosan's decision making process.

How DNV has considered the comment received in its validation:

The project participants were requested to provide documentary evidence that the incentive from the CDM was seriously considered in the decision to proceed with the project activity. DNV received documented evidence 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 potential emission reductions from the project dated in April 2002 which was carried out by a CDM consultant /7/. This evidence is deemed appropriate.

5 VALIDATION OPINION

Det Norske Veritas Certification Ltd. (DNV) has performed a validation of the "Serra Bagasse Cogeneration Project (SBCP)" located in the municipality of Ibaté, São Paulo State, Brazil (hereafter called "the project"). 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 COSAN S/A Indústria e Comércio – Filial Ibaté and Econergy Brasil Ltda. The host Party, Brazil meets all relevant participation requirements. No participating Annex I Party is yet identified for the project.

The project is a bagasse-based cogeneration power generation activity displacing grid electricity. By installing a total 15 MW bagasse cogeneration capacity at the COSAN S/A - Ibaté sugar mill, the project will be able to supply excess electricity 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 is 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 is 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, 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 operates 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 "Serra Bagasse Cogeneration Project (SBCP)" as described in the revised and resubmitted project design document of October 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. Hence, DNV will request the registration of the "Serra Bagasse Cogeneration Project (SBCP)" 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/ Econergy: Project Design Document for the Serra Bagasse Cogeneration Project (SBCP), Version 1 of 6 July 2005.

/2/ Econergy: Project Design Document for the Serra Bagasse Cogeneration Project (SBCP), Version 3 of 11 October 2005.

/3/ Spreadsheet of Calculation of Combined Margin Emission Coefficient (ONS-Emission factors SSECO 2002-2004-2005.09.23).

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

/4/ International Emission Trading Association (IETA) & the World Bank's Prototype Carbon Fund (PCF): *Validation and Verification Manual*. http://www.vvmanual.info

/5/ Approved Baseline and Monitoring Methodology AM0015: "*Bagasse-based cogeneration connected to an electricity grid"*. Version 01 of 22 September 2004.

/6/ 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.

/7/ EcoSecurities, *Edge Energy Report: avaliação do potencial de redução de emissões do projeto de cogeração e eficiência energética da Cosan Usina da Serra*, April, 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 who contributed with other information that are not included in the documents listed above:

/9/ Benito Carlos Coletta – representative of COSAN S/A Indústria e Comércio – Filial Ibaté and Econergy Brasil Ltda

/10/ David Freire – Econergy

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APPENDIX A

CDM VALIDATION PROTOCOL

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

Requirement	Reference	Conclusion	Cross Reference / Comment
1. The project shall assist Parties included in Annex I in achieving compliance with part of their emission reduction commitment under Art. 3	Kyoto Protocol Art.12.2	OK	Table 2, Section E.4.1 No participating Annex I Party is 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 it 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 Brazil.
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. 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.

Requirement	Reference	Conclusion	Cross Reference / Comment
8. Parties participating in the CDM shall designate a national authority for the CDM	CDM Modalities and Procedures §29	OK	The 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 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 participating Annex I Party is yet 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 Articles 5 and 7	CDM Modalities and Procedures §31b	Not applicable	No participating Annex I Party is yet 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	OK	Table 2, Section G Local stakeholders, such as the Municipal Government, the state and municipal agencies, the Brazilian forum of NGOs, neighboring 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 names and details of these contacts were presented. No comments were received.
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 Documented evidence of the Environmental License and the requirements established by the environmental authority in order to issue the environmental license were provided (Partial Operation License n^{o} 28001049 issued in 20/07/2004) by the state environmental agency.
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

Requirement	Reference	Conclusion	Cross Reference / Comment
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 "Serra Bagasse Cogeneration Project (SBCP)" PDD of July 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 23 August 2005 to 21 September 2005. One comment was 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 the CDM-PDD (version 02 of 1 July 2004).

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 "Serra Bagasse Cogeneration Project (SBCP)", Brazil, is located in the municipality of Ibaté, São Paulo State, within the area of Usina da Serra.		OK
A.1.2. Are the project's system (components and facilities used to mitigate GHG's) boundaries clearly defined?	/1/	DR	Yes. The project system's boundary comprises the Usina da Serra cogeneration facility for activities related to the cogeneration, and the South-Southeast and Midwest section of the interconnected subsystem of the Brazilian grid. The project boundary and this electricity grid 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/	DR	Yes. The project design engineering reflects good practice using the steam Rankine cycle technology for steam and power generation.		OK
A.2.2. Does the project use state of the art technology or would the technology result in a significantly	/1/	DR	Yes. The technology used is the Rankine technology, adopted worldwide. The project		OK

Checklist Question	Ref	MoV*	Comments	Draft Concl.	Final Concl.
better performance than any commonly used technologies in the host country?			involves expanding the cogeneration capacity of the sugar mill, which will allow for the generation of excess electricity to be supplied to the grid.		
A.2.3. Is the project technology likely to be substituted by other or more efficient technologies within the project period?	/1/	DR	No. The project is unlikely to be replaced by other more efficient technologies, at least within the first 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/	DR	The project will require minimal additional training for project maintenance since the retrofit is only a modification of the currently used system.		OK
A.2.5. Does the project make provisions for meeting training and maintenance needs?	/1/	DR	The project documentation does not detail provisions for training nor maintenance. Due to the reasons indicated in A.2.4, this appears reasonable.		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	As per ANEEL Resolution (authorization to generate/sell electricity as an independent producer), total installed capacity for Usina da Serra is 15 MW Documented evidence of the Environmental License and the requirements established by the environmental authority in order to issue the environmental license were provided (Partial Operation License no 28001049 issued in 20/07/2004) by the state environmental agency.		OK
A.3.2. Is the project in line with host-country specific CDM requirements?	/1/	DR	Brazil established the Resolution 1 in line with CDM requirements. Local stakeholders, such as the Municipal Government, the state and municipal agencies,		OK

Checklist Question	Ref	MoV*	Comments	Draft Concl.	Final Concl.
			the Brazilian forum of NGOs, neighboring 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 names and details of these contacts were presented. No comments were received		
A.3.3. Is the project in line with sustainable development policies of the host country?	/1/	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 it in achieving sustainable development.		--
A.3.4. Will the project create other environmental or social benefits than GHG emission reductions?	/1/	DR	The project is expected to bring social (employment and health assistance), environmental (fauna and flora preservation and recovery plans) and economic benefits, thus contributing to the sustainable development objectives of the Brazilian 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/	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	/1/	DR	Yes. The project fulfils the conditions under which AM0015 methodology is applicable. The		OK

Checklist Question	Ref	MoV*	Comments	Draft Concl.	Final Concl.
appropriateness justified?			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.		
B.2. Baseline Determination *The choice of baseline will be validated with focus on whether the baseline is a likely scenario, whether the project itself is not a likely baseline scenario, and whether the baseline is complete and transparent.*					
B.2.1. Is the application of the methodology and the discussion and determination of the chosen baseline transparent?	/1/	DR	The simple-adjusted operating margin (OM) emission coefficient is calculated to be 0.4310 tCO_2e/MWh (applying an average λ of 0.4961) and build margin (BM) emission coefficient of 0.1256 tCO_2e/MWh, which results in a combined margin emission coefficient of 0.2783 tCO_2e/MWh (weighted average of the build and operating margin). The emission coefficient calculations were transparently presented in spreadsheets /3/ submitted to and verified by DNV.		OK
B.2.2. Has the baseline been determined using conservative assumptions where possible?	/1/ /3/	DR	The baseline emission calculations are according to the baseline methodology AM0015. The project uses electricity generation data provided by the Brazilian Electricity Agency (ANEEL) and the National Electricity System Operator (ONS) for the electricity generated in the S-SE-CO regional Brazilian grid in the years 2001-2003. These data are not the most recent available by the time of PDD submission.	~~CAR 1~~	OK

Checklist Question	Ref	MoV*	Comments	Draft Concl.	Final Concl.
			Average plant efficiencies for different power plant types established in the IEA study on the Brazilian grid and IPCC carbon emission factors for specific fuels were applied to calculate plant specific emission coefficients, which is considered appropriate		
B.2.3. Has the baseline been established on a project-specific basis?	/1/	DR	See B.2.1		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/	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 only 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/ /3/	DR	The λ was calculated by interpolating daily dispatch data for thermal power plants and daily dispatch data for hydropower plants based on data provided by ONS for the years 2001 to 2003. The λ calculations were transparently presented in spreadsheets submitted to and verified by DNV. The selected approach for calculating λ is in accordance with AM0015. See B.2.2		OK
B.2.6. Does the selected baseline represent the most likely scenario among other possible and/or discussed scenarios?	/1/	DR	See B.2.1		OK
B.2.7. Is it demonstrated/justified that the project activity itself is not a likely baseline scenario?	/1/ /5/ /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	~~CAR 3~~	OK

Checklist Question	Ref	MoV*	Comments	Draft Concl.	Final Concl.
			steps: Step 0 - -Preliminary screening based on the starting date of the project activity: The starting date of the CDM project activity, i.e. September 2002, 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 which will allow Usina da Serra to supply excess electricity to the grid. 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. Barrier analysis: Technological barriers, institutional and political barriers, economic and investment barriers and cultural barriers are presented in the PDD: a) Technological barriers. The Rankine cycle technology is well known in Brazil and the implementation of the this technology does not face any barriers, although sugar cane units		

Checklist Question	Ref	MoV*	Comments	Draft Concl.	Final Concl.
			mainly operate with low-efficiency. However, there is a technological barrier because the project needs to supply energy at a certain quality to the grid, which requires better cogeneration technology than generally applied by sugarcane mills in Brazil today. b) Institutional and political barriers. DNV could confirm that the regulatory environment for the electricity sector changes a lot and often in Brazil, resulting in uncertainty 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. c) Economic and Investment barriers. DNV was not able to confirm a general economic and investment barrier because sugarcane producers do normally not have problems with securing long-term financing as they have strong securities from their core activity, i.e. production of sugar and alcohol. d) Cultural barriers. DNV was able to confirm that the sugarcane production 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. The barriers should be better accessed. Step 4 - Common practice analysis: DNV was able to confirm that the efficient production of		

Checklist Question	Ref	MoV*	Comments	Draft Concl.	Final Concl.
			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 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/	DR	Yes.		OK
B.2.9. Is all literature and sources clearly referenced?	/1/	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/	DR	Yes. The project start date is September 2002 with an expected lifetime of 25 years.		OK
C.1.2. Is the assumed crediting time clearly defined (renewable crediting period of seven years with two possible renewals or fixed crediting period of 10 years with no renewal)?	/1/	DR	A renewable 7-year crediting period was selected, starting in 18/09/2002.		OK

Checklist Question	Ref	MoV*	Comments	Draft Concl.	Final Concl.
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/ /5/	DR	Yes. The project applies the approved monitoring methodology AM0015 - "Bagasse-based cogeneration connected to an electricity grid".		OK
D.1.2. Is the monitoring methodology applicable for this project and is the appropriateness justified?	/1/ /5/	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/ /5/	DR	The monitoring methodology of AM0015 is correctly applied and calculation of emission reductions will use data based on electricity exported (energy meter) to the grid and consistency will be ensured through sales records. Nonetheless, the methodology asks for hourly measurement and monthly recording and these requirements are not mentioned on PDD/table D.2.1.3	~~CAR 2~~	OK
D.1.4. Is the discussion and selection of the monitoring methodology transparent?	/1/	DR	Yes.		OK

Checklist Question	Ref	MoV*	Comments	Draft Concl.	Final Concl.
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/ /5/	DR	Project emissions are considered zero in line with AM0015 and IPCC guidelines, which stipulate that biomass combustion is assumed to equal its re-growth, i.e. to be climate neutral.		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/ /5/	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. It should be further confirmed if there were no organizations bought bagasse from Usina da Serra, prior to the project implementation,	~~CL 2~~	OK
D.3.2. Have relevant indicators for GHG leakage been included?	/1/	DR	See D.3.1	~~CL 2~~	OK
D.3.3. Does the monitoring plan provide for the collection and archiving of all relevant data necessary for determining leakage?	/1/	DR	See D.3.1	~~CL 2~~	OK
D.3.4. Will it be possible to monitor the specified GHG leakage indicators?	/1/	DR	See D.3.1	~~CL 2~~	OK

Checklist Question	Ref	MoV*	Comments	Draft Concl.	Final Concl.
D.4. Monitoring of Baseline Emissions *It is established whether the monitoring plan provides for reliable and complete project emission data over time.*					
D.4.1. Does the monitoring plan provide for the collection and archiving of all relevant data necessary for determining baseline emissions during the crediting period?	/1/ /3/	DR	The CO_2 emission factor of the grid is based on ONS information for the years 2001 to 2003. These are not the most recent data available. This coefficient is fixed ex-ante and hence no data needs to be collected in this regard.	~~CAR 1~~	OK
D.4.2. Is the choice of baseline indicators, in particular for baseline emissions, reasonable?	/1/	DR	See D.4.1	~~CAR 1~~	OK
D.4.3. Will it be possible to monitor the specified baseline indicators?	/1/	DR	See D.4.1	~~CAR 1~~	OK
D.5. Monitoring of Sustainable Development Indicators/ Environmental Impacts *It is checked that choices of indicators are reasonable and complete to monitor sustainable performance over time.*					
D.5.1. Does the monitoring plan provide the collection and archiving of relevant data concerning environmental, social and economic impacts?	/1/	DR	Neither AM0015 nor Resolution 1 of the Brazilian DNA requires the monitoring of social and environmental indicators.		OK
D.5.2. Is the choice of indicators for sustainability development (social, environmental, economic) reasonable?	/1/	DR	See D.5.1.		OK
D.5.3. Will it be possible to monitor the specified sustainable development indicators?	/1/	DR	See D.5.1.		OK
D.5.4. Are the sustainable development indicators in line with stated national priorities in the Host Country?	/1/	DR	See D.5.1.		OK

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	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/	DR	The amount of electricity sold will be verified through invoices issued by the regional electricity company (CPFL) and monitoring, registration and review is the responsibility of Usina da Serra.		OK
D.6.3. Are procedures identified for training of monitoring personnel?	/1/	DR	No specific procedures for training of monitoring personnel are mentioned, but the project only requires limited monitoring, which is part of normal operations. Calibration of energy meter is the responsibility of the utility company.		OK
D.6.4. Are procedures identified for emergency preparedness for cases where emergencies can cause unintended emissions?	/1/	DR	See D.6.1.		OK
D.6.5. Are procedures identified for calibration of monitoring equipment?	/1/	DR	See D.6.3.		OK
D.6.6. Are procedures identified for maintenance of monitoring equipment and installations?	/1/	DR	See D.6.1.		OK
D.6.7. Are procedures identified for monitoring, measurements and reporting?	/1/	DR	See D.6.1.		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	See D.6.1.		OK
D.6.9. Are procedures identified for dealing with possible monitoring data adjustments and	/1/	DR	See D.6.1.		OK

Checklist Question	Ref	MoV*	Comments	Draft Concl.	Final Concl.
uncertainties?					
D.6.10. Are procedures identified for review of reported results/data?	/1/	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/	DR	See D.6.1.		OK
D.6.12. Are procedures identified for project performance reviews before data is submitted for verification, internally or externally?	/1/	DR	See D.6.1.		OK
D.6.13. Are procedures identified for corrective actions in order to provide for more accurate future monitoring and reporting?	/1/	DR	See D.6.1.		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/ /5/	DR	Yes. 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

Checklist Question	Ref	MoV*	Comments	Draft Concl.	Final Concl.
E.2. Leakage *It is assessed whether there leakage effects, i.e. change of emissions which occurs outside the project boundary and which are measurable and attributable to the project, have been properly assessed.*					
E.2.1. Are potential leakage effects beyond the chosen project boundaries properly identified?	/1/ /5/	DR	According to the chosen methodology, the only potential source of leakage could come from organizations that used to buy bagasse from the sugar mill. 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. It should be further confirmed / verified that no organizations bought bagasse from Usina da Serra. prior to the project implementation,	~~CL 2~~	OK
E.2.2. Have these leakage effects been properly accounted for in calculations?	/1/	DR	See E.2.1.	~~CL 2~~	OK
E.2.3. Does the methodology for calculating leakage comply with existing good practice?	/1/	DR	See E.2.1.	~~CL 2~~	OK
E.2.4. Are the calculations documented in a complete and transparent manner?	/1/	DR	See E.2.1.	~~CL 2~~	OK
E.2.5. Have conservative assumptions been used when calculating leakage?	/1/	DR	See E.2.1.	~~CL 2~~	OK
E.2.6. Are uncertainties in the leakage estimates properly addressed?	/1/	DR	See E.2.1.	~~CL 2~~	OK

Checklist Question	Ref	MoV*	Comments	Draft Concl.	Final Concl.
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/ /3/ /5/	DR	The simple-adjusted operating margin (OM) emission coefficient is calculated to be 0.4310 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). The emission coefficient calculations were transparently presented in spreadsheets /3/ submitted to and verified by DNV.		OK
E.3.2. Are the baseline boundaries clearly defined and do they sufficiently cover sources and sinks for baseline emissions?	/1/ /3/	DR	The baseline emission calculations are according to the baseline methodology AM0015. The project uses electricity generation data provided by the Brazilian Electricity Agency (ANEEL) and the National Electricity System Operator (ONS) for the electricity generated in the S-SE-CO regional Brazilian grid in the years 2001-2003. These data are not the most recent available by the time of PDD submission. Average plant efficiencies for different power plant types established in the IEA study on the Brazilian grid and IPCC carbon emission factors for specific fuels were applied to calculate plant specific emission coefficients, which is considered appropriate	~~CAR 1~~	OK
E.3.3. Are the GHG calculations documented in a complete and transparent manner?	/1/	DR	See E.3.1		OK

Checklist Question	Ref	MoV*	Comments	Draft Concl.	Final Concl.
E.3.4. Have conservative assumptions been used when calculating baseline emissions?	/1/	DR	See E.3.2		OK
E.3.5. Are uncertainties in the GHG emission estimates properly addressed in the documentation?	/1/	DR	See E.3.1		OK
E.3.6. Have the project baseline(s) and the project emissions been determined using the same appropriate methodology and conservative assumptions?	/1/	DR	For project baseline, see E.3.1. For project emissions, see E.1.1.		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/ /5/	DR	The project is expected to reduce CO_2 emissions to the extent of 48 990 tCO_2e (6 999 tCO_2e / year on average) during the first 7-year crediting period. Table 6 shows baseline emissions in column No.1 (project emissions) instead of No.2.	~~CL 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/	DR	Usina da Serra has been granted environmental licenses (Previous and Installation License Process nº 28/00579/04 emitted in 04/08/2005) by the state environmental agency (CETESB) after all possible environmental impacts were analyzed by the State Secretary of Environment (SMA) through a report called "Previous		OK

Checklist Question	Ref	MoV*	Comments	Draft Concl.	Final Concl.
			Environmental Report" (RAP – Relatório Ambiental Preliminar). Documented evidence of the Environmental License and the requirements established by the environmental authority in order to issue the environmental license were provided (Partial Operation License no 28001049 issued in 20/07/2004) by the state environmental agency.		
F.1.2. Are there any Host Party requirements for an Environmental Impact Assessment (EIA), and if yes, is an EIA approved?	/1/	DR	See F.1.1		OK
F.1.3. Will the project create any adverse environmental effects?	/1/	DR	Project design did not identified/addressed any environmental impact; however, no significant adverse environmental effects are expected to be created, given the nature of the project design.		OK
F.1.4. Are transboundary environmental impacts considered in the analysis?	/1/	DR	Transboundary environmental impacts are not foreseen.		OK
F.1.5. Have identified environmental impacts been addressed in the project design?	/1/	DR	The project is unlikely to create any adverse environmental impacts.		OK
F.1.6. Does the project comply with environmental legislation in the host country?	/1/	DR	See F.1.1		
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	Local stakeholders, such as the Municipal Government, the state and municipal agencies, the Brazilian forum of NGOs, neighboring communities and the office of the attorney general, were invited to comment on the project,		OK

Checklist Question	Ref	MoV*	Comments	Draft Concl.	Final Concl.
			in accordance with the requirements of Resolution 1 of the Brazilian DNA. The names and details of these contacts were presented. No comments were received.		
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 uses electricity generation data provided by the Brazilian Electricity Agency (ANEEL) and the National Electricity System Operator (ONS) for the electricity generated in the S-SE-CO regional Brazilian grid in the years 2001-2003. These data are not the most recent available by the time of PDD submission. There is data for 2002-2004.		The PDD was updated with the new data from 2002-2004 as required. In addition, all linked information was also modified.	Section E.4 of the revised PDD provides the requested clarification on emission factor of S.SE.CO Brazilian grid for the years 2002-2004. This CAR is therefore closed.
CAR 2 The methodology asks for hourly measurement and monthly recording and these requirements are not mentioned on PDD/table D.2.1.3	D.1.3	As already added into the table D.2.1.3. and the Annex 4 (Monitoring Plan) of the PPD: "The quantity of energy to be sold to Eletrobras will be on-line monitored and the information will be monthly recorded."	The further clarifications provided by the project proponents sufficiently address our request. This CAR is therefore closed.
CAR 3 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	There is a PIN developed by COSAN through Eco-Securities, issued in April, 2002. The document was already sent to Ms. Cíntia Dias from DNV by e-mail from Mr. David F. Costa from Econergy, in October, 7th, 2005. This document proves that Cosan had considered CDM before the project implementation.	DNV received documented evidence 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 potential emission reductions from the project dated in April 2002 which was carried out by a CDM consultant /7/. This evidence is deemed appropriate. This CAR is therefore closed.
CL 1 Table 6 shows baseline emissions in column No.1 (project emissions) instead of No.2. The calculations have to be specified in a	E.4.1	The table was updated in Annex 3 section with all information available.	Table in Annex 3 of the revised PDD provides the requested clarification. 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
table form, the energy for internal consumption as well as to be delivered the grid, the hours per year and the months to be produced have to be clearly demonstrated.			
CL 2 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. It should be further confirmed / verified that no organizations bought bagasse from Usina da Serra prior to the project implementation,	E.2.1 D.3.1 to D.3.4	An e-mail sent to Mr. David F. Costa from Econergy by Manuela Turner Marquez from Serra-Cosan confirms that the mill did not sell bagasse previously to the beginning of project activity. In addition, the same e-mail confirms that a formal document will be sent to Mr. David F. Costa from Econergy. Meanwhile, the mentioned e-mail will be sent by Mr. David to Miss Cintia Dias and Mr. Luis Felipe Tavares, both from DNV.	DNV recognizes that there is no potential leakage in the sugar cane mills because there is an abundance of the bagasse in the area. This CL is closed.

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