VALIDATION REPORT

Santa Terezinha – Tapejara Cogeneration Project. (Usina de Açúcar Santa Terezinha Ltda.)

BUREAU VERITAS CERTIFICATION

REPORT NO. BVC/BRA/2006-001

REVISION NO. 05

VALIDATION REPORT

Date of first issue: March 1ST, 2006	Project No.: 61730
Approved by: Ashok Mammen Internal reviewer	Organisational unit: Bureau Veritas Certification Holding SA
Client: **USINA DE AÇÚCAR SANTA TEREZINHA LTDA**	Client ref.: Genaildo Torres

Summary:
Bureau Veritas Certification Holding SA (BVC) has made a validation of the Santa Terezinha – Tapejara Cogeneration Project. (Usina de Açúcar Santa Terezinha Ltda.) (hereafter called "the project") located in Tapejara, State of Paraná, 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 rules and modalities and the subsequent decisions by the CDM Executive Board, as well as the host country criteria.

The validation scope is defined as an independent and objective review of the project design document, the project's baseline study, monitoring plan and other relevant documents, and consisted of the following three phases: i) desk review of the project design and the baseline and monitoring plan (February 2006); ii) follow-up interviews with project stakeholders (February 2006); iii) resolution of outstanding issues and the issuance of the final validation report and opinion (March 2006)iv) revision of the validation report due to the comments of the Designated National Authority (July 2006);revision of the validation report due to modifications made in the PDD (revision 7, January 18, 2007) due to the change of Methodology ACM0006 – Version 4. The overall validation, from Contract Review to Validation Report & Opinion, was conducted using internal procedures (BMS, September 2003), which were audited by the UN CDM Accreditation Team in December 2004.

The first output of the validation process is a list of Clarification and Corrective Actions Requests (CR and CAR), presented in Appendix A. Taking into account this output, the project proponent revised its project design document (March 2006).

In summary, it is BVC's opinion that the project correctly applies the Clean Development Mechanism Project Design Document Form (CDM-PDD) – Version 03; the Guidelines for completing the Project Design Document (CDM-PDD) and the proposed new baseline and monitoring methodologies CDM-NM, Version 06.2; the Approved Consolidated Baseline Methodology ACM0006 "Consolidated baseline methodology for grid-connected electricity generation from biomass residues" - Version 04; the Tool for the demonstration and assessment of additionality – Version 02; and meets the relevant UNFCCC requirements for the CDM and the relevant host country criteria.

Report No.: BVC/BRA/2006-001	Subject Group: GHG/CDM	
Report title: Santa Terezinha – Tapejara Cogeneration Project. (Usina de Açúcar Santa Terezinha Ltda.)		
Work carried out by: Antonio Daraya, Flávio Gomes da Silva, Marcos Tashiro		
Work reviewed by: Ashok Mammen		
Date of this revision: 25 Jan 2007	Rev. No.: 05	Number of pages: 76

Indexing terms

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Abbreviations

ACM	Approved Consolidated Methodology
BMS	BVC Management System
BVC	Bureau Veritas Certification Holding SA
BVC	Bureau Veritas Quality International
CAR	Corrective Action Request
CDM	Clean Development Mechanism
CER	Certified Emission Reductions
CH_4	Methane
CR	Clarification Request
CO_2	Carbon Dioxide
COPICAR	Coop. Agroindustrial dos Produtores de Cana de Icaraíma
COTAL	Coop. Agrícola dos Produtores de Cana de Tapejara
COVAPI	Coop. Agrícola dos Produtores de Cana do Vale do Pirapó
DNA	Designated National Authority
DOE	Designated Operational Entity
DR	Document Review
GHG	Green House Gas(es)
I	Interview
IAP	Paraná Environmental Institute
IETA	International Emissions Trading Association
IPCC	Intergovernmental Panel on Climate Change
ISO	International Organisation for Standardization
LI	Installation Licence
LO	Operation Licence
LP	Preliminary Licence
MoV	Means of Verification
MP	Monitoring Plan
NGO	Non Government Organisation
PCF	Prototype Carbon Fund
PDD	Project Design Document
PROCANA	Programa para o Desenvolvimento da Cana – IAC Instituto Agronômco de Campinas/FUNDAG – Fundação de Apoio à Pesquisa Agrícola.
UNFCCC	United Nations Framework Convention for Climate Change

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1 INTRODUCTION

USINA DE AÇUCAR SANTA TEREZINHA (hereafter called “the client”) has commissioned Bureau Veritas Certification to validate its Cogeneration Project (hereafter called “the project”) at Tapejara, State of Paraná, Brazil.

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

1.1 Objective

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

UNFCCC criteria refer to Article 12 of the Kyoto Protocol, the CDM rules and modalities and the subsequent decisions by the CDM Executive Board, as well as the host country criteria.

1.2 Scope

The validation scope is defined as an independent and objective review of the project design document, the project’s baseline study and monitoring plan and other relevant documents. The information in these documents is reviewed against Kyoto Protocol requirements, UNFCCC rules and associated interpretations. BVC has, based on the recommendations in the Validation and Verification Manual (IETA/PCF, v. 3.3, 2004), employed a risk-based approach in the validation, focusing on the identification of significant risks for project implementation and the generation of CERs.

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

1.3 GHG Project Description

Santa Terezinha – Tapejara Cogeneration Project consists on the installation of a modernized equipment using bagasse more efficiently to co generate electricity. Through this expansion, replacing old equipment, the sugar mill will generate power surplus for sale and, at the same time, carbon credits by reducing greenhouse gases emissions, contributing to the sustainable development. A more efficient cogeneration of this renewable fuel allows USINA DE AÇÚCAR SANTA TEREZINHA – Tapejara mill to sell a surplus of electricity to the grid and creates a competitive advantage.

The cogeneration project will generate enough energy not only for powering the sugar mill (thus eliminating the consumption of energy from the grid for the expanding capacity of the facility), but also for delivering surplus energy to the national grid. This electricity given to the grid will displace energy that the government would have provided with a strong use of fossil fuels. This displacement of energy thus creates a reduction of greenhouse gases emissions. This project also creates social and economical benefits that constitute a real contribution to Brazil's sustainable development.

This renewable energy project is owned by USINA DE AÇÚCAR SANTA TEREZINHA Ltda., a sugar cane based distillery originally founded in 1964. In the eighties, Santa Terezinha acquired COVAPI – Cooperativa Agrícola dos Produtores de Cana do Vale do Pirapó Ltda., in the municipal district of Paranacity, which started to operate with the name of Destilaria de Álcool São José S.A. and COTAL - Cooperativa Agrícola dos Produtores de Cana de Tapejara Ltda., which started to operate by the name of Destilaria Julina S.A. In 1994, Santa Terezinha also acquired COPICAR – Cooperativa Agroindustrial dos Produtores de Cana de Icaraíma Ltda., which started operating as Usina de Álcool e Açúcar Ivaté S.A., located in the Municipal district of Ivaté, Northwest of Paraná. Today, Santa Terezinha Group has 4 production units in the cities: Ivaté, Maringá, Paranacity and Tapejara. During the last 2004/2005 crop season, Santa Terezinha Group (all units) processed about 6,404,370 tones of sugar cane, produced 127,407 m3 of alcohol and 688,160 tones of sugar.

1.4 Validation team

The validation team consists of the following personnel:

Eng. Antonio Daraya	BVC Brazil	GHG Auditor
Marcos Tashiro	BVC Brazil	Corporate Finance Manager
Dr. Ashok Mammen	BVC India	Internal Reviewer
MSc. Flávio Gomes da Silva	BVC Holdings	Team Leader, GHG Auditor

A small resume of each member of the validation team is described below;

Flavio Gomes – is a chemical engineer graduated with máster of science degree in Sanitary Engineering and Health and Safety Enginnering. He is an expert in the implementation of Environmental Management System (EMS) and the operational control applicable to waste treatment systems. Flavio has a big experience in activities related to CDM, such as: participation in validation and verification team, tutor of internal training courses far validators/verifiers qualification and internal reviewer of validation and verification reports issued by BVC. He is also the technical responsible for CDM activities in BVC.

Antonio Daraya – is graduate in Chemical Engineering with a very large experience in Industrial and Environmental management in several industrial sectors. He is ISO 9001:2000, ISO 14001:2004 and OHSAS 18001 Lead Auditor and has also experience in the implementation of Quality and Environmental Management Systems. Antonio is qualified as Lead Verifier GHG – Green House Gases. He has been involved in the validation and verification process in many project activities.

Marcos Tashiro – Professional with 10 years of experience in the Finance/ Control Area, Corporate Finance, Risk Management and IRR Analysis. Presently works as BVC's Corporate Finance Manager, reporting to the Executive Board of the company, in charge of Project/Client's Results Analysis and Consolidation of Results.

Ashok Mammen - Ph.D (Oils & Lubricants),M.Sc(Analytical chemistry. Over 20 years of experience in petrochemical sector. He has been involved in the validation and verification processes of more than 30 CDM projects.

2 METHODOLOGY

The overall validation, from Contract Review to Validation Report & Opinion, was conducted using internal procedures (BMS, September 2003) which were audited by the CDM Accreditation Team in December 2004.

In order to ensure transparency, a validation protocol was customised for the project, according to the Validation and Verification Manual (IETA/PCF, v. 3.3, 2004). 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 five tables. The different columns in these tables are described in Figure 1~~Figure 1~~.

The completed validation protocol is enclosed in Appendix A to this report.

Validation Protocol Table 1: Mandatory Requirements			
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)** or a **Clarification Request (CR)** of risk or non-compliance with stated requirements. The CAR's and CR's are numbered and presented to the client in the Validation Report.	Used to refer to the relevant protocol 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 several sections. Each section is then further sub-divided. The lowest level constitutes a checklist question.	Gives reference to documents where 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). **Clarification Request (CL)** is used when the validation team has identified a need for further clarification.

Validation Protocol Table 3: Methodology checklist				
Checklist Question	**Reference**	**Means of verification (MoV)**	**Comment**	**Draft and/or Final Conclusion**
The various requirements of the baseline and monitoring methodologies are specified in this checklist. The checklist is organised in several sections. Each section is then further sub-divided. The lowest level constitutes a checklist question.	Baseline and monitoring methodologies	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). **Clarification Request (CL)** is used when the validation team has identified a need for further clarification.

Validation Protocol Table 4: Legal requirements				
Checklist Question	**Reference**	**Means of verification (MoV)**	**Comment**	**Draft and/or Final Conclusion**
The national legal requirements the project must meet.	National Sustainable Policies.	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). **Clarification Request (CL)** is used when the validation team has identified a need for further clarification.

Validation Protocol Table 5: Resolution of Corrective Action and Clarification Requests			
Report clarifications and corrective action requests	**Ref. to checklist question in tables 2, 3 and 4**	**Summary of project owner response**	**Validation conclusion**
If the conclusions from the 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 Tables 2, 3 and 4 where the Corrective Action Request or Clarification Request is explained.	The responses given by the Client or other 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 Tables 2,3 and 4, under "Final Conclusion".

Figure 1 Validation protocol tables

2.1 Review of Documents

The Project Design Document (PDD) submitted by USINA DE AÇÚCAR SANTA TEREZINHA and additional background documents related to the project design and baseline, i.e., Resolução Interministerial 01/03 , Resolução Interministerial 02/05 , Clean Development Mechanism Project Design Document Form (CDM-PDD) – Version 03, Guidelines for completing the Poject Design Document (CDM-PDD) and the proposed new baseline and monitoring methodologies CDM-NM, Version 06.2, ACM0006 "Consolidated baseline methodology for grid-connected electricity generation from biomass residues" Version 04, ACM0002 "Consolidated Baseline Methodology for Grid Connected Electricity Generation From Renewable Sources", Version 02, Tool for the demonstration and assessment of additionality – Version 02 , Kyoto Protocol to the United Nations Framework Convention on

Climate Change, Clarifications on Validation Requirements to be Checked by a Designated Operational Entity , were reviewed.
The following documents were used as references to the validation work, in addition to internal BVC procedures: IETA/PCF – Validation and Verification Manual (v. 3.3, Mar 2004) ; ISO 14064-3 - Greenhouse gases —Part 3: Specification with guidance for the validation and verification of greenhouse gas assertions ; ISO 14064-2 - Greenhouse gases — Part 2: Specification with guidance at the project level for quantification, monitoring and reporting of greenhouse gas emission reductions or removal enhancements .

2.2 Follow-up Interviews

On February 23rd, 2006 BVC performed interviews with project stakeholders to confirm selected information and to resolve issues identified in the document review. Representatives of USINA DE AÇÚCAR SANTA TEREZINHA were interviewed (see References). The main topics of the interviews are summarised in Table 1.

Table 1 Interview topics

Interviewed organisation	Interview topics
USINA DE AÇÚCAR SANTA TEREZINHA	➢ Environmental legal requirements related to the project ➢ Technical characteristics of the project
ECOINVEST	➢ Project category ➢ Actual reduction of tons of GHG ➢ Barriers to the project ➢ Methodology ➢ Origin of data ➢ Invitation of stakeholders for comments

2.3 Resolution of Clarification and Corrective Action Requests

The objective of this phase of the validation was to raise the requests for corrective actions and clarification and any other outstanding issues that needed to be clarified for BVC positive conclusion on the project design.

To guarantee the transparency of the validation process, the concerns raised are documented in more detail in the validation protocol in Appendix A.

3 VALIDATION FINDINGS

In the following sections the findings of the validation are stated. The validation findings for each validation subject are presented as follows:

1) The findings from the desk review of the original project design documents and the findings from interviews during the follow up visit are summarised. A more detailed record of these findings can be found in the Validation Protocol in Appendix A.
2) Where BVC had identified issues that needed clarification or that represented a risk to the fulfilment of the project objectives, a Clarification or Corrective Action Request, respectively, have been issued. The Clarification and Corrective Action Requests are stated, where applicable, in the following sections and are further documented in the Validation Protocol in Appendix A. The validation of the Project resulted in nine Corrective Action Requests and sixteen Clarification Requests.
3) The conclusions of the validation process are presented.

3.1 Project Design

One fundamental goal of the project is the efficient use of resources, particularly indigenous resources, while minimizing impact on the environment.

Santa Terezinha – Tapejara Cogeneration Project consists on the installation of a modernized equipment using bagasse more efficiently to co generate electricity. Through this expansion, replacing old equipment, the sugar mill will generate power surplus for sale and, at the same time, carbon credits by reducing greenhouse gases emissions, contributing to the sustainable development. A more efficient cogeneration of this renewable fuel allows USINA DE AÇÚCAR SANTA TEREZINHA – Tapejara mill to sell a surplus of electricity to the grid and creates a competitive advantage.

The cogeneration project will generate enough energy not only for powering the sugar mill (thus eliminating the consumption of energy from the grid for the expanding capacity of the facility), but also for delivering surplus energy to the national grid. This electricity given to the grid will displace energy that the government would have provided with a strong use of fossil fuels. This displacement of energy thus creates a reduction of greenhouse gases emissions. This project also creates social and economical benefits that constitute a real contribution to Brazil's sustainable development.

The revenues obtained from the sale of the CERs will help USINA DE AÇÚCAR SANTA TEREZINHA to continue supporting the community. USINA DE AÇÚCAR SANTA TEREZINHA has a strong social responsibility

evidenced in numerous initiatives concentrated in 3 great projects: human capital with programmes and training for its employees, construction of popular houses by supporting the construction of dwelling groups and plan of the participation of the employees in the results of the Company. These revenues distribution and social efforts must be added to the environmental benefits when evaluating the contribution to sustainable development of this project activity.

During the site visit the water-impounding permit the project was not showed. It was required from Superintendência de Desenvolvimento de Recursos Hídricos e Saneamento Ambiental on October 13th, 2005, as stated in section F.1 of the version 04 of the PDD. Later it was provided by the project participant, issued on July 2006 and a validity period of 5 years.

3.2 Baseline

The project falls under Scenario # 14/ Energy Efficiency Projects/ P4 and P5/ B4/ H5 of methodology ACM0006 for grid-connected electricity generation using biomass. It reduces emissions by displacing electricity from the grid. It complies with all the conditions limiting the applicability of the methodology.

The primary fuel in the project plant is a biomass consisting of sugar cane bagasse. The bagasse used in the Santa Terezinha - Tapejara Cogeneration Project comes from the production of sugar carried in the same facility where the project is located.

Any increases in the bagasse production are due to Santa Terezinha - Tapejara Cogeneration Project natural expanding business and could not be attributed to the implementation of the cogeneration project. This project does not have an impact in processing capacity; Santa Terezinha - Tapejara will not increase their installed capacity because of this project.

Santa Terezinha - Tapejara will generate approximately 75.56 KWh per tonne of sugar cane processed.

The sugar mills, generally, store a small amount of bagasse for the next season in order to start plant operations when the new crop season/ harvest begins. The bagasse is stored from the end of the harvest season in November in the Brazilian South region, until the beginning of the following harvest season, in May. The volume of bagasse stored between seasons is insignificant, less than 5% of the total amount of bagasse generated during the year or during the harvest period.

The biomass used in this project is not transformed in any way before being used as a fuel. Santa Terezinha - Tapejara Cogeneration Project uses bagasse for the generation of heat and electricity. The project activity replaces less efficient equipment that used the biomass to generate electricity to the sugar mill. The installed capacity of the plant changes, due to the increase in efficiency, using the same type and quantity of biomass as before. Biomass decay was non-existent, as biomass was used in the past to generate electricity for internal use. Emission reductions from heat are not considered because the heat efficiency of the new plant is larger than the heat efficiency of the pre-project equipment and for conservativeness reasons, they are excluded.
In the absence of the project activity, the existing power plant would continue to operate without significant changes, until it would need to be replaced at the end of its technical lifetime.

For Santa Terezinha - Tapejara Cogeneration Project, it was estimated that the replaced equipment still had additional 25 years of life. With good maintenance, 40 years is the typical average technical lifetime of this type of equipment in this industry in Brazil.

In accordance with ACM0006, the additionality of the project is demonstrated through the “Tool for the demonstration and assessment of additionality”, which includes the following steps:

Step 0 -Preliminary screening based on the starting date of the project activity : not applicable

Step 1 - Identification of alternatives to the project activity consistent with current laws and regulations:

Sub-step 1a. Define alternatives to the project activity
To define the alternatives to the project activity, there are two-sided analysis, taking into consideration the perspective of the project owner and the perspective of the country.

From the project owner’s perspective, the cogeneration project allows the company to export electricity to the grid. Without the project, the plant would continue to operate with low energy efficiency and could not export electricity to the grid.

From the country’s perspective, the alternative for producing a similar amount of energy, as the one Santa Terezinha - Tapejara is to provide, would be to use current generation system, which is electricity supplied by large hydro and thermal power stations. Brazil is increasingly depending on thermal plants (mainly natural gas fired).

During a period of restructuring the entire electricity market, as is the current Brazilian situation, investment uncertainty is the main barrier for small renewable energy power projects. In this scenario, these projects compete with existing plants (operating margin) and with new projects (build margin), in which thermal plants usually attract the attention of financial investors.

Sub-step 1b. Enforcement with applicable laws and regulations

The usage of electricity from the grid is in complete compliance with all applicable legal and regulatory requirements. The use of thermal electricity in the generation system is not only in compliance with regulations but also of increasing importance. The proposed project activity is not the only alternative in compliance with regulations.

Step 2 - Investment analysis: Not applicable (step 3 was selected)

Step 3. Barrier analysis.

Sub-step 3a: Investment barrier, Institutional barrier and barriers due to the prevailing practice are presented in the PDD:

Investment barrier : Based on the analysis of the project Cash Flow and data about the economical scenario of Brazil, BVC could confirm that an economic and investment barrier is the fact that the Project was set up with an expected financial IRR – Internal Rate of Return of the approximately 12.63% per year. The inclusion of the revenues from CERs makes the project's IRR increase from 12.63% to 15.41%, which is very similar to the Brazilian Prime Rate, SELIC (source Brazilian Central Bank) BVC conclusion is that the project is not financially attractive in absence of CER revenues.

Institutional barrier : BVC could confirm that the government electricity market policies have been continuously changing in Brazil. Too many laws and regulations were created to try to organize and to provide incentives for new investments in the energy sector. The relatively high volatility of the electricity price in Brazil, although in the short term, contributes to difficult the analysis of the market by the developers.

Barriers due to prevailing practice: The validation team was able to confirm that the sugarcane production is different from energy production and that electricity revenues only constitute a very minor part of the project developer's total income. The main alternative to the project activity is to continue the status quo, the sugar cane mills only concentrating theirs investment on sugar and ethanol production.

Sub-step 3b. Show that the identified barriers would not prevent the implementation of at least one of the alternatives:

As described above, the main alternative to the project activity is to continue the status quo, the sugarcane mills only concentrating their investments on sugar and ethanol. Therefore the barriers above would not affect the investment in other opportunities.

Step 4 - Common practice analysis: It was possible 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 sale of CER's will provide the necessary incentive for the project to overcome the presented barriers.

Based on the analysis above, it is sufficiently demonstrated that the project is not a likely baseline scenario.

It was demonstrated that the thermal efficiency of the project plant is larger than the old plant.

It was evidenced why leakage was considered nil. .

3.3 Monitoring Plan

The chosen monitoring methodology is applicable to biomass-based cogeneration projects connected to the grid. The methodology considers monitoring emission reductions generated from cogeneration projects using sugarcane bagasse as fuel. This fits perfectly the operation at Santa Terezinha - Tapejara Cogeneration project, so the choice of methodology is justified.

The applicability conditions expressed in the monitoring methodology are identical to those of the ACM0006 baseline methodology. The Santa Terezinha - Tapejara project as described in Section 3.2 of this document, meets such conditions.

The main data to be considered in determining the emission reductions is the net quantity of electricity(electricity exported to the grid + electricity consumed – electricity consumed in the auxiliary systems). The emission reductions are reached by applying an emission factor through the electricity dispatched to the grid, which is verified and monitored by the power plant that sells the electricity.

The PDD presents all the description of authority and responsibility for the project management as well as for registration, monitoring, measurement and reporting.

The type of the meter to be used to do the measurement of the energy dispatched to the grid is provided in the PDD.

3.4 Calculation of GHG Emissions

Ex-ante calculation of emission reductions:

$$ER_y = BE_{thermal,y} + BE_{electricity,y} - PE_y - L_y$$

Where:

ER_y are the emission reductions of the project activity during year y
$BE_{electricity,y}$ are the baseline emissions due to displacement of electricity in year y
$BE_{thermal,y}$ are the baseline emissions due to displacement of thermal energy in year y
PE_y are project emissions in year y (zero for this project activity)
L_y are the leakage emissions in year y (zero for this project activity)

Based on the renewable source of technology, the project emissions are nil. There are no CO2 emissions from on-site fuel consumption of fossil fuels, because the power plant has been using, before and after the project activity, only bagasse as fuel. Therefore, no calculation of estimate of GHG emissions is necessary.

PEy = 0

The main emissions giving rise due to leakage in the context of electric sector projects are emissions arising due to activities such as power plant construction, fuel handling (extraction, processing and transport). Project participants do no need to consider these emission sources as leakage in applying this methodology. So, leakage was considered nil, because all the biomass combusted in the project plant is produced on-site. There is no need to purchase biomass off-site and no diversion of biomass from other uses to the project plant as a result of the project activity. Therefore:

Ly = 0

Estimated baseline emissions:

The amount of electricity to be considered for the displacement of power from the grid is calculated using the equation below. This equation corresponds to the chosen scenario #14 of the ACM0006 methodology:

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

EGy is determined based on the average net efficiency of electricity generation in the project plant prior to project implementation, *εel,pre project ,* and the average net efficiency of electricity generation in the project plant after project implementation, *εel,project plant,y*, where:

EGy is the net quantity of increased electricity generation as a result of the project activity(incremental to baseline generation) during the year *y* in MWh,

EGproject plant,y is the net quantity of electricity generated in the project plant during the year *y* in MWh,
εel,pre project is the average net efficiency of electricity generation in the project plant prior to project implementation, expressed in MWhel/MWhbiomass.
εel,project plant,y is average net energy efficiency of electricity generation in the project plant, expressed in MWhel/MWhbiomass.

The average net energy efficiency of heat electricity in the project plant (*εel,project plant,y*) should be calculated by dividing the electricity generation during the year *y* by the sum of all fuels (biomass residue types *k* and fossil fuel types *i*), expressed in energy units, as follows:

$$\varepsilon_{el,project\ plant,y} = \frac{EG_{project\ plant,y}}{\sum_k NCV_k \cdot BF_{k,y} + \sum_i NCV_i \cdot FF_{project\ plant,i,y}}$$

where:

εel,project plant,y = Average net energy efficiency of electricity generation in the project plant
EGproject plant,y = Net quantity of electricity generated in the project plant during the year *y* (MWh)
BFk,y = Quantity of biomass residue type *k* combusted in the project plant during the year *y* (tons of dry matter or liter)
NCVk = Net calorific value of the biomass residue type *k* (GJ/ton of dry matter or GJ/liter)
NCVi = Net calorific value of fossil fuel type *i* (GJ / mass or volume unit)
FFproject plant,i,y = Quantity of fossil fuel type *i* combusted in the biomass residue fired power plant during the year *y* (mass or volume unit per year)

For this project, as seen above, PE_y=0, L_y =0. and, as seen in PDD, section B.2, BEthermal,y=0 and BEbiomass, y=0.

We conclude that ER_y = BEelectricity,y=0.2611 X EGy.

See calculation of EGy in the annexed spreadsheet "Santa Terezinha_calculation_CERs_scenario 14_2006.12.13.xls".

The full implementation of–the Santa Terezinha - Tapejara project connected to the Brazilian North-Northeast electricity interconnected grid will avoid an average estimated yearly emission of around 43,844 tCO_2e, and a total reduction of about 306,907 tCO_2e over the first 7 years crediting period (up to and including 2014).

3.5 Sustainable Development Impacts

The plant possesses preliminary and construction licenses. The preliminary licenses were issued by the Paraná Environmental Agency, *IAP – Instituto Ambiental do Paraná*. All licenses for the projects are available for consultation under request, as well as the environmental studies.

In the process, reports containing investigation of the following aspects were prepared:
- Impacts to climate and air quality;
- Geological and soil impacts;
- Hydrological impacts (surface and groundwater);
- Impacts to the flora and animal life;
- Socioeconomic (necessary infrastructure, legal and institutional, etc.).

In Brazil, the sponsor of a project that involves construction, installation, expansion or operation, even with no new significant environmental impact, must obtain new licenses. The licenses required by the Brazilian environmental regulation are (Conama Resolution n° 237/97):
- The preliminary license ("*Licença Prévia*" or LP),
- The construction license ("*Licença de Instalação*" or LI); and
- The operating license ("*Licença de Operação*" or LO).

Santa Terezinha - Tapejara has the authorization issued by ANEEL to operate as an independent power producer and has the energy reference approval to participate on PROINFA Program (*ANEEL Resolution 065 of May 25th, 2004*). Moreover, the power plant has the licenses emitted by *IAP – Instituto Ambiental do Paraná*, the environmental agency of the state of Paraná (*Installation License - n° 1604/2003, Operating License - nº 6353/2004*).

Santa Terezinha – Tapejara cogeneration project has signed a power purchase agreement that is also contingent to the compliance of all environmental regulations.

After the assessment of the preliminary environmental report by the state environmental authority some minor requirements were made in order to issue the licenses. The project sponsors are fulfilling all the requirements. In conclusion, no full environmental impact assessment was required.

Sugar production has some environmental impact such as bagasse burning. Nevertheless, those activities were conducted prior to the implementation of the project and thus could not be attributed to the CDM project activity. The project does not increase bagasse production; therefore, those environmental impacting activities mentioned above are not increased nor intensified.

3.6 Comments by Local Stakeholders

Public discussion with local stakeholders is compulsory for obtaining the environmental construction and operating licenses. The legislation also requests the announcement of the issuance of the licenses (LP, LI and LO) in the official journal (*Diário Oficial da União*) and in the regional newspaper to make the process public and allow public information and opinion.

Besides the public discussion for the environmental licensing, the Brazilian Designated National Authority requires the compulsory invitation of selected stakeholders to comment the PDD sent to validation in order to provide the letter of approval..

It was demonstrated that all the requirements of the Brazilian DNA were fulfilled.

4 COMMENTS BY PARTIES, STAKEHOLDERS AND NGOS

According to the modalities for the Validation of CDM projects, the validator shall make publicly available the project design document and receive, within 30 days, comments from Parties, stakeholders and UNFCCC accredited non-governmental organisations and make them publicly available.

BVC published the project documents on the UNFCCC CDM website (http://cdm.unfccc.int) on 2006-02-11 and invited comments within 2006-03-12 by Parties, stakeholders and non-governmental organisations. No comments were received.

5 VALIDATION OPINION

Bureau Veritas Certification (BVC) has performed a validation of the USINA DE AÇÚCAR SANTA TEREZINHA Project in Brazil. The validation was performed on the basis of UNFCCC criteria and host country criteria, also on the criteria given to provide for consistent project operations, monitoring and reporting.

The validation consisted of the following phases: i) a desk review of the project design and the baseline and monitoring plan (February 2006); ii) follow-up interviews with project stakeholders (February 2006); iii) the resolution of outstanding issues and the issuance of the final validation report and opinion (March 2006); iv) revision of the validation report due to the comments of the Designated National Authority(July 2006);

v) revision of the validation report due to modifications made in the PDD (revision 7, January 18, 2007) due to the change of Methodology ACM0006 – Version 4.

Santa Terezinha – Tapejara Cogeneration Project consists on the installation of a modernized equipment using bagasse more efficiently to co generate electricity. Through this expansion, replacing old equipment, the sugar mill will generate power surplus for sale and, at the same time, carbon credits by reducing greenhouse gases emissions, contributing to the sustainable development. A more efficient cogeneration of this renewable fuel allows USINA DE AÇÚCAR SANTA TEREZINHA – Tapejara mill to sell a surplus of electricity to the grid and creates a competitive advantage.

The review of the project design documentation (March 2006 version) and the subsequent follow-up interviews have provided Bureau Veritas Certification with sufficient evidence to determine the fulfilment of stated criteria. In our opinion, the project correctly applies the Clean Development Mechanism Project Design Document Form (CDM-PDD) – Version 03; the Guidelines for completing the Project Design Document (CDM-PDD) and the proposed new baseline and monitoring methodologies CDM-NM, Version 06.2; the Approved Consolidated Baseline Methodology ACM0006 “Consolidated baseline methodology for grid-connected electricity generation from biomass residues” - Version 04; the Tool for the demonstration and assessment of additionality – Version 02; and meets the relevant UNFCCC requirements for the CDM and the relevant host country criteria.

The validation is based on the information made available to us and the engagement conditions detailed in this report.

Date: 27 January 2007

Ashok Mammen

Internal Reviewer

Date: 27 January 2007

Flavio Gomes

Lead Verifier GHG

6 REFERENCES

Category 1 Documents:
Documents provided by USINA DE AÇÚCAR SANTA TEREZINHA that relate directly to the GHG components of the project.

/1/ **Clean development mechanism – Project design document (CDM-PDD) – Santa Terezinha – Tapejara Cogeneration Project.** Version 1, Feb 2006

/2/ **Clean development mechanism – Project design document (CDM-PDD) – Santa Terezinha – Tapejara Cogeneration Project.** Version 2, Mar 2006

/3/ **Clean development mechanism – Project design document (CDM-PDD) – Santa Terezinha – Tapejara Cogeneration Project.** Version 3, Mar 2006

/4/ **Clean development mechanism – Project design document (CDM-PDD) – Santa Terezinha – Tapejara Cogeneration Project.** Versión 4, July 2006

/5/ **Clean development mechanism – Project design document (CDM-PDD) – Santa Terezinha – Tapejara Cogeneration Project.** Versión 5, December 2006

/6/ **Clean development mechanism – Project design document (CDM-PDD) – Santa Terezinha – Tapejara Cogeneration Project.** Versión 7, January 2007

/7/ **Clean development mechanism – Project design document (CDM-PDD) – Santa Terezinha – Tapejara Cogeneration Project.** Versión 8, January 2007

Category 2 Documents:

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

/8/ **Resolução Interministerial 01.** Comissão Interministerial de Mudança Global do Clima, Sep, 2003.

/9/ **Resolução Interministerial 02.** Comissão Interministerial de Mudança Global do Clima, Aug 2005.

/10/ **Clean Development Mechanism Project Design Document Form** (CDM-PDD) – Version 02

/11/ **Clean Development Mechanism Project Design Document Form** (CDM-PDD) – Version 03

/12/ **Guidelines for completing CDM-PDD, CDM-NMB and CDM-NMM** – Version 04

/13/ Guidelines for completing the Poject Design Document (CDM-PDD) and the

proposed new baseline and monitoring methodologies CDM-NM, Version 06.2

/14/ **Approved Consolidated Baseline Methodology ACM0006** "Consolidated baseline methodology for grid-connected electricity generation from biomass residues" - Version 03

/15/ **Approved Consolidated Baseline Methodology ACM0006** "Consolidated baseline methodology for grid-connected electricity generation from biomass residues" - Version 04

/16/ **Tool for the demonstration and assessment of additionality** – Version 02

/17/ **Kyoto Protocol to the United Nations Framework Convention on Climate Change**. United Nations, Dec, 1997

/18/ **Clarifications on validation requirements to be checked by a Designated Operational Entity**. UNFCCC/CCNUCC, Sep, 2004

/19/ **IETA/PCF – Validation and Verification Manual (v. 3.3, Mar 2004)**

/20/ **ISO 14064-3 - Greenhouse gases — Part 3: Specification with guidance for the validation and verification of greenhouse gas assertions**

/21/ **ISO 14064-2 - Greenhouse gases — Part 2: Specification with guidance at the project level for quantification, monitoring and reporting of greenhouse gas emission reductions or removal enhancements**

/22/ **Resolução SEMA 41/2002**

/23/ **Water-Impounding Permit portaria Nº 781/2006-DRH**

/24/ **Banco Central do Brasil – Histórico da taxa de juros – www.bcb.gov.br/COPOMJUROS**

/25/ **Santa Terezinha Cash Flow**

Persons interviewed:

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

/26/ USINA DE AÇÚCAR SANTA TEREZINHA
- Antonio Sperandio
- Genaildo Torres

/27/ ECOINVEST
- Melissa Hirschheimer

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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	The project will result in fewer GHG emissions than the baseline scenario.	Table 2, Section E.4.1
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, Marrakesh Accords, CDM Modalities §40a	The final decision from the DNA will be available only after its first meeting after the receiving of the all documents necessary for evaluation, including this validation report, according to Article 6th of Resolução Interministerial 01/03.	Table 4, Section 1.4
3. The project shall assist non-Annex I Parties in contributing to the ultimate objective of the UNFCCC	Kyoto Protocol Art.12.2.	The project will result in fewer GHG emissions than the baseline scenario.	Table 2, Section E.4.1
4. The project shall have the written approval of voluntary participation from the designated national authorities of each party involved, including confirmation by the host party that the project activity assists it in achieving sustainable development	Kyoto Protocol Art. 12.5a, Marrakesh Accords, CDM Modalities §40a, §28	The final decision from the DNA will be available only after its first meeting after the receiving of the all documents necessary for evaluation, including this validation report,	Table 4, Section 1.4

REQUIREMENT	REFERENCE	CONCLUSION	Cross Reference / Comment
		according to Article 6th of Resolução Interministerial 01/03.	
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	The project will result in fewer GHG emissions than the baseline scenario.	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, Marrakesh Accords, CDM Modalities §43 and 44	There are no evidences that the step 2 of this reference was evaluated. Please, note that investment barrier is different from economic/financial barrier. There are no evidences that "technological barriers" and "barriers due to prevailing practice" (sub-step 3a of this reference) were evaluated. Step 2 was considered not applicable. Step 3a: The barriers considered in the project and justified were: Investment barrier, Institutional barrier and Barriers due to Prevailing Practice. Final conclusion: OK	Table 2, Section B.3

REQUIREMENT	REFERENCE	CONCLUSION	Cross Reference / Comment
7. Potential public funding for the project from Parties in Annex I shall not be a diversion of official development assistance	Marrakech Accords	There is no public funding involved. See annex 2 of PDD.	Table 2, Section A.4.5
8. Parties participating in the CDM shall designate a national authority for the CDM	Marrakech Accords, CDM Modalities §29	Comissão Interministerial de Mudança Global do Clima	-
9. The host country shall be a Party to the Kyoto Protocol	Marrakech Accords, CDM Modalities §30	Comissão Interministerial de Mudança Global do Clima	-
10. Comments by local stakeholders shall be invited, a summary of these provided and how due account was taken of any comments received	Marrakech Accords, CDM Modalities §37b	There are no evidences that stakeholders have been consulted. The organizations and entities invited for comments on the project were: Prefeitura Municipal de Tapejara, Câmara Municipal de Tapejara, IAP – Instituto Ambiental do Paraná, Ministério Público do Paraná, Secretaria do Meio Ambiente de Tapejara, Associação dos Funcionários da Usina Santa Terezinha, FBOMS – Fórum Brasileiro de ONGs e	Table 2, Section G

REQUIREMENT	REFERENCE	CONCLUSION	Cross Reference / Comment
		Movimentos Sociais para o Desenvolvimento e Meio Ambiente. No concerns were raised in the public calls regarding the project. Final conclusion: OK	
11. 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.	Marrakech Accords, CDM Modalities §37c	Please, note that the fact that Santa Terezinha – Tapejara cogeneration project has signed a power purchase agreement that is contingent to the compliance of all environmental regulations does not mean that there is an evidence that the environmental impact of this project has been properly assessed and deemed insignificant. After the assessment of the preliminary environmental report by the state environmental authority some minor requirements were made	Table 2, Section F

REQUIREMENT	REFERENCE	CONCLUSION	Cross Reference / Comment
		in order to issue the licenses. The project sponsors are fulfilling all the requirements, thus, the environmental impact of the project activity is not considered significant and no full environmental impact assessment, such as EIA/RIMA, was required. Final conclusion: OK.	
12. Baseline and monitoring methodology shall be previously approved by the CDM Methodology Panel	Marrakech Accords, CDM Modalities §37e	ACM0006 – Approved consolidated baseline/monitoring methodologies for grid-connected electricity generation from biomass residues. Version 03 of 19 May 2006. ACM0006 methodology was changed to version 04.	Table 2, Section B.1.1 and D.1.1
13. 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	Marrakech Accords, CDM Modalities §37f	There are no evidences of a description of authority and responsibility for the project management. There are no evidences of a description of	Table 2, Section D

REQUIREMENT	REFERENCE	CONCLUSION	Cross Reference / Comment
		authority and responsibility for registration, monitoring, measurement and reporting. SantaTerezinha- Tapejara are 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 person in charge for the project monitoring and reporting is Antonio Sperandio, Industrial manager. Final conclusion: OK.	
14. 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	Marrakech Accords, CDM Modalities, §40	No comments were received.	-
15. 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	Marrakech Accords, CDM Modalities, §45 b, c, e	Please, clearly specify that the expansion capacity construction works that are being conducted at the plant are related to the expanding business of the proponent and	Table 2, Section B.2

REQUIREMENT	REFERENCE	CONCLUSION	Cross Reference / Comment
		not to the production of electricity for selling. Any increases in the bagasse production are due to Santa Terezinha - Tapejara Cogeneration Project natural expanding business and could not be attributed to the implementation of the cogeneration project. This project does not have an impact in processing capacity; Santa Terezinha - Tapejara will not increase their installed capacity because of this project, but due to the recent and remarkable expansion of the sugar, and mainly, of the ethanol market in Brazil. Final conclusion: OK.	
16. The baseline methodology shall exclude to earn CERs for decreases in activity levels outside the project activity or due to force majeure	Marrakech Accords, CDM Modalities, §47	OK.	Table 2, Section B.2
17. The project design document shall be in conformance with the UNFCCC CDM-PDD format and fulfilled according to the guidelines for completing CDM-PDD, CDM-NMB, and CDM-	Marrakech Accords, CDM Modalities,	OK	-

REQUIREMENT	REFERENCE	CONCLUSION	Cross Reference / Comment
NMM	Appendix B, EB Decisions		

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. Title of the project activity, version number and date of the document	1	DR	Santa Terezinha – Tapejara Cogeneration Project. (Usina de Açúcar Santa Terezinha Ltda) Version: 4 Date: 17/07/2006.	OK	OK
A.2. **Description of the project activity**					
A.2.1. Is the purpose of the project activity included?	1	DR	The primary objective of the Santa Terezinha – Tapejara Cogeneration Project is to supply Brazil's rising demand for energy due to economic growth and to improve the supply of electricity, while contributing to the environmental, social and economic sustainability by increasing renewable energy's share of total Brazilian, Latin America and Caribbean region's electricity consumption. One fundamental goal of the project is the efficient use of resources, while minimizing impact on the environment.	OK	OK

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
A.2.2. Is the view of the project participants on the contribution of the project activity to sustainable development included?	1	DR	Please, specify the view of one of the project participants Ecoinvest Carbon Assessoria Ltda. on the contribution of the project activity to sustainable development.	CR 01	OK
A.2.3. Will the project create other environmental or social benefits than GHG emission reductions?	1	DR	The revenues obtained from the sale of the CER's will help Usina Santa Terezinha to continue support the community, evidenced in numerous initiatives concentrated in 3 great projects: human capital with programmes and training for its employees, construction of popular houses by supporting the construction of dwelling groups and plan of the participation of the employees in the results of the company. Provides also its employees with medical attention, insurance and transportation.	OK	OK
A.3. **Project participants**					
A.3.1. Are Party(ies) and private and/or public entities involved in the project activity listed?	1	DR	See table A.3 of PDD.	OK	OK
A.3.2. Is the contact information provided in annex 1 of the PDD?	1	DR	Yes.	OK	OK
A.3.3. Is this information indicated using the tabular format?	1	DR	Yes.	OK	OK
A.4. **Technical description of the project activity**					
A.4.1. Location of the project activity					
A.4.1.1. Host country Party(ies)	1	DR	Brazil.	OK	OK

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
A.4.1.2. Region/State/Province etc.	1	DR	Paraná.	OK	OK
A.4.1.3. City/Town/Community etc.	1	DR	Tapejara.	OK	OK
A.4.1.4. Detailed description of the physical location, including information allowing the unique identification of this project activity.	1	DR	Usina Santa Terezinha is located in Tapejara, 20° 43' 00'' South 52° 52' 10'' West, northwest of Paraná State, at 549 Km from Curitiba, capital of the state.	OK	OK
A.4.2. Category of the project activity					
A.4.2.1. Is the category of the project activity specified?	1	DR	Energy and Power. Sectorial Scope: 1 – Energy Industries (renewable/ non-renewable sources).	OK	OK
A.4.2.2. Is it justified how the proposed project activity conforms to the project category selected?	-	DR	Category: Renewable electricity generation for a grid (energy generation, supply, transmission and distribution.	OK	OK
A.4.3. 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.4.3.1. Does the project design engineering reflect current good practices?	-	DR I	Yes.	OK	OK

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
A.4.3.2. 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?	-	DR I	Yes.	OK	OK
A.4.3.3. Is the project technology likely to be substituted by other or more efficient technologies within the project period?	-	DR I	No.	OK	OK
A.4.3.4. Does the project require extensive initial training and maintenance efforts in order to work as presumed during the project period?	-	DR I	Yes.	OK	OK
A.4.3.5. Does the project make provisions for meeting training and maintenance needs?	-	DR I	Please, inform which provisions were made to meet training and maintenance activities necessary for the project.	CR 02	OK
A.4.4. Brief statement of how anthropogenic emissions of GHG by sources are to be reduced by the proposed CDM project activity					
A.4.4.1. Is it stated how anthropogenic GHG emission reductions are to be achieved?	1	DR	The project will result in GHG emission reductions by displacing electricity generation from fossil-fuel thermal plants that would have otherwise been dispatched to the grid.	OK	OK

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
A.4.4.2. Is the estimate of total anticipated reductions of tons of CO_2 equivalent provided?	1	DR	A total reduction of 264,553tons of CO2 equivalent is estimated.	OK	OK
A.4.4.3. Is this information indicated using the tabular format?	1	DR	Information is in table 1 of PDD. Please, inform whether the information stated on line 9 of table 1 of the PDD refers to total estimated emissions or total estimated reductions.	CR 03	OK
A.4.5. Public funding of the project activity					
A.4.5.1. Is it indicated whether public funding from Parties included in Annex I is involved in the proposed project activity?	1	DR	There is no public funding involved. See annex 2 of PDD.	OK	OK
A.4.5.2. If public funding is involved, is information on sources of public funding for the project activity provided in Annex 2, including an affirmation that such funding does not result on a diversion of official development assistance and is separate from and is not counted towards the financial obligations of those Parties?	1	DR	N.A.	-	-

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. Are the title and the reference of the baseline methodology applicable to the project activity defined?	1	DR I	ACM0006 – Approved consolidated baseline methodology for grid-connected electricity generation from biomass residues. Version 03 of 19 May 2006.	OK	OK
B.1.2. Does the CDM Methodology Panel previously approve the baseline methodology?	1	DR	Yes.	OK	OK
B.1.3. Does the proposed project activity meet the applicability conditions of the methodology?	1	DR	See item 1.1 of Table 3.	-	-
B.2. **Description of how the methodology is applied in the context of the project activity**					
B.2.1. Is the baseline methodology the one deemed most applicable for this project and is the appropriateness justified?	1	DR	See item 1.1 of Table 3.	-	-

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
B.3. Description of how the anthropogenic GHG emissions by sources are reduced below those that would have occurred in the absence of the proposed project activity					
B.3.1. Is the proposed project activity additional?	3	DR	There are no evidences that the step 2 of this reference was evaluated. Please, note that investment barrier is different from economic/financial barrier. There are no evidences that "technological barriers" and "barriers due to prevailing practice" (sub-step 3a of this reference) were evaluated.	CAR 01 CAR 02	OK OK
B.3.2. Are national policies and circumstances relevant to the baseline of the proposed project activity summarised?	-	I	*Yes.*	OK	OK
B.4. Description of the project boundary for the project activity					
B.4.1. Are the project's spatial (geographical) boundaries clearly defined?	1	DR	See item B.4 PDD. Please, inform whether, on page 26 of PDD version 01, the project activity is located in North-Northeast or in South/Southeast/Midwest subsystem of the Brazilian grid.	CR 04	OK

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
B.4.2. Are the project's system (components and facilities used to mitigate GHGs) boundaries clearly defined?	1	DR	The project boundaries are defined by the emissions targeted or directly affected by project activities, construction and operation. It encompasses the physical, geographical site of the bagasse power generation source, which is represented by the sugarcane mill, the sugarcane plantation that supplies biomass to the mill, the region located close to the power plant facilities and the interconnected grid. See figure 13 of the PDD.	OK	OK
B.5. **Details of the baseline and its development**					
B.5.1. Is the date of completion provided?	1	DR	01/02/2006.	OK	OK
B.5.2. Is contact information provided?	1	DR	Yes.	OK	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	Starting date is 03/07/2006. Operational lifetime is 25 years.	OK	OK
C.1.2. Is the assumed crediting time clearly defined and reasonable (renewable crediting period of max. two x 7 years or fixed crediting period of max. 10 years)?	1	DR	It is a renewable crediting period of two times 7 years.	OK	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.*					
D.1. **Monitoring Methodology** *It is assessed whether the project applies an appropriate baseline methodology.*					
D.1.1. Does the CDM Methodology Panel previously approve the monitoring methodology?	1	DR	Approved monitoring methodology ACM0006 – Consolidated baseline methodology for grid – connected electricity generation from biomass residues.	OK	OK
D.1.2. Is the monitoring methodology applicable for this project and is the appropriateness justified?	1	DR	The chosen monitoring methodology is applicable to biomass-based cogeneration projects connected to the grid. The methodology considers monitoring emission reductions generated from cogeneration projects using sugarcane bagasse as fuel. This fits perfectly the operation at Santa Terezinha – Tapejara Cogeneration project.	OK	OK
D.1.3. Does the monitoring methodology reflect good monitoring and reporting practices?	-	DR	The applicability conditions expressed in the monitoring methodology are identical to those of the ACM0006 baseline methodology. Such conditions are met by the project, as described in section B.2 of PDD.	OK	OK

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
D.1.4. Is the discussion and selection of the monitoring methodology transparent?	-	DR	Yes.	OK	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?	-	DR	See item 2 of Table 3.	-	-
D.2.2. Are the choices of project GHG indicators reasonable?	-	DR	See item 2 of Table 3.	-	-
D.2.3. Will it be possible to monitor / measure the specified project GHG indicators?	-	DR	See item 2 of Table 3.	-	-
D.2.4. Will the indicators give opportunity for real measurements of achieved emission reductions?	-	DR	See item 2 of Table 3.	-	-
D.2.5. Will the indicators enable comparison of project data and performance over time?	-	DR	See item 2 of Table 3.	-	-

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?	-	DR	See item 2 of Table 3.	-	-
D.3.2. Have relevant indicators for GHG leakage been included?	-	DR	See item 2 of Table 3.	-	-
D.3.3. Does the monitoring plan provide for the collection and archiving of all relevant data necessary for determining leakage?	-	DR	See item 2 of Table 3.	-	-
D.3.4. Will it be possible to monitor the specified GHG leakage indicators?	-	DR	See item 2 of Table 3.	-	-
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?	-	DR	See item 2 of Table 3.	-	-

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
D.4.2. Is the choice of baseline indicators, in particular for baseline emissions, reasonable?	-	DR	See item 2 of Table 3.	-	-
D.4.3. Will it be possible to monitor the specified baseline indicators?	-	DR	See item 2 of Table 3.	-	-
D.5. **Project Management Planning** *It is checked that project implementation is properly prepared for and that critical arrangements are addressed.*					
D.5.1. Is the authority and responsibility of project management clearly described?	1	DR	There are no evidences of a description of authority and responsibility for the project management.	CAR 03	OK
D.5.2. Is the authority and responsibility for registration, monitoring, measurement and reporting clearly described?	1	DR	There are no evidences of a description of authority and responsibility for registration, monitoring, measurement and reporting.	CAR 04	OK
D.5.3. Are procedures identified for training of monitoring personnel?	-	I	See item A.4.3.5 of this table.	-	-
D.5.4. Are procedures identified for calibration of monitoring equipment?	-	I	There are no evidences of procedures for calibration of monitoring equipment.	CR 05	OK
D.5.5. Are procedures identified for maintenance of monitoring equipment and installations?	-	I	There are no evidences of procedures for maintenance of monitoring equipment and installations.	CR 06	OK

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
E. Calculation of GHG Emissions by Source *It is assessed whether all material GHG emission sources are addressed and how sensitivities and data uncertainties have been addressed to arrive at conservative estimates of projected emission reductions.*					
E.1. **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, including leakage, captured in the project design?	-	DR	Yes.	OK	OK
E.1.2. Are the GHG calculations documented in a complete and transparent manner?	-	DR	Yes.	OK	OK
E.1.3. Have conservative assumptions been used to calculate project GHG emissions?	-	DR	Yes.	OK	OK
E.1.4. Are uncertainties in the GHG emissions estimates properly addressed in the documentation?	-	DR	Yes	OK	OK
E.1.5. Have all relevant greenhouse gases and source categories listed in Kyoto Protocol Annex A been evaluated?	-	DR	Yes.	OK	OK

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
E.1.6. Are uncertainties of external data sources for emissions reduction estimated?	-	DR	Yes.	OK	OK
E.2. **Leakage** *It is assessed whether there leakage effects, i.e. change of emissions which occurs outside the project boundary and which are measurable and attributable to the project, have been properly assessed.*					
E.2.1. Are potential leakage effects beyond the chosen project boundaries properly identified?	-	DR	See item 1.10 of Table 3.	-	-
E.2.2. Have these leakage effects been properly accounted for in calculations?	-	DR	See item 1.10 of Table 3.	-	-
E.2.3. Does the methodology for calculating leakage comply with existing good practice?	-	DR	See item 1.10 of Table 3.	-	-
E.2.4. Are the calculations documented in a complete and transparent manner?	-	DR	See item 1.10 of Table 3.	-	-
E.2.5. Have conservative assumptions been used when calculating leakage?	-	DR	See item 1.10 of Table 3.	-	-
E.2.6. Are uncertainties in the leakage estimates properly addressed?	-	DR	See item 1.10 of Table 3.	-	-

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. Are the baseline boundaries clearly defined and do they sufficiently cover sources and sinks for baseline emissions?	-	DR	See 5th question of item 1.3 of Table 3.	-	-
E.3.2. Are the GHG calculations documented in a complete and transparent manner?	-	DR	Yes.	OK	OK
E.3.3. Have conservative assumptions been used when calculating baseline emissions?	-	DR	Yes.	OK	OK
E.3.4. Are uncertainties in the GHG emission estimates properly addressed in the documentation?	-	DR	Yes.	OK	OK
E.3.5. Have the project baseline(s) and the project emissions been determined using the same appropriate methodology and conservative assumptions?	-	DR	Methodology ACM0006, version 03, 19 May 2006. ACM0006 methodology was changed to version 04.	OK	OK

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
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?	-	DR	Yes.	OK	OK
F. Environmental and Social Impacts *Documentation on the analysis of the environmental and social 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 and social impacts of the project activity been sufficiently described?	-	I	Yes.	OK	OK
F.1.2. Are there any Host Party requirements for an Environmental Impact Assessment (EIA), and if yes, is an EIA approved?	-	I	No.	OK	OK
F.1.3. Will the project create any adverse environmental or social effects?	-	I	No.	OK	OK
F.1.4. Are transboundary environmental and social impacts considered in the analysis?	-	I	Yes.	OK	OK

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
F.1.5. Have identified environmental and social impacts been addressed in the project design?	-	I	Please, note that the fact that Santa Terezinha – Tapejara cogeneration project has signed a power purchase agreement that is contingent to the compliance of all environmental regulations does not mean that there is an evidence that the environmental impact of this project has been properly assessed and deemed insignificant.	CR 07	OK
F.1.6. Does the project comply with environmental legislation in the host country?	-	I	See Table 4.	-	-
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?	-	DR	There are no evidences that stakeholders have been consulted.	CAR 05	OK
G.1.2. Have appropriate media been used to invite comments by local stakeholders?	-	DR	See item G.1.1. of this table.	-	-
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?	-	I	See item G.1.1. of this table.	-	-

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
G.1.4. Is a summary of the stakeholder comments received provided?	-	DR	See item G.1.1. of this table.	-	-
G.1.5. Has due account been taken of any stakeholder comments received?	-	DR	See item G.1.1. of this table.	-	-

Table 3 Approved Consolidated Baseline and Monitoring Methodologies ACM0006

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
1. Baseline Methodology					
1.1. Applicability					
Is the project activity a grid-connected and *biomass residue* fired electricity generation project activities, including cogeneration plants?	2	DR	Yes	OK	OK
Does the project activity include the installation of a new biomass power generation plant at a site where currently no power generation occurs (greenfield power projects)?	2	DR	No	OK	OK
Does the project activity include the installation of a new biomass power generation unit, which is operated next to existing power generation capacity fired with either fossil fuels or the same type of biomass residue as in the project plant (power capacity expansion projects)?	2	DR	Please, specify if this is the case.	CR 08	OK
Does the project activity include the improvement of energy efficiency of an existing power generation plant (energy efficiency improvement projects), e.g. by retrofitting the existing plant or by installing a new plant that replaces the existing plant?	2	DR	No	OK	OK
Does the project activity include the replacement of fossil fuels by biomass in an existing power plant (fuel switch projects)?	2	DR	No	OK	OK
Is the project activity based on the operation of a power	2	DR	Yes	OK	OK

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
generation unit located in an agro-industrial plant generating the biomass residues or as an independent plant supplied by biomass residues coming from the nearby area or a market?					
Are other biomass types than *biomass residues*, used in the project plant and are these biomass residues the predominant fuel used in the project plant (some fossil fuels may be co-fired)?	2	DR	The primary fuel in the project plant is a biomass consisting of sugar cane bagasse.	OK	OK
For projects that use biomass residues from a production process (e.g. production of sugar or wood panel boards), does the implementation of the project result in an increase of the processing capacity of raw input (e.g. sugar, rice, logs, etc.) or in other substantial changes (e.g. product change) in this process?	2	DR	Please, clearly specify that the expansion capacity construction works that are being conducted at the plant are related to the expanding business of the proponent and not to the production of electricity for selling.	CR 09	OK
Is the biomass used by the project facility stored for more than one year?	2	DR	The bagasse is stored from the end of the harvest season in November in the Brazilian South region, until the beginning of the following harvest season, in May.	OK	OK
Are significant energy quantities, except from transportation of the biomass, required to prepare the biomass residues for fuel combustion? (i.e. projects that process the biomass residues prior to combustion (e.g. esterification of waste oils) are not eligible under this methodology).	2	DR	The biomass used in this project is not transformed in any way before being used as a fuel.	OK	OK
1.2.Identification of the baseline scenario					
Did the project participants identify the most plausible	2	DR	Please, clearly specify whether the alternative for	CR 10	OK

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
baseline scenario among all realistic and credible alternatives(s)?			power generation is P4 or P5, according to ACM0006/Version 03. Please, explain why the alternative for heat generation H2, according to ACM/0006/Version 03, was not chosen. ACM0006 methodology was changed to version 04. The identified alternatives for the different components of the project activity correspond to scenario 14, an energy efficiency project, obtained by the replacement of the existing biomass power units by new highly efficient ones. Scenario 14/ P4 and P5/ B4/ H5. Final conclusion: OK.		
Do the project type and the baseline scenario conform to one of those described on table 1 of Baseline Methodology ACM0006?	2	DR	This corresponds to scenario #14.	OK	OK
1.3. Project boundary					
Did the project participants include CO_2 emissions from on-site fuel consumption of fossil fuels, co-fired in the biomass power plant?	2	DR	Please, explain.	CR 11	OK
Did the project participants include CO_2 emissions from off-site transportation of biomass that is combusted in the project plant?	2	DR	Please, explain	CR 12	OK
Does the spatial extent of the project boundary	2	DR	All of them but the means for transportation of biomass to the project site. Please, explain.	CR 13	OK

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
encompass the power plant at the project site, the means for transportation of biomass to the project site (e.g. vehicles), and all power plants connected physically to the electricity system that the CDM project power plant is connected to?					
1.4. Emissions reductions					
Is the emission reduction determined according to the following formula: ERy = ERheat,y + ERelectricity,y + BEbiomass,y – PEy – Ly?	2	DR	The equation 22 of the PDD does not include BEbiomass,y. Please, explain.	CR 14	OK
Are all values chosen in a conservative manner and is the choice justified?	2	DR	See above	-	-
1.5. Project emissions					
Does the project emissions include CO_2 emissions from transportation of biomass to the project site and CO_2 emissions from on-site consumption of fossil fuels due to the project activity?	2	DR	See first question of item 1.3	-	-
Does the project emissions include CH_4 emissions from the combustion of biomass?	2	DR	Excluded for simplification. This is conservative.	OK	OK
1.6. Emissions reductions due to displacement of electricity					
Are the emission reductions calculated by multiplying the net quantity of increased electricity generated with biomass as a result of the project activity (EGy) with the CO_2 baseline emission factor for the electricity displaced due to the project (EFelectricity,y)?	2	DR	Yes.	OK	OK

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
Does the emission factor for the displacement of electricity (EFelectricity,y) correspond to the grid emission factor (EFgrid,y)?	2	DR	Yes	OK	OK
Is the grid emission factor (EFgrid,y) calculated as a combined margin (CM)?	2	DR	Table 8 and Figures 15, 16 and 17 of the PDD present load duration curves for North-Northeast interconnected grid. Please, confirm if this is the right information.	CR 15	OK
Is EGy determined based on the net efficiency of electricity generation in the project plant prior to project implementation *εel,pre project* and the net efficiency of electricity generation in the project plant after project implementation *εel,project plant,y*?	2	DR	Please, explain.	CR 16	OK
To determine *εel,pre project*, did the project participants measure the net efficiency of electricity generation prior to project implementation and use, as a conservative approach, the higher value between the measured efficiency and the manufacturer's information on the efficiency of the plant?	2	DR	See above	-	-
In determining the *net* quantities of electricity generation or the *net* efficiency of electricity generation, did the project participants subtract the quantity of electricity required for the operation of the power plant (in both the baseline and project cases)?	2	DR	According to table of Annex 3.	OK	OK
1.7. Emissions reductions or increases due to displacement of heat					
Did the project participants determine the emission	2	DR	Emission reductions from heat are not considered	OK	OK

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
reductions or increases due to displacement of heat (*ERheat,y*)?			because the heat efficiency of the new plant is larger than the heat efficiency of the pre-project equipment and for conservativeness reasons, they are excluded.		
Did the project participants demonstrate that the thermal efficiency in the project plant is larger or similar compared with the thermal efficiency of the plant considered in baseline scenario and then assume *ERheat,y* = 0?	2	DR	There are no evidences that the project participants demonstrated that the thermal efficiency in the project plant is larger or similar compared with the thermal efficiency of the plant considered.	CAR 06	OK
Did the project participant account for any increases in CO_2 emissions?	2	DR	See above.	-	-
1.8. Baseline emissions due to natural decay or uncontrolled burning of anthropogenic sources of biomass					
Were the baseline emissions due to natural decay or uncontrolled burning of anthropogenic sources of biomass considered null?	2	DR	Biomass decay was non-existent, as biomass was used in the past to generate electricity for internal use.	OK	OK
1.9. Additionality					
Was the additionality of the project activity demonstrated and using the latest version of the "Tool for the demonstration and assessment of additionality"?	3	DR	See item B.3.1. of Table 2	-	-
1.10. Leakage					
Were the leakage effects addressed?	2	DR	No evidences concerning and explanation of why leakage was considered nil were found.	CAR 07	OK

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
2. Monitoring Methodology					
2.1. Applicability					
Is the project activity a grid-connected and *biomass residue* fired electricity generation project activities, including cogeneration plants?	2	DR	Yes	OK	OK
Does the project activity include the installation of a new biomass power generation plant at a site where currently no power generation occurs (greenfield power projects)?	2	DR	No	OK	OK
Does the project activity include the installation of a new biomass power generation unit, which is operated next to existing power generation capacity fired with either fossil fuels or the same type of biomass residue as in the project plant (power capacity expansion projects)?	2	DR	See third question of item 1.1. of this table.	-	-
Does the project activity include the improvement of energy efficiency of an existing power generation plant (energy efficiency improvement projects), e.g. by retrofitting the existing plant or by installing a new plant that replaces the existing plant?	2	DR	No	OK	OK
Does the project activity include the replacement of fossil fuels by biomass in an existing power plant (fuel switch projects)?	2	DR	No	OK	OK
Is the project activity based on the operation of a power generation unit located in an agro-industrial plant generating the biomass residues or as an independent plant supplied by biomass residues coming from the	2	DR	Yes	OK	OK

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
nearby area or a market?					
Are other biomass types than *biomass residues*, used in the project plant and are these biomass residues the predominant fuel used in the project plant (some fossil fuels may be co-fired)?	2	DR	The primary fuel in the project plant is a biomass consisting of sugar cane bagasse.	OK	OK
For projects that use biomass residues from a production process (e.g. production of sugar or wood panel boards), does the implementation of the project result in an increase of the processing capacity of raw input (e.g. sugar, rice, logs, etc.) or in other substantial changes (e.g. product change) in this process?	2	DR	See eight question of item 1.1. of this table.	-	-
Is the biomass used by the project facility stored for more than one year?	2	DR	The bagasse is stored from the end of the harvest season in November in the Brazilian South region, until the beginning of the following harvest season, in May.	OK	OK
Are significant energy quantities, except from transportation of the biomass, required to prepare the biomass residues for fuel combustion? (i.e. projects that process the biomass residues prior to combustion (e.g. esterification of waste oils) are not eligible under this methodology).	2	DR	The biomass used in this project is not transformed in any way before being used as a fuel.	OK	OK
2.2. Monitoring Methodology					
Will the electricity generation from the proposed project activity be monitored?	2	DR	Electricity supplied to the grid by the project.	OK	OK
Will the data needed to recalculate the operating margin emission factor, if needed, based on the choice of the	2	DR	Yes.	OK	OK

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
method to determine the operating margin (OM), consistent with "Consolidated baseline methodology for grid-connected electricity generation from biomass residues " (ACM0006) be monitored?					
Will the data needed to recalculate the build margin emission factor, if needed, consistent with "Consolidated baseline methodology for grid-connected electricity generation from renewable sources" (ACM00062) be monitored?	2	DR	Yes	OK	OK
Will the data needed to calculate, carbon dioxide emissions from fuel combustion due to co firing fossil fuels used in the project plant or in boilers operated next to the project plant or in boilers used in the absence of the project activity be monitored?	2	DR	See first question of item 1.3. of this table.	-	-
Will the data needed to calculate methane emissions from natural decay or burning of biomass in the absence of the project activity be monitored?	2	DR	Biomass decay was non-existent, as biomass was used in the past to generate electricity for internal use.	OK	OK
Will the data needed to calculate carbon dioxide emissions from the transportation of biomass to the project plant be monitored?	2	DR	See second question of item 1.3. of this table.	-	-
Will the data needed to calculate methane emissions from the combustion of biomass in the project plant be monitored?	2	DR	Biomass decay was non-existent, as biomass was used in the past to generate electricity for internal use.	OK	OK
Will the data needed to calculate leakage effects from fossil fuel consumption outside the project boundary be monitored?	2	DR	See item 1.10. of this table.	-	-

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
2.3. Project emissions parameters					
Will the quantity of biomass type *I* combusted in the project plant during the year *y* be monitored?	2	DR	See second question of item 1.4. of this table	-	-
Will the net calorific value of biomass or fossil fuel type I be monitored?	2	DR	See second question of item 1.4. of this table	-	-
Will the methane emission factor for combustion of biomass in the project plant be monitored?	2	DR	Biomass decay was non-existent, as biomass was used in the past to generate electricity for internal use.	OK	OK
Will the average return trip distance between biomass fuel supply sites and the project site be monitored?	2	DR	See second question of item 1.3. of this table.	-	-
Will the number of truck trips for the transportation of biomass be monitored?	2	DR	See second question of item 1.3. of this table.	-	-
Will the average truckload of the trucks used for transportation of biomass be monitored?	2	DR	See second question of item 1.3. of this table.	-	-
Will the average CO_2 emission factor for transportation of biomass with trucks be monitored?	2	DR	See second question of item 1.3. of this table.	-	-
Will the fuel consumption of fuel type i used for transportation of biomass be monitored?	2	DR	See second question of item 1.3. of this table.	-	-
Will the CO_2 emission factor for the fuel type i be monitored?	2	DR	See second question of item 1.3. of this table.	-	-
Will the on-site fossil fuel consumption of fuel type i for co firing in the project plant be monitored?	2	DR	See first question of item 1.3. of this table.	-	-
2.4. Baseline emission parameters					
Will the net quantity of electricity generated in the project plant during the year y be monitored?	2	DR	Electricity supplied to the grid by the project.	OK	OK

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
Will the net quantity of electricity generated in the captive power plant during the year y be monitored?	2	DR	N.A.	-	-
Will the total quantity of electricity generated at the project site (including the project plant and any other plants existing at the start of the project activity) be monitored?	2	DR	N.A.	-	-
Will the net quantity of heat generated from firing biomass in the project plant be monitored?	2	DR	Emission reductions from heat are not considered because the heat efficiency of the new plant is larger than the heat efficiency of the pre-project equipment and for conservativeness reasons, they are excluded.	OK	OK
Will the net quantity of heat generated at the project site (including the project plant and any other plants existing at the start of the project activity) be monitored?	2	DR	Emission reductions from heat are not considered because the heat efficiency of the new plant is larger than the heat efficiency of the pre-project equipment and for conservativeness reasons, they are excluded.	OK	OK
Will the net calorific value of the fossil fuel types i co-fired in the project plant be monitored?	2	DR	See first question of item 1.3. of this table.	-	-
Will the quantity of biomass type I combusted in the project plant during the year *y* be monitored?	2	DR	See first question if item 1.4. of this table.	-	-
Will the net calorific value of biomass or fossil fuel type I be monitored?	2	DR	See first question if item 1.4. of this table.	-	-
Will the on-site fossil fuel consumption of fuel type i for co firing in the project plant be monitored?	2	DR	See first question of item 1.3. of this table.	-	-
Will the average net energy efficiency of electricity	2	DR	See fourth question of item 1.4. of this table.	-	-

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
generation in the project plant be monitored?					
Will the average net energy efficiency of heat generation in the project plant be monitored?	2	DR	Emission reductions from heat are not considered because the heat efficiency of the new plant is larger than the heat efficiency of the pre-project equipment and for conservativeness reasons, they are excluded.	OK	OK
Will the average net energy efficiency of heat generation in the boiler that is operated next to the project plant be monitored?	2	DR	N.A.	-	-
2.5. Leakage					
Will the quantity of biomass type I for which leakage could not be ruled out using one of the approaches in the baseline methodology be monitored?			See item 1.10. of this table.	-	-
Will the CO2 emission factor of the most carbon intensive fuel in the calculation of the combined margin with methodology ACM0006 be monitored?			See item 1.10. of this table.	-	-
Will the amount of biomass of type i fired in all grid connected power plants in the region / country be monitored?			See item 1.10. of this table.	-	-
Will the quantity of biomass of type i that is available in surplus in the region / country be monitored?			See item 1.10. of this table.	-	-
Will the quantity of biomass of type i that could not be sold or is not utilized at a representative sample group of biomass suppliers be monitored?			See item 1.10. of this table.	-	-

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
2.6. Quality Control (QC) and Quality Assurance (QA) procedures					
Will all measurements use calibrated measurement equipment that is maintained regularly and checked for its functioning?	2	I	There are no evidences of the determination of the type of the main meter to be used neither of its installation point.	CAR 08	OK

Table 4 Legal requirements

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
1. Legal requirements					
1.1. Is the project in line with relevant legislation and plans in the host country?	4	DR I	There are no evidences that a water-impounding permit was obtained for the project.	CAR 09	OK
1.2. Is the project activity environmentally licensed by the competent authority?	4	DR I	Installation License 6353/2004 and Operation License 1604/2003.	OK	OK
1.3. Are the conditions of the environmental license being met?	4	DR I	Yes.	OK	OK
1.4 Are the conditions of the Designated National Authority being met?	4	DR	The final decision from the DNA will be available only after its first meeting after the receiving of the all documents necessary for evaluation, including this validation report, according to Article 6th of Resolução Interministerial 01/03. Validation report was revised into rev 01 to incorporate the comments of the DNA		

Table 5 Resolution of Corrective Action and Clarification Requests

Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in Tables 2/3/4	Summary of project owner response	Validation team conclusion
CAR 01 - There are no evidences that the step 2 of this reference was evaluated. Please, note that investment barrier is different from economic/financial barrier.	Table 2 B.3.1	Annex 1 of EB16 (Tool for additionality) states that project participants *may* choose either step 2 *or* step 3, and are not obliged to complete both. In this project, project participants decided to choose step 2. The information stated in the PDD is that Project participants decided to choose step 3, not step 2. All the explanations and justifications have been accepted in the validation report. Final conclusion: OK.	The information given is considered sufficient, and the corrective action request is closed.

Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in Tables 2/3/4	Summary of project owner response	Validation team conclusion
CAR 02 - There are no evidences that "technological barriers" and "barriers due to prevailing practice" (sub-step 3a of this reference) were evaluated.	Table 2 B.3.1	Annex 1 of EB16 (Tool for additionality) states that barriers *may* include, *among others*, "technological barriers" and "barriers due to prevailing practice", so that project participants are not obliged to include *all* kinds of barriers. There are no technological barriers in the case of this project activity, but cultural barriers were mentioned in page 23, and they can be considered "prevailing practice". The required modification was made in section B.3	The information given in the subtitle "Cultural Barrier" is considered correct. Nevertheless, to avoid misunderstanding during the submission to the National Authority and registering processes, please consider the terminology used by the reference, that is "barriers due prevailing practice". The modification was introduced in the PDD and the corrective action request is closed
CAR 03 - There are no evidences of a description of authority and responsibility for the project management.	Table 2 D.5.1	As stated in section D.5, Santa Terezinha – Tapejara are responsible for the project management. The person in charge is Antonio Sperandio, Industrial Manager, as stated in section D.5.	Please, clearly specify the person/function in charge of the project management. The information given is considered sufficient, and the corrective action request is closed.

Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in Tables 2/3/4	Summary of project owner response	Validation team conclusion
CAR 04 - There are no evidences of a description of authority and responsibility for registration, monitoring, measurement and reporting.	Table 2 D.5.2	As stated in Annex 4, page 51, Santa Terezinha- Tapejara are 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 person in charge is Antonio Sperandio, Industrial Manager, as stated in Annex 4.	Please, clearly specify the person/function in charge of registration, monitoring, measurement and reporting. The information given is considered sufficient, and the corrective action request is closed.
CAR 05 - There are no evidences that stakeholders have been consulted.	Table 2 G.1.1	Stakeholders that were consulted are listed in section G.1, page 37. The letters and the receiving conformation will be sent by e-mail. Receipts of the letters were sent by e-mail.	The information given in the PDD is considered sufficient. But please provide this DOE with all the evidences of receipt of the letter sent to the stakeholders mentioned in the PDD. The receipt of the letters were received by the validation team and the corrective action is closed.

Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in Tables 2/3/4	Summary of project owner response	Validation team conclusion
CAR 06 - There are no evidences that the project participants demonstrated that the thermal efficiency in the project plant is larger or similar compared with the thermal efficiency of the plant considered.	Table 3 1.7	Evidence that the thermal efficiency of the project plant is larger than the thermal efficiency of the old plant is provided in section B.2, page 9.	The information given is considered sufficient, and the corrective action request is closed.
CAR 07 - No evidences concerning and explanation of why leakage was considered nil were found.	Table 3 1.10	As stated in section D.2.4, page 34, leakage was considered nil because all the biomass combusted in the project plant is produced on-site. There is no need to purchase biomass off-site and no diversion of biomass from other uses to the project plant as a result of the project activity.	The information given is considered sufficient, and the corrective action request is closed.
CAR 08 - There are no evidences of the determination of the type of the main meter to be used neither of its installation point.	Table 3 2.6	The measurement of the energy generated to the grid will be done by two three-fase four wire electronic redundant meters, which will send data to COPEL's (*Companhia Paranaense de Energia*) grid through a gateway. They will be installed in a metallic panel inside COPEL's control room, as stated in Annex 4, page 52.	The information given is considered sufficient, and the corrective action request is closed.

Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in Tables 2/3/4	Summary of project owner response	Validation team conclusion
CAR 09 - There are no evidences that a water-impounding permit was obtained for the project.	Table 4 1.1	A water-impounding permit was required from Superintendência de Desenvolvimento de Recursos Hídricos e Saneamento Ambiental on October 13, 2005, as stated in section F.1, page 38.	The information given is considered sufficient, and the corrective action request is closed. In the course of the internal technical review Santa Terezinha provided the water-impounding permit number portaria Nº 781/2006-DRH issued by Superintendência de Desenvolvimento de Recursos Hídricos e Saneamento Ambiental on July 2006 with a validity period of 5 years.
CR 01 - Please, specify the view of one of the project participants Ecoinvest Carbon Assessoria Ltda. on the contribution of the project activity to sustainable development.	Table 2 A.2.2	As stated in section A.2, pages 3 and 4, Usina Santa Terezinha have a strong social responsibility, evidenced in numerous initiatives concentrated in three projects: human capital, with programmes and training for its employees; construction of popular houses, by supporting the construction of dwelling groups; and plan of participation of the employees in the results of the company. Santa Terezinha also contributes with sports	Please specify if the view of project participant Usina Santa Terezinha is the same as the project participant Ecoinvest Carbon Assessoria Ltda.

Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in Tables 2/3/4	Summary of project owner response	Validation team conclusion
		sponsorship supporting several groups in their region, and provides their employees with medical attention, insurance and transportation. Besides the social benefits mentioned above, Usina São Francisco are working on environmental projects, such as regular water quality assessment, erosion control, reposition of vegetal area with native species, preservation of ecologic reservoir areas, and participation in the *Plano Estratégico Sócio Ambiental* (Socioenvironmental Strategic Plan) of the State of Paraná. Santa Terezinha has the same view of the Project as Ecoinvest Carbon Assessoria Ltda.	The information given is considered sufficient, and the corrective action request is closed.
CR 02 - Please, inform which provisions were made to meet training and maintenance activities necessary for the project.	Table 2 A.4.3.5	Maintenance activities will be done yearly, according to the internal procedures of Santa Terezinha – Tapejara and the recommendations of the equipments' manufacturers. Staff	The information given is considered sufficient, and the clarification request is closed.

Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in Tables 2/3/4	Summary of project owner response	Validation team conclusion
		will be trained on the operation of boilers and electric generators, as stated in Annex 4.	
CR 03 - Please, inform whether the information stated on line 9 of table 1 of the PDD refers to total estimated emissions or total estimated reductions.	Table 2 A.4.4.3	It refers to total estimated reductions. The correction was made in the PDD.	The information given is considered sufficient, and the clarification request is closed.
CR 04 - Please, inform whether, on page 26 of PDD version 01, the project activity is located in North-Northeast or in South/Southeast/Midwest subsystem of the Brazilian grid.	Table 2 B.4.1	The project is located in South/Southeast/Midwest subsystem of the Brazilian grid. The correction was made both in page 26 and in Annex 3.	The information given is considered sufficient, and the clarification request is closed.
CR 05 - There are no evidences of procedures for calibration of monitoring equipment.	Table 2 D.5.4	The calibration of instruments will be done according to the regulations of ANEEL, as stated in Annex 4.	The information given is considered sufficient, and the clarification request is closed.
CR 06 - There are no evidences of procedures for maintenance of monitoring equipment and installations.	Table 2 D.5.5	The maintenance of monitoring equipment and installations will be done yearly, according to the internal procedures of Santa Terezinha - Tapejara, as stated in Annex 4.	The information given is considered sufficient, and the clarification request is closed.
CR 07 - Please, note that the fact that Santa Terezinha – Tapejara cogeneration project	Table 2	As stated in the Operating License 6353/2004, Santa Terezinha – Tapejara	Please, note that SEMA Resolution 41/2002 establish emission patterns

Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in Tables 2/3/4	Summary of project owner response	Validation team conclusion
has signed a power purchase agreement that is contingent to the compliance of all environmental regulations does not mean that there is an evidence that the environmental impact of this project has been properly assessed and deemed insignificant.	F.1.5	will monitor the emission of SOx, NOx and CO and the production of solid residues at the combustion of bagasse in the boilers, as well as the production of liquid residues, all following the CEMA 041 regulation.	just for air pollutants. But, since the process had obtained its Operating License, this DOE considers that the information given is sufficient, and the clarification request is closed.
CR 08 – Please specify if the project activity include the installation of a new biomass power generation unit, which is operated next to existing power generation capacity fired with either fossil fuels or the same type of biomass residue as in the project plant (power capacity expansion projects).	Table 3 1.1	As stated in section A.4.3, page 6, the old equipment will be completely deactivated (and part of it will be kept only as backup), so that the project plant will not operate next to the existing one, though both are biomass power generation units.	The information given is considered sufficient, and the clarification request is closed.
CR 09 - Please, clearly specify that the expansion capacity construction works that are being conducted at the plant are related to the expanding business of the proponent and not to the production of electricity for selling.	Table 2 1.1	As stated in section B.2, page 9, Santa Terezinha - Tapejara will not increase their installed capacity because of this project, but due to the recent and remarkable expansion of the sugar, and mainly, of the ethanol market in Brazil. The offer of ethanol in the Brazilian market is not supplying the rapid increasing demand caused by the use of flex-fuel cars, that can run on	The information given is considered sufficient, and the clarification request is closed.

Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in Tables 2/3/4	Summary of project owner response	Validation team conclusion
		gasoline, ethanol or any blend of the two.	
CR 10 - Please, clearly specify whether the alternative for power generation is P4 or P5, according to ACM0006/Version 03. Please, explain why the alternative for heat generation H2, according to ACM/0006/Version 03, was not chosen.	Table 3 1.2	The alternative for power generation is P4: the generation of power in existing grid-connected power plants (the power generated in the project plant would be partly be generated in the same plant (without project implementation), partly in power plants in the grid). H2 was not chosen because the alternative scenario to the project activity would be the continuation of heat generation with the *same* thermal energy efficiency until the end of lifetime of the existing plant. ACM0006 methodology was changed to version 04. The identified alternatives for the different components of the project activity correspond to scenario 14, an energy efficiency project, obtained by the replacement of the existing biomass power units by new highly efficient ones.	The information given is considered sufficient, and the clarification request is closed.

Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in Tables 2/3/4	Summary of project owner response	Validation team conclusion
		Scenario 14/ P4 and P5/ B4/ H5. Final conclusion: OK.	
CR 11 - Please, explain why the project participants did not include CO_2 emissions from on-site fuel consumption of fossil fuels, co-fired in the biomass power plant.	Table 3 1.3	As stated in section E.1, page 36, there are no CO_2 emissions from on-site fuel consumption of fossil fuels, because the power plant has been using, before and after the project activity, only bagasse as fuel.	The information given is considered sufficient, and the clarification request is closed.
CR 12 - Please, explain why the project participants did not include CO_2 emissions from off-site transportation of biomass that is combusted in the project plant.	Table 3 1.3	As stated in section E.2, page, 36, CO_2 emissions from off-site transportation of biomass were not included because all the biomass combusted in the project plant is produced on-site. There is no need to purchase biomass off-site. As stated in section B.4 and shown in Figure 13, the project boundary, i.e., the site, encompasses the physical, geographical site of the bagasse power generation source, which is represented by the sugarcane mills, the sugarcane plantation that supplies biomass to the mill, the region located	Please, define site. The understanding of this DOE is that the spatial extent of the project boundary encompasses the power plant at the project site and the means for transportation of biomass to the project site, either purchased or self produced. The information given is considered sufficient, and the clarification request is closed.

Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in Tables 2/3/4	Summary of project owner response	Validation team conclusion
		close to the power plants facilities and the interconnected grid. So, there is no off-site transportation of biomass to the project plant.	
CR 13 - Please explain why the spatial extent of the project boundary did not encompass the means for transportation of biomass to the project site (e.g. vehicles).	Table 3 1.3	The spatial extent of the project boundary did not encompass the means for transportation of biomass to the project site because all the biomass combusted in the project plant is produced on-site. There is no need to purchase biomass off-site. As stated in section B.4 and shown in Figure 13, the project boundary, i.e., the site, encompasses the physical, geographical site of the bagasse power generation source, which is represented by the sugarcane mills, the sugarcane plantation that supplies biomass to the mill, the region located close to the power plants facilities and the interconnected grid. So, the project boundary encompasses the means for transportation of bagasse to the project	Please, define site. The understanding of this DOE is that the spatial extent of the project boundary encompasses the power plant at the project site and the means for transportation of biomass to the project site, either purchased or self produced. The information given is considered sufficient, and the clarification request is closed.

Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in Tables 2/3/4	Summary of project owner response	Validation team conclusion
		site.	
CR 14 - The equation 22 of the PDD does not include BEbiomass,y. Please, explain.	Table 3 1.4	As stated in section E.5, page 38, biomass decay was non-existent, nor have biomass been burned in an uncontrolled manner, as biomass was used in the past to generate electricity for internal use. For scenario #14, BEbiomass,y=0.	The information given is considered sufficient, and the clarification request is closed.
CR 15 - Table 8 and Figures 15, 16 and 17 of the PDD present load duration curves for North-Northeast interconnected grid. Please, confirm if this is the right information.	Table 3 1.6	No, this is not the right information. The referred table and figures now show information for the South-Southwest-Midwest interconnected grid.	The information given is considered sufficient, and the clarification request is closed.
CR 16 - Please explain why EGy was not determined based on the net efficiency of electricity generation in the project plant prior to project implementation $\varepsilon_{el,pre\ project}$ and the net efficiency of electricity generation in the project plant after project implementation $\varepsilon_{el,project\ plant,y}$.	Table 3 1.6	Because it was considered that $\varepsilon_{el,pre\ project}$=0, since the net quantity of electricity generated in the project plant, prior to project implementation, was zero. So, EG,y=EG project plant, y.	The information given is considered sufficient, and the clarification request is closed.

1- GUIDELINES FOR COMPLETING CDM-PDD, CDM-NMB and CDM-NMM – Version 04 – July 8th, 2005
2- APPROVED CONSOLIDATED METHODOLOGY ACM0006 – Version 04
3- TOOL FOR THE DEMONSTRATION AND ASSESSMENT OF ADDITIONALITY – Version 02 – November 28th, 2005

4- KYOTO PROTOCOL – December 11th, 1997