VALIDATION REPORT

BioHeat International B.V.

Josapar Itaqui Biomass Cogeneration Project

SGS Climate Change Programme
SGS United Kingdom Ltd
SGS House
217-221 London Road
Camberley Surrey
GU15 3EY
United Kingdom

Date of issue:	Project No.:
06 November 2006	CDM.Val0214d
Project title	Organisational unit:
Josapar Itaqui Biomass Cogeneration Project	SGS Climate Change Programme
Revision number	Client:
02	BioHeat International B.V.

Summary
SGS has performed a validation of project: Josapar Itaqui Biomass Cogeneration Project. The validation was performed on the basis of the UNFCCC criteria and host country criteria, as well as criteria given to provide consistent project operations, monitoring and reporting.
Using a risk based approach, the validation of the project design documentation and the subsequent follow-up interviews have provided SGS with sufficient evidence to determine the fulfilment of the stated criteria.

The SGS will request the registration of the Josapar Itaqui Biomass Cogeneration Project as a CDM project activity, once the written approval by the DNA of the participating Parties and the confirmation by the DNA of Brazil that the project assists in achieving sustainable development has been received.

Subject.:			
CDM validation			**Indexing terms**
Work carried out by			
Fabian Gonçalves, Geisa Principe, Jochen Gross, Marco Van der Linden.			
Technical review			
Marco Van der Linden			☒ No distribution without permission from the Client or responsible organisational unit
Authorized signatory			
			☐ Limited distribution
Date of final decision:	Number of pages:		
	13		☐ Unrestricted distribution

SGS United Kingdom Ltd SGS House, 217-221 London Road, Camberley, Surrey GU15 3EY **Tel** +44 (0)1276 697810 **Fax** +44 (0)1276 697888
Registered in England No. 1193985 Rossmore Business Park, Ellesmere Port, Cheshire CH65 3EN www.sgs.com

Member of SGS Group (Société Générale de Surveillance)

Abbreviations

AM	Approved Methodology
CAR	Corrective Action Request
CER	Certified Emission Reduction
DNA	Designated National Authority
MP	Monitoring Plan
NIR	New Information Request
PDD	Project design Document
SGS	Société Générale de Surveillance
EF	Emission Factor

SGS United Kingdom Ltd SGS House, 217-221 London Road, Camberley, Surrey GU15 3EY **Tel** +44 (0)1276 697810 **Fax** +44 (0)1276 697888
Registered in England No. 1193985 Rossmore Business Park, Ellesmere Port, Cheshire CH65 3EN www.sgs.com

Member of SGS Group (Société Générale de Surveillance)

Table of content

SGS United Kingdom Ltd SGS House, 217-221 London Road, Camberley, Surrey GU15 3EY **Tel** +44 (0)1276 697810 **Fax** +44 (0)1276 697888
Registered in England No. 1193985 Rossmore Business Park, Ellesmere Port, Cheshire CH65 3EN www.sgs.com

Member of SGS Group (Société Générale de Surveillance)

1. Introduction

1.1 Objective

The Bioheat International B.V. has commissioned SGS to perform the validation of the project: Josapar Itaqui Biomass Cogeneration Project with regard to the relevant requirements for CDM project activities. The purpose of a validation is to have an independent third party assess 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 seen as necessary to provide assurance to stakeholders of the quality of the project and its intended generation of Certified Emission Reduction (CER). UNFCCC criteria refer to the Kyoto Protocol criteria and the CDM rules and modalities and related decisions by the COP/MOP and the CDM Executive Board.

1.2 Scope

The scope of the validation 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. SGS has 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

Josapar Itaqui is a rice mill located in Itaqui city, Rio Grande do Sul state, Brazil. The core business of Josapar is the production of paddy rice and parboiled rice for the market in Brazil and exporting markets. Josapar is the second rice company in Rio Grande do Sul state.
The purpose of the project is to avoid methane emissions due to the decay of unutilized rice husks and to avoid carbon emissions related to electricity generation for the grid.

The project will eliminate electricity demand from the grid, will sell the surplus generated to the grid, using only rice husks as fuel, complying with Josapar energy demand and exporting surplus. With this new thermal power plant, Josapar will deactivate the old boiler used only to produce process steam. After full implementation of the project 31,878 tonnes of rice husks will be combusted and the project activity will prevent annually 19,827 tonnes of rice husks from decay, avoiding methane emissions.

Total amount of emission reductions for the first crediting period is 171,397 tCO2e

Baseline Scenario:
No investment in clean power generation; electricity generation by fossil fuel sources, and the biomass is left to decay and methane is emitted to the atmosphere, continuation of the current situation.

With-project scenario:
Construction of a new biomass cogeneration unit of 6MW and 15.5MW thermal of installed capacity, using rice husks as fuel. With project implementation 31,878 tonnes of rice husks are consumed, so the project activity prevents annually net 19,827 tonnes of rice husks from decay, avoiding the associated methane emissions.

SGS United Kingdom Ltd SGS House, 217-221 London Road, Camberley, Surrey GU15 3EY **Tel** +44 (0)1276 697810 **Fax** +44 (0)1276 697888
Registered in England No. 1193985 Rossmore Business Park, Ellesmere Port, Cheshire CH65 3EN www.sgs.com

Leakage:
No leakage is anticipated.

Environmental and social impacts:
The project will promote sustainable development by increasing employment opportunities, implementation of new source of electricity generation, optimization in the use of natural resources; avoid new uncontrolled waste disposal places, using a large amount of rice residues.
The Josapar Itaqui rice mill is accomplished to local environmental license; it has authorization for operation according the law.

1.4 The names and roles of the validation team members

Name	***Role***
Fabian Gonçalves	*Lead Assessor*
Geisa Principe	*Assessor*
Jochen Gross	*Expert*
Marco van der Linden	*Technical reviewer*

2. Methodology

2.1 Review of CDM-PDD and additional documentation

The validation is performed primarily as a document review of the publicly available project documents. The assessment is performed by trained assessors using a validation protocol.

A site visit is usually required to verify assumptions in the baseline. Additional information can be required to complete the validation, which may be obtained from public sources or through telephone and face-to-face interviews with key stakeholders (including the project developers and Government and NGO representatives in the host country). These may be undertaken by the local SGS affiliate. The results of this local assessment are summarized in Annex 1 to this report.

2.2 Use of the validation protocol

The validation protocol used for the assessment is partly based on the templates of the IETA / World Bank Validation and Verification Manual and partly on the experience of SGS with the validation of CDM projects. It serves the following purposes:

- it organises, details and clarifies the requirements the project is expected to meet; and
- it documents both how a particular requirement has been validated and the result of the validation.

The validation protocol consists of several tables. The different columns in these tables are described below.

Checklist Question	***Means of verification (MoV)***	***Comment***	***Draft and/or Final Conclusion***
The various requirements are linked to checklist questions the project should meet.	*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 (**Y**), or a **Corrective Action Request (CAR)** due to non-compliance with the checklist question (See below). **New Information Request (NIR)** is used when the validation team has identified a need for further clarification.*

The completed validation protocol for this project is attached as Annex 2 to this report

2.3 Findings

As an outcome of the validation process, the team can raise different types of findings

In general, where insufficient or inaccurate information is available and clarification or new information is required the Assessor shall raise a **New Information Request (NIR)** specifying what additional information is required.

Where a non-conformance arises the Assessor shall raise a **Corrective Action Request (CAR).** A CAR

is issued, where:

I. mistakes have been made with a direct influence on project results;

II. validation protocol requirements have not been met; or

III. there is a risk that the project would not be accepted as a CDM project or that emission reductions will not be verified.

The validation process may be halted until this information has been made available to the assessors' satisfaction. Failure to address a NIR may result in a CAR. Information or clarifications provided as a result of an NIR may also lead to a CAR.

Observations may be raised which are for the benefit of future projects and future verification or validation actors. These have no impact upon the completion of the validation or verification activity.

Corrective Action Requests and New Information Requests are raised in the draft validation protocol and detailed in a separate form (Annex 3). In this form, the Project Developer is given the opportunity to "close" outstanding CARs and respond to NIRs and Observations.

2.4 Internal quality control

Following the completion of the assessment process and a recommendation by the Assessment team,

SGS United Kingdom Ltd SGS House, 217-221 London Road, Camberley, Surrey GU15 3EY **Tel** +44 (0)1276 697810 **Fax** +44 (0)1276 697888
Registered in England No. 1193985 Rossmore Business Park, Ellesmere Port, Cheshire CH65 3EN www.sgs.com

Member of SGS Group (Société Générale de Surveillance)

all documentation will be forwarded to a Technical Reviewer. The task of the Technical Reviewer is to check that all procedures have been followed and all conclusions are justified. The Technical Reviewer will either accept or reject the recommendation made by the assessment team.

3. Determination Findings

3.1 Participation requirements

Host Party: Brazil is listed as the host Party. Brazil has ratified the Kyoto Protocol on 23rd August 2002.

Annex 1: Netherlands has ratified the Kyoto Protocol on 31st May 2002.

(http://unfccc.int/files/essential_background/kyoto_protocol/application/pdf/kpstats.pdf)

CAR 1 was raised: No letter of approval from Annex I country has been proved to the validator.

Letter was received, dated on 06/07/2006. CAR 1 was closed out.

At time of the validation, no Letter of Approval from the host country had been provided. The Letter of Approval will be signed when the DNA of Brazil has received the validation report.

3.2 Baseline selection and additionality

This activity confirms with category 1.D Renewable electricity generation for a grid, that comprises renewable energy generation units that supply electricity to an electricity distribution system that is or would have been supplied by at least one fossil fuel or non-renewable biomass fired generation unit.

The project comprises the use of rice husks, which is a renewable biomass to be used to supply electricity to and displace electricity from the south-southeast-midwest Brazilian grid. The unit uses only rice husks, which is renewable biomass. The plant maximum output of heat (15.5MW th) and power (6 MWe), the sum of these if below the limit of 45 MWthermal. This is the first biomass power plant to be installed in Josapar Itaqui. The project is not a retrofitted or modified facility, the old non-environmental boiler will be deactivate; the biomass plant will be a new facility and will produce a maximum 6 MW to the grid that is below the limit of 15 MW.

This activity confirms with category III.E too – Avoidance of methane production from biomass decay through controlled combustion.

Decay will be prevented through controlled combustion of rice husks and less methane will be produced and emitted to the atmosphere. The waste composition is 100% rice husks. The emissions through electricity or diesel consumption are zero because the plant will be fully supplied by a renewable source. Emissions related to the biomass transportation will be zero because the rice husks are generated in the rice mill. The only project emissions will come from the ash transportation, maximum 5 tonnesCO2 annually. Project emissions leads to direct carbon emissions of less than 15 kilo tonnes of CO2e annually.

It is conclude that category AMS I.D and AMS III.E is applicable to the small scale project activity.

The UNFCCC website does not show another registered project with the same characteristics. Therefore, this project is not considered a debundled component of a larger activity.

According to simplified methodologies, project participants shall provide an explanation to show that the project activity would not have occurred anyway due to at least one pre-defined barrier.

The project demonstrated additionality by using the Attachment A to Appendix B from the CDM EB (barrier analysis). The project described two scenarios, continuation of current activities (scenario 1) and

SGS United Kingdom Ltd SGS House, 217-221 London Road, Camberley, Surrey GU15 3EY **Tel** +44 (0)1276 697810 **Fax** +44 (0)1276 697888
Registered in England No. 1193985 Rossmore Business Park, Ellesmere Port, Cheshire CH65 3EN www.sgs.com

Member of SGS Group (Société Générale de Surveillance)

construction of a renewable energy plant (scenario 2). The investment barrier in scenario 2 was select because this barrier would prevent that the project would have occurred. During site visit the original IRR with formula and data used was verified. The discount rate was cross checked with national rate, verified the equipment quotation.

NIR 3 was raised: To correct the NPV and discount tax in the PDD according to the financial analysis worksheet verified during site visit.

The PDD was revised and copy of the worksheet was provided. NIR 3 was closed out.
Despite the barrier associated with the project, it was decided to implement it. The fact that the project would be able to benefit from carbon credits was one of the key factors in the decision making.
It was concluded that the project is additional.

3.3 Application of Baseline methodology and calculation of emission factors

The methodology applied to this Small Scale Project activity is Type I, Category I.D – grid connected renewable electricity generation and Type III, Category III.E – avoidance of methane production from biomass decay through controlled combustion.

In the methodology, the simplified baseline is the kWh produced by the renewable generating unit multiplied by an emission coefficient calculated in a transparent and conservative manner as: the average of the "approximate operating margin" and the "build margin".

The baseline emission factor is calculated as a combined margin, consisting of the operating margin and the build margin of the relevant electricity system. For the purpose of determining the build margin and the operating margin emission factors, a project electricity system is defined by the spatial extent of the power plants that can be dispatched without significant transmission constraints. Similarly a connected electricity system is defined as one that is connected by transmission lines to the project and in which power plants can be dispatched without significant transmission constraints.
During validation assessment CAR 2 was raised: To correct the emission factor using the most recent value available (until 2005).
The PDD was revised and calculation of the new emission factor was verified, copy was provided.
CAR 2 was closed out.

To estimate the baseline emissions related to the avoidance of methane production from biomass decay through controlled combustion, the baseline was calculate using the first order decay model based on the method of the IPCC guidelines, as referred to in category III.E and described in category III.G.

This project does not create any leakage as defined in the methodology.

Emission reductions for category I.D is the emission reduction due to grid connected renewable electricity production = baseline emissions of electricity generations.

Emission reduction for category III.E is the emission reduction by the avoidance of methane production from biomass decay through controlled combustion = project activity emissions, minus baseline methane emissions from biomass decay.

The total emission reduction of the project activity is: ERtotal = ER I.D + ER III.E

3.4 Application of Monitoring methodology and Monitoring Plan

The monitoring methodology is in line with the monitoring methodology mentioned in category I.D and III.E.

SGS United Kingdom Ltd SGS House, 217-221 London Road, Camberley, Surrey GU15 3EY **Tel** +44 (0)1276 697810 **Fax** +44 (0)1276 697888
Registered in England No. 1193985 Rossmore Business Park, Ellesmere Port, Cheshire CH65 3EN www.sgs.com

Member of SGS Group (Société Générale de Surveillance)

The monitoring plan encompasses metering the electricity generated by rice husk combustion regarding category I.D.
For category III.E, the emission reduction will be measured as the difference between the baseline emissions and the sum of the project emission and leakage. It was justified that the monitoring methodology III.E is applicable and correctly applied.

3.5 Project design

The project applies the correct PDD format.

One observation was raised to include the date and version in the PDD. The PDD was revised and the observation was closed out.

3.6 Environmental Impacts

The project has the legally required environmental licenses. Operation license issued by Fepam (LO number 07070/2004-DL, 30/09/2004 valid until 30/09/2008).
No environmental impact expected. The project will contribute to displace more carbon intensive electricity generation sources from the south-southeast-midwest grid, promoting the use of renewable fuel (rice husk) for electricity generation.
The project will improve the local environmental condition due to the adequate treatment of rice husks residues. Currently these residues are a problem because they are left decomposing in landfill, releasing methane emissions to the atmosphere.

3.7 Local stakeholder comments

Local stakeholders have been invited by letters to comment on the Josapar Itaqui Biomass Co-generation Project.

The invitation was sent to specific stakeholders, considered representative of the general public (according Resolution 1 of the DNA):

- City Hall of Itaqui;
- Chamber of Itaqui;
- Environmental agencies from the state and Local Authority;
- The Brazilian NGO Forum;
- District Attorney;
- Local communities' associations.

Copies of the letters sent to stakeholders and records of receiving were verified (formal records from the post office). Comments from stakeholders was received and a summary of the comments and the report on how due account was taken was provided during validation assessment, and in the PDD.

4. Comments by Parties, Stakeholders and NGOs

In accordance with sub-paragraphs 40 (b) and (c) of the CDM modalities and procedures, the project design document of a proposed CDM project activity shall be made publicly available and the DOE shall invite comments on the validation requirements from Parties, stakeholders and UNFCCC accredited non-governmental organizations and make them publicly available. This chapter describes this process for this project.

4.1 Description of how and when the PDD was made publicly available

The PDD and the monitoring plan for this project were made available on the SGS website http://cdm.unfccc.int/Projects/Validation/DB/AH6Q5U56D32DB9EVDQ72P7QGQT8NG7/view.html and were

open for comments from 15 Mar 2006 until 14 Apr 2006. Comments were invited through the UNFCCC CDM homepage.

4.2 Compilation of all comments received

Comment number	*Date received*	*Submitter*	*Comment*
1			

No comments received to the DOE during the 30 days commenting period.

4.3 Explanation of how comments have been taken into account

No comments received.

5. Validation opinion

Steps have been taken to close out 3 findings and one observation.

SGS has performed a validation of project: Josapar Itaqui Biomass Cogeneration Project. The validation was performed on the basis of the UNFCCC criteria and host country criteria, as well as criteria given to provide consistent project operations, monitoring and reporting.
Using a risk based approach, the validation of the project design documentation and the subsequent follow-up interviews have provided SGS with sufficient evidence to determine the fulfilment of the stated criteria.

By using rice husk as biomass to electricity generation and avoid methane emissions due to decay of unutilised rice husks, the project results in reducing greenhouse gas emissions that are real, measurable and give long-term benefits to the mitigation of climate change. A review of the investment barrier presented demonstrates that the proposed project activity was not a likely baseline scenario. Emission reductions attributable to the project are hence additional to any that would occur in the absence of the project activity. If the project is implemented as designed, the project is likely to achieve the estimated amount of emission reductions.
The validation is based on the information made available to SGS and the engagement conditions detailed in the report. The validation has been performed using a risk based approach as described above. The only purpose of this report is its use during the registration process as part of the CDM project cycle. Hence SGS can not be held liable by any party for decisions made or not made based on the validation opinion, which will go beyond that purpose.

SGS United Kingdom Ltd SGS House, 217-221 London Road, Camberley, Surrey GU15 3EY **Tel** +44 (0)1276 697810 **Fax** +44 (0)1276 697888
Registered in England No. 1193985 Rossmore Business Park, Ellesmere Port, Cheshire CH65 3EN www.sgs.com

Member of SGS Group (Société Générale de Surveillance)

6. List of persons interviewed

Date	*Name*	*Position*	*Short description of subject discussed*
7-8th June, 2006	Diego Machado Silveira	Project developer	Technical issues, operational issues, findings, monitoring plan, baseline, quality procedures, licenses.
7-8th June, 2006	Marie Bertolucci Ehrengerger	Lawyer	Licenses, stakeholder consultation process, findings.
8th June, 2006	Luiza Termignoni	Project developer	Validation process and findings.
8th June, 2006	Teobaldo Grabin	Project developer	Validation process and findings.

7. Document references

Category 1 Documents (documents provided by the Client that relate directly to the GHG components of the project, (i.e. the CDM Project Design Document, confirmation by the host Party on contribution to sustainable development and written approval of voluntary participation from the designated national authority):

/1/ Project Design Document, Josapar Itaqui Biomass Cogeneration Project, version 01, 08/02/2006; version 02, 08/06/2006; version 03, 05/07/2006; version 04, 27/07/2006; version 05, 17/10/2006.

/2/ Simplified baseline and monitoring methodologies for selected small scale CDM project activity – AMS ID Grid connected renewable electricity generation, version 09, 28 July 2006.

/3/ Simplified baseline and monitoring methodologies for selected small scale CDM project activity – AMS IIIE Avoidance of methane production from biomass decay through controlled combustion, version 09, 12 May 2006.

Category 2 Documents (background documents used to check project assumptions and confirm the validity of information given in the Category 1 documents and in validation interviews):

/4/ Laudo de Exames de Balança 523484, verification 1.735.128-5, 17/10/2005; and 523484, verification 1.735.129-7, 17/10/2005 issued by INMETRO. Calibration certificate.

/5/ Rice husks worksheet 2003-2005. Worksheet with quantity of rice husks generated and consumed.

/6/ LO number 07070/2004-DL, 30/09/2004 (valid until 30/09/2008) issued by Fepam. Operation license.

/7/ Josapar Itaqui BCP, June 2006. CDM project management planning.

/8/ Financial analysis. Worksheets with financial analysis.

/9/ Invoice December/2005 and worksheet with energy consumption 2003-2005. Energy invoice for the year 2005.

/10/ CERs Josapar Itaqui project. Worksheets with data of biomass decay parameters,

SGS United Kingdom Ltd SGS House, 217-221 London Road, Camberley, Surrey GU15 3EY **Tel** +44 (0)1276 697810 **Fax** +44 (0)1276 697888
Registered in England No. 1193985 Rossmore Business Park, Ellesmere Port, Cheshire CH65 3EN www.sgs.com

Member of SGS Group (Société Générale de Surveillance)

project emissions, electricity displace, baseline emissions.

/11/ "Comunicato técnico, 02/05/2006 Winckieel" (temperature control of the rice deposit). "Informativo técnico, 24/04/2006 Keplerweber" (control of the aeration system of the plant). Technical information.

/12/ Emission factor 2003-2005. Emission factor data, ONS data (National Operator of the electricity system).

/13/ "Ensaio em casca de arroz", number 17136/55654, 13/01/2006 issued by Cientec. Rice husk analysis to determine the ash content, humidity.

/14/ Potencial Bioenergético do Setor Arrozeiro do RS, 2001. Universidade Federal RS. Study that confirms the ash content in the rice rusk, %of husk and humidity of the rice.

- o0o -

SGS United Kingdom Ltd SGS House, 217-221 London Road, Camberley, Surrey GU15 3EY **Tel** +44 (0)1276 697810 **Fax** +44 (0)1276 697888
Registered in England No. 1193985 Rossmore Business Park, Ellesmere Port, Cheshire CH65 3EN www.sgs.com

Member of SGS Group (Société Générale de Surveillance)