F-CDM-REG

CDM Project Activity Registration and Validation Report Form
(By submitting this form, designated operational entity confirms that the proposed CDM project activity meets all validation and registration requirements and thereby requests its registration)

Section 1: Request for registration	
Name of the designated operational entity (DOE) submitting this form	SGS United Kingdom Ltd.
Title of the proposed CDM project activity (Section A.2 of the attached CDM-PDD) submitted for registration	Cucaú Bagasse Cogeneration Project (CBCP).
Project participants (Name(s))	Zihuatanejo do Brasil Açúcar e Álcool S.A. (Brazilian private entity) Econergy Brasil Ltda. (Brazilian private entity)
Sector in which project activity falls	1 Energy industries (renewable / non-renewable sources) ID Renewable Electricity Generation for a Grid.
Is the proposed project activity a small-scale activity?	**Yes** / No

Section 2: Validation report	
List of documents to be attached to this validation report (please check mark):	

☒ The CDM-PDD of the project activity

☒ An explanation by the submitting designated operational entity of how it has taken due account of comments on validation requirements received, in accordance with the CDM modalities and procedures, from Parties, stakeholders and UNFCCC accredited non-governmental organizations;

☐ The written approval of voluntary participation from the designated national authority of each Party involved, including confirmation by the host Party that the project activity assists it in achieving sustainable development:

- ☐ (Attach a list of all Parties involved and attach the approval (in alphabetical order))

Host Party:

- ☐ Brazil

☒ Other documents, including any validation protocol used in the validation

- ☒ comprehensive list of documents attached clearly referenced
- ☒ List of persons interviewed by DOE validation team during the validation process
- ☒ Any other documents. Please refer to list of documents attached.

☒ Information on when and how the above validation report is made publicly available.

☐ Banking information on the payment of the non-reimbursable registration fee

☐ A statement signed by all project participants stipulating the modalities of communicating with the Executive Board and the secretariat in particular with regard to instructions regarding allocations of

CERs at issuance allocations of CERs at issuance.

Executive Summary and Introduction, including

- **Description of the proposed CDM project activity**
- **Scope of validation process (include all documentation that has been reviewed and name persons that have been interviewed as part of the validation, as applicable)**
- **DOE Validation team (list of all persons involved in the validation, describing functions assumed in the validation)**

Description of the proposed CDM project activity

This report summarizes the results of the validation of the project Cucaú, performed on the basis of UNFCCC criteria. The validation has been performed as a desk review of the project documents presented by Econergy Brasil Ltda and a site visit to the sugar mill Zihuatanejo do Brasil Açúcar e Álcool S.A. (Cucaú). During site visit, carried out on 16th and 17th November, 2005, the staff from the company and its consultant was interviewed and relevant documents and records were verified.

The mill is located at Parque Industrial Engenho Cucaú (Artur Siqueira Highway, without number – Rural Zone), Rio Formoso, Southeast Region of Pernambuco State, Brazil. This project activity consists of increasing efficiency in the bagasse (a renewable fuel source, residue from sugarcane processing) cogeneration facility at Cucaú sugar mill.

The project is a combined steam and power system where steam will be produced for own consumption and for electricity generation. Cucáu had started to implement this project activity in 2001. This project consists on installation of additional equipments, refurbishing and upgrading others already installed, during the different phases (as described in the PDD):

- Phase 1 (2001):

- Installation of one additional 3 MW backpressure turbo-generator (NG/Toshiba);
- Deactivation of one 2 MW backpressure turbo generator (KKK).

- Phase 2 (2002):

- Refurbishment of one 21 kgf/cm² boiler (Dedini), upgrading it up to a capacity from 60 tsh (tonnes of steam per hour) to 70 tsh.

- Phase 3 (2003):

- Refurbishment of another one 21 kgf/cm² boiler (Dedini), upgrading it up to a capacity from 40 tsh to 60 tsh.

- Phase 4 (2004):

- Installation of one additional 5,6 MW backpressure turbo generator (TGM/WEG);
- Deactivation of one 1 MW backpressure turbo generator (Texas/AEG).

- Phase 5 (2007):

- Installation of one additional 2,4 MW condensing turbo generator (GE);
- Refurbishment of one 21 kgf/cm² boiler (Dedini), the same refurbished in Phase 2 (2002), upgrading it up to a capacity from 70 tsh to 100 tsh.

With the implementation of this project – investment for increasing in steam efficiency in the sugar and alcohol production and for increasing in the efficiency of burning the bagasse - the mill generates

surplus steam and uses it exclusively for electricity production.

The total installed capacity has expanded from 7 MW (before the project) to 15 MW (expected for 2007 year). The project will result in GHG emissions reductions as the result of the displacement of generation from fossil-fuel thermal plants that would have otherwise delivered to the interconnected grid.

Total emission reductions for the first crediting period are estimated to be 14,580 tCO_2e.
The expected operational lifetime of the project is 25 years.

Baseline Scenario:
No investment in clean power generation; the bagasse is not utilized to generate excess electricity to be supplied to the grid.

With-project scenario:
Investment for increasing efficiency in the Cucaú bagasse cogeneration facility. With this, the mill is able to sell electricity to the national grid, avoiding the dispatch of same amount of energy produced by fossil-fuelled thermal plants to that grid. By that, the initiative avoids CO_2 emissions.

Leakage:
As defined in the AMS 1, no leakage is to be considered. The energy generating equipment was not transferred from another activity nor the existing equipment was transferred to another activity.

Environmental and social impacts:
The bagasse cogeneration is a sustainable source of energy that brings advantages for mitigating global warming and also creates a sustainable competitive advantage for the sugarcane industry in Brazil. Using the available natural resources in a more efficient way, the CBCP activity helps to enhance the consumption of renewable energy. It can be used to demonstrate the feasibility of electricity generation as a side-business source of revenue for the sugar industry.

During site visit it was verified that the project meets all the environmental regulations as set out by CPRH – Agência Estadual de Meio Ambiente e Recursos Hídricos (Environmental and Water Resources State Agency).

In addition to the mandatory requirements, the project sponsor is working with local communities supporting programs which correspond to the company social and environmental responsibilities. No negative social impact was verified, as a result of the project implementation.

CBCP is expected to bring environmental, social and economic benefits, thus contributing to sustainable development objectives of the Brazilian Government.

Scope
The scope of the validation is the independent and objective review of the project design document, the baseline study and monitoring plan and other relevant documents of the Cucaú Bagasse Cogeneration Project (CBCP). The information in these documents is reviewed against the criteria defined in the Marrakech Accords (Decision 17) and the Kyoto Protocol (Article 12) and subsequent guidance from the CDM Executive Board.
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.

Overview of documentation that has been reviewed and names of persons that have been interviewed as part of the validation

Please refer to Annex 3.

DOE Validation team

Name	Role
Áurea Nardelli	Team leader / lead assessor
Fabian Gonçalves	Local assessor
Irma Lubrecht	Technical reviewer

Description of methodology for carrying out validation

- **Review of CDM-PDD and additional documentation attached to it**
- **Assessment against CDM requirements (e.g. by use of a validation protocol)**
- **Report of findings by the DOE, e.g. by use of type of findings (e.g. corrective action requests, clarifications or observations). Please explain the way findings are "labelled" during validation.**
- **Include statements or assessments in the section "Conclusions, final comments and validation opinion" below.**

Review of CDM-PDD and additional documentation

The validation was performed primarily as a document review of the publicly available project documents (see Annex 2 for the list of documents). The assessment was carried out by trained assessors using a validation protocol.

A site visit was required to verify assumptions in the baseline. Additional information was required to complete the validation, which was obtained through telephone, e-mail and face-to-face interviews with the project developers and their consultants. These were performed by the local assessor, from the SGS Brazil. The results of the site visit carried out on 16th and 17th November, 2005 are summarized in Annex 6 to this report.

Assessment against CDM requirements

In order to ensure transparency, a validation protocol was customised for the project. The protocol shows 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 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	*Explains how conformance with the checklist*	*The section is used to elaborate and*	*This is either acceptable based on evidence provided (**OK**), or a*

questions the project should meet.	*question is investigated. Examples of means of verification are document review (DR) or interview (I). N/A means not applicable.*	*discuss the checklist question and/or the conformance to the question. It is further used to explain the conclusions reached.*	***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 4 to this report.

Report of findings and use of type of findings.

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

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 that requires the Project Developer to do something (for example correct something in the PDD) the Assessor shall raise a **Corrective Action Request (CAR).**

A CAR is issued, where:

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

. validation protocol requirements have not been met; or

. 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 lead to a CAR. Observations may also 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 Request are raised in the draft validation protocol and detailed in a separate form (Annex 5). In this form, the Project Developer is given the opportunity to "close" outstanding CAR.

Explanation by the submitting designated operational entity of how it has taken due account of comments on validation requirements received, in accordance with the CDM modalities and procedures, from Parties, stakeholders and UNFCCC accredited non-governmental organizations;

- **Description of how and when the PDD was made publicly available**
- **Description of how comments were received and made publicly available**
- **Explanation of how due account has been taken of comments received**
- **Compilation of all comments received (Identify the submitter)**

In accordance with the CDM modalities and procedures, the project design document of this proposed CDM project activity has been made publicly available and comments have been invited from Parties, stakeholders and UNFCCC accredited non-governmental organizations. This process is described in Annex 1 to this report, which is available as a separate document.

Conclusions, final comments and validation opinion

- **Provide conclusions on each requirement under paragraph 37 of the CDM modalities and procedures, describing how these requirements have been meet. This shall include assessments and findings (e.g. corrective action requests, clarifications or observations) in relation to each requirement, including a confirmation that all issues raised have been addressed to the satisfaction of the DOE.**
- **Final comments and validation opinion**

Participation requirements

The project participants are Zihuatanejo do Brasil Açúcar e Álcool S.A. (Cucaú) and Econergy Brasil Ltda.
Brazil is listed as the host Party. Brazil has ratified the Kyoto Protocol on 23rd August 2002 (http://unfccc.int/files/essential_background/kyoto_protocol/application/pdf/kpstats.pdf).
Annex I Party participants are not identified yet.

At time of the draft 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. CAR1 was cancelled.

Eligibility as a small scale project activity

The project is a small scale project activity and falls under category Type 1– "*Renewable energy projects" - 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. Biomass co-generation systems that supply electricity to a grid are included in this category (Appendix B of the Simplified Modalities and Procedures for Small-Scale CDM project activities).

The categorization is justified by the following parameters:

1. The electricity output does not exceed the threshold of 15 MW for small scale CDM projects.
2. Fuel type is biomass: bagasse (a renewable fuel source, residue from sugarcane processing).

The CDM project only includes the electricity generation to the grid system and excludes the generation of electricity and steam for own consumption in the mill. The situation prevailing prior to such implementations has never been considered as a CDM 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 project activity.

CBCP is fully eligible as a small-scale project.

Baseline and monitoring methodology

The methodology applied to this Small Scale Project activity is *Type 1: Renewable energy projects. Category , I.D.: Renewable* Electricity *generation for a grid.*

The project fulfils the conditions under which the methodology is applicable, due to the fact that CBCP produces renewable energy from biomass co-generation and supplies renewable electricity to a grid. The electricity export to the grid system will avoid emissions in the electricity system by reducing the emissions from the existing power generation capacities.

The project boundary encompasses:
Baseline energy grid: For CBCP, the North-Northeast subsystem of the Brazilian grid is considered as a

boundary, since it is the system to which Cucaú is connected and therefore receives all the bagasse-based produced electricity.

Bagasse cogeneration plant: the bagasse cogeneration plant considered as boundary comprises the whole site where the cogeneration facility is located.

This project is boundary is acceptable.

In accordance with the methodology, the baseline should be calculated as the kWh produced by the renewable generating unit multiplied by an emission coefficient (measured in kg CO2e/kWh) calculated in a transparent and conservative manner as the average of the "approximate operating margin" and the "build margin", where:

- The "approximate operating margin" is the weighted average emissions (in kg CO2e/kWh) of all generating sources serving the system, excluding hydro, geothermal, wind, low-cost biomass, nuclear and solar generation;
- The "build margin" is the weighted average emissions (in kg CO2e/kWh) of recent capacity additions to the system, which capacity additions are defined as the greater (in MWh) of most recent 20% of existing plants or the 5 most recent plants.";

The baseline methodology considers the determination of the emissions factor for the grid to which the project activity is connected as the core data to be determined in the baseline scenario. In Brazil, there are two main grids, South-Southeast-Midwest (S-SE-CO) and North-Northeast (N-NE), therefore the North-Northeast Grid is the relevant one for this project.

In order to calculate the emission factor in the most accurate way, real dispatch data was necessary. Then, daily dispatch data from the Brazilian electricity system manager (ONS) needed to be gathered. For this purpose, ONS was contacted, as this entity does not regularly provide such information.

The information provided by ONS comprised years 2002, 2003 and 2004, and it has been the most recent information available at this stage. The ONS data as well as the spreadsheet data with the calculation of emission factors have been provided to the local assessor during the site visit.

A summary of the analysis is presented in the PDD. The baseline emission factor calculated for the first credit period is 0,3850 tCO2e/MWh

This project activity is not expected to result in GHG emissions due to the use of a renewable energy source (bagasse) for electricity generation.

According to the methodology, leakage calculation is only required if the energy generating equipment is transferred from another activity or if the existing equipment is transferred to another activity. In the case of CBCP, it is not applicable.

Additionality

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 using the option (d) of "Attachment A to Appendix B" of the simplified modalities and procedures for small-scale CDM project activities.

To proof additionality of the CBCP, the project proponents had provided detailed information (PDD, section B.3) which demonstrated that the project is not a likely baseline scenario. The following barriers

were analyzed:

a) Investment barrier

(b) Technological barrier: a less technologically advanced alternative to the project activity involves lower risks due to the performance uncertainly or low market share of the new technology adopted for the project activity and so would have led to higher emissions;

(c) Barrier due to prevailing practice

(d) Other barriers (such as institutional barriers or limited information, managerial resources, organizational capacity, financial resources, or capacity to absorb new technologies).

Given the mentioned above barriers which the project faces, the alternative to this project activity was to keep the current situation and focus strictly in its core business which is the production of sugar and alcohol.

Monitoring plan

Monitoring shall consist of metering the quantity of energy exported to the grid (EG_y), from year 2001 up to the end of the last crediting period. Since no leakage nor any off-grid emissions change were identified in this project activity, there will be no need to monitor the variables for these cases.
This monitoring methodology is in line with the monitoring methodology mentioned in category I.D.

There are two operations that must be performed in order to ensure data consistency: The monthly readings of the calibrated meter equipment shall be recorded in an electronic spreadsheet and the sales receipt shall be archived for double checking. In case of inconsistency, the last one information should be used.

The calibration of energy measurement instruments are made by CELP – Companhia Energética de Pernambuco, which is the local electricity company. The calibration shall be made annually.

The electricity baseline emission factor is determined ex-ante and will be updated at renewal of the crediting period. The data monitored in combination with an emission factor will be the information necessary to calculate the emission reductions.

No specific written procedure was prepared for the project. It was verified during site visit that operators know the process and their responsibilities relate to the CBCP.
The established measures reflect good monitoring and reporting practices.

Environmental Impacts

The potential environmental impacts were analyzed by the CPRH – Agência Estadual de Meio Ambiente e Recursos Hídricos (Environmental and Water Resources State Agency). The project meets all the environmental regulations as set out by this agency. The license covering the extension of its electric system generation from biomass has been issued.

As defined by state environmental agency, the project shall be in compliance with some conditions when the entrepreneurship operate in full charge, as collection of chimney emissions samples by isokinetic process and reporting the results to CPRH. The first chimney emissions sampling will be done in December 2005.

During the site visit, the following documents issued by CPRH were verified:

Operation License #1487/01 (28/08/2001); Operation License #1708/02 (28/08/2002), Operation License #1718/03 (26/08/2003), Installation License #0368/04 (29/03/2004), Operation License #2706/04 (29/10/2004) and Operation License #0107/05 (19/01/2005).

Comments by local stakeholders

Local stakeholders have been invited by letters to comment on the Cucaú project.

During the site visit, the local assessor verified the letters and a summary of the project that were sent to the stakeholders. Copy of the letters and delivery protocol were provided.

The invitation was sent to specific stakeholders, considered representative of the general public, as defined by Resolution 1 of the DNA. The following stakeholders were invited to comment:

- Prefeitura Municipal de Rio Formoso – PE / Municipality of Rio Formoso – PE;
- Câmara dos Vereadores de Rio Formoso – PE / Municipality Chamber of Rio Formoso – PE;
- Agência Estadual de Meio Ambiente e Recursos Hídricos – CPRH /Environment and Water Resources State Agency;
- Secretaria da Agricultura, Indústria, Comércio e Meio Ambiente / Agriculture, Industry, Commerce and Environment Secretary;
- Fórum Brasileiro de ONGs / Brazilian NGO Fórum;
- Ministério Público de Pernambuco / Public Ministry of Pernambuco;
- Associação Comunitária Unidos Por Rio Formoso – UCURF / Community Association United by Rio Formoso;
- Associação dos Moradores da Rua da Lama / Residents Association of Lama Street;
- Associação dos Deficientes Físicos do Rio Formoso / Physically Handicapped Associantion of Rio Formoso;
- Associação dos Moradores do Alto do Campo / Residents Association of Alto do Campo;
- Sindicato da Indústria do Açúcar e do Álcool no Estado de Pernambuco - Sindaçúcar / Sugar and Alcohol Industry Union of Pernambuco State;
- Sociedade dos Técnicos Açucareiros e Alcooleiros do Brasil / Brazilian Sugar and Alcohol Technician Society;
- Associação dos Moradores da Cohab de Rio Formoso / Residents Association of Cohab from Rio Formoso;
- Associação de Desenvolvimento do Distrito de Cucaú / Development Association District of Cucaú;
- Centro de Pesquisas Ambientais do Nordeste – CEPAN / Northeast Environment Research Centre;
- Instituto para Preservação da Mata Atlântica – IPMA / Atlantic Forest Preservation Institute.

Six comments were received. All the comments received were positive comments about Cucaú project. They enhance the importance of the Global Climate Change associated with the Global Warming Potential and the contribution, by the Cucaú Bagasse Cogeneration Project, for the mitigation of Greenhouse Gases effects. The comments received did not require any specific explanation or feedback.

Other requirements

The project applies the correct PDD format and no modifications have been made to the format.

Final comments and validation opinion

The Validation Opinion is based on the current and emerging rules surrounding Article 12 of the Kyoto Protocol.

The DOE declares herewith that in undertaking the validation of this proposed CDM project activity it has no financial interest related to the proposed CDM project activity and that undertaking such a validation does not constitute a conflict of interest which is incompatible with the role of a DOE under the CDM.

By submitting this validation report, the DOE confirms that all validation requirements are met. Name of authorized officer signing for the DOE	The SGS will request the registration of the Cucaú Bagasse 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.
Date and signature for the DOE	12/06/2006

Section below to be filled by UNFCCC secretariat		
Date when the form is received at UNFCCC secretariat		
Date at which the registration fee has been received		
Date at which registration shall be deemed final		
Date of request for review, if applicable		
Date and number of registration	Date	Number