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	Atiaia – Buriti Small Hydropower Plant.
Project participants (Name(s))	Pouso Alto Energia S/A (private entity/Brazil) Ecoinvest Carbon (private entity/Brazil) IFC-Netherlands Carbon Facility (INCaF) (Private/ Netherlands)
Sector in which project activity falls	1 Energy industries(renewable / non-renewable sources)
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)) N/A

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 Atiaia – Buriti Small Hydropower Plant project, performed on the basis of UNFCCC criteria. The validation has been performed as a desk review of the project documents presented by Atiaia Energia S/A and a site visit to Small Hydro Power Plant , located in Chapadão do Sul and Água Clara , Mato Grosso do Sul, Brazil. During site visit, Atiaia's managers and Ecoinvest consultant were interviewed.

ICAL S.A. (Indústria, Comércio e Administração) is a holding that controls Pouso Alto Energia S/A, that is the owner of SHP Buriti

ICAL S.A. is going through a societal restructuring, after which the two project companies will be controlled 100% by Atiaia Energia S.A., a new holding company owned by ICAL, Koblitz S/A and members of Cornélio Brennand family.

The project activity consists of 30 MW installed capacity. The plant is installed in the Midwest region of Brazil and are connected to the interconnected grid South-Southeast-Midwest.

Buriti facilities is small hydropower with reservoir, which store water to generate electricity for short periods of time. The plant comply with the Brazilian legal criteria to define small hydropower plant.

SHP Buriti: - Located in Chapadão do Sul and Água Clara, Mato Grosso do Sul (MS).

- Installed capacity: 30 MW
- Reservoir 0.38 km²

Total amount of emission reductions estimated for the first crediting period is 447,002 t CO_2 e

Baseline Scenario:
No investment in clean power generation; electricity generation from fossil-fuel thermal plants that would have otherwise dispatched to the grid.

With-project scenario:
The project activity consists of the installation of small hydropower plant with reservoir with capacity of 30 MW. It will result in GHG emissions reductions avoiding the dispatch of same amount of energy produced by fossil-fuelled thermal plants to the grid.

Leakage:
No leakage is anticipated.

Environmental and social impacts:

The environmental impact of the project activity is considered small considering the host country definition of small-hydro plants, given the small dam and reservoir size. With the use of small hydropower facility to generate electricity for local use and for delivery to the grid, the project displaces part of the electricity derived from diesel, a finite fossil fuel, and gives less incentive for the construction of large hydro plants which can have major environmental and social impacts.

Regarding the compliance with environmental legislation of the host country, the project sponsors are required to obtain the environmental licenses defined by the Brazilian environmental regulation, including: the preliminary license (Licença Prévia or LP), the construction license (Licença de Instalação or LI); and the operating license (Licenca de Operação or LO).

The plant obtained the preliminary and construction licenses. The preliminary licenses were issued by the Mato Grosso do Sul environmental agencies, IMAP - *Secretaria de Estado de Meio Ambiente e Recursos Hídricos do Estado de Mato Grosso do Sul.* The project has also been reviewed under "IFC's Environmental & Social Guidelines and Safeguards Policies" (1998) and the "World Commission on Dams Guidelines for Good Practice" (2000). The results of this assessment were summarized in the PDD.

In order to implement measures to mitigate adverse impacts identified in the Environmental Impact Assessment, project sponsors prepared Environmental Control Plans and Basic Environmental Project which were approved by IMAP. This plan includes actions for flora and fauna studies, environmental education, water resources monitoring, restoration of degraded areas, social communication and others.

Regarding social and economic impacts, small hydropower plant with reservoir provide local distributed generation, in contrast with the business as usual large hydropower and natural gas fired plants. This small hydropower project provides site specific reliability, transmission and distribution benefits.

It is expected that the project activity will contribute to improve the supply of electricity, while contributing to the environmental, social and economic sustainability.

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 Atiaia – Buriti Small Hydropower Plant project. 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 customised 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 local assessor from the SGS Brazil. The results of the site visit carried out on 30th March, 2006 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 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 (**OK**), 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 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).**

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 Requests and New Information Requests 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 CARs and respond to NIRs and Observations.

For this project, the Corrective Action Requests (CAR) and New Information Request (NIR) were closed out through communication between validation team and Atiaia staff and the consultant. Changes to the project design were necessary to clarify the issues raised.

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.

No comment was received.

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

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).

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 and analyzed the validation report.

Netherlands is listed as Annex 1 Party. Netherlands has ratified the Kyoto Protocol on 31st May 2002.

At time of the validation, no Letter of Approval from the Annex 1 country had been provided.

Baseline and monitoring methodology

The methodology applied to this Project Activity is: ACM0002 – "Consolidated baseline methodology for grid-connected electricity generation from renewable sources/ Consolidated monitoring methodology for grid-connected electricity generation from renewable sources" (version 06, issued on 19th May, 2006).

The project consists of small-hydro power plant with reservoir. The project boundaries are defined by the emissions targeted or directly affected by the project activity. It encompasses the physical, geographical site of the hydropower generation and the interconnected grid. The baseline calculation boundary is covered by the South-Southeast-Midwest integrated electric grid and the plant is connected to this grid and baseline calculations use the electric generation data from this region. The project boundary is acceptable.

As defined in the ACM0002, the baseline emission factor is calculated as a combined margin, consisting of the combination of operating margin and the build margin factors. The calculation of the emission factor of Brazilian South-Southeast-Midwest grid is based on data from the National Electric System Operator (ONS – Operador Nacional do Sistema Elétrico).

During the desk review, it was identified a mistake in the figures presented for calculation of the baseline emission factor (EF_y). The value of $EF_{BM,2004}$ was informed as 0.1045 tCO_2e/MWh, but the $EF_{BM,2004}$ used in the equation 11 was 0.0962, see PDD, version 5, page 41). CAR 5 was raised. It was revised in the PDD (version 6). The correct value for both cases is 0.0962. The emission factor calculated was 0.2647 tCO_2/MWh. CAR 5 was closed out.

During the validation process, the PDD was revised to use the latest version of ACM 0002 (version 6). The methodology is applicable to grid-connected renewable power generation project activities which include among other conditions "new hydro electric power projects with reservoirs having power densities (installed power generation capacity divided by the surface area at full reservoir level) greater than 4 W/m^2."
The original PDD (version 1 to 6) had included two plants. One plant (Canoa Quebrada) was excluded because has a power density less than 4 W/m^2. It is not acceptable by ACM0002. CAR 11 was raised.

To close out CAR 11, the PDD was revised to be in compliance with ACM0002 version 6. The plant Canoa Quebrada was excluded of the project.

The project emissions should be determined in accordance with the methodology described. The version 6 of the ACM0002 requires that the PE should be calculated from the "power density". No reference about this was included in the PDD. PE is dependent on the reservoir area and capacity installed of the plant. These parameters are used for "Power density" calculation. No information about reservoir area is included in Section D of the PDD. CAR 12 was raised.
Information about PE calculation and demonstration why PE=zero was provided in the revised PDD. "According to ACM0002 (version 6), new hydro electric power projects with reservoirs, shall account for project emissions. For SHP Buritis, considering the capacity of the project: 30MW and area of reservoir: 0.38 Km2, the power density = 30/0.38 = 78.95 W/m2. If power density of the project is greater than 10W/m2,
PEy = 0". CAR 12 was closed out.

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

Considering that the project emissions and leakage are zero, the emission reductions by the project activity (ER_y) during a given year *y* are the product of the baseline emissions factor (EF_y, in tCO_2e/MWh) times the electricity supplied by the project to the grid (EG_y, in MWh).

Additionality

As required in the ACM 0002, the project demonstrated additionality using the "Tool for the demonstration and assessment of additionality". The relevant information for this analysis was presented in the PDD. The step 0 and step 2 were not applicable to the project.

The discussion on the additionality was not clear (mainly about the investment barrier); transparent evidence related to the IRR analysis was not provided during the desk study. NIR 2 was raised.
To clarify NIR 2, spreadsheets were sent to the validator, which presents data and formulas to demonstrate how IRR was determined.

It was verified that the investment barrier is not the most important barrier, once the project received subsidised funds from BDNES (with interest rate lower than the rate of the market).
PDD Section B.3 was revised to clarify that some barriers that are common to the Brazilian context were not faced by Atiaia. NIR 2 was closed out.

The barrier analysis demonstrated that with absence of the incentive created by the CDM, this project would not be the most attractive scenario.

Monitoring plan

During the validation, it was verified that the monitoring plan did not cover all requirements of the ACM0002 and of good monitoring practices. Issues were raised, as described below:

- CAR 1: The operational and management structure to be implemented was not described in details in the PDD (see section D.4 and Monitoring plan). It was lacking information about authority and responsibility, about monitoring and reporting procedures, internal reviews and training.

To close out CAR 1, it was informed that the SHP will work with a local manager, who has operational and managerial knowledge and 3 maintenance technicians (2 responsible for electromechanical tasks and 1 for general services). All the operations will be centralized in Cuiabá – Mato Grosso, in the *Centro de Operação do Sistema – "COS"* (System Operation Center), which will operate and plan the maintenance of the SHP. "COS" personnel includes: 1 director, 1 maintenance coordinator engineer, 1

operation coordinator engineer, 1 administrative coordinator and 5 system operators (shift work, 24 hours a day). All the procedures will be done by telecommand from COS in Cuiabá, and in the SHP the local manager is capable of operating the whole plant, in case of communications failure with COS, as stated in Annex 4.

Energy distribution company ENERSUL will be responsible for dealing with possible monitoring data adjustments and uncertainties, for review of reported results/data, for internal audits of GHG project compliance with operational requirements and for corrective actions.

Approximately 120 days before the beginning of the commercial operation of the SHP, energy producer and energy distributor will sign an agreement to cover each side's responsibilities. SHP' technicians will be trained on the use of monitoring equipment according to the specifications of this agreement and the recommendations of the equipments' manufacturers.

The PDD, Annex 4 was revised to describe the operational and management structure of the project. CAR 1 was closed out and an observation was raised: The procedures should be clearly described and the operational and maintenance manual should be prepared and implemented until the start up of the plant. Personnel involved in monitoring activities should be trained on the procedures before the plant start to generated CERs.

- CAR 4: No procedures were identified for calibration and maintenance of monitoring equipment.

To close CAR 4, it was informed that the energy distribution company ENERSUL will be responsible for the calibration and maintenance of the monitoring equipment. The Annex 4 of the PDD was updated with this information. It was also described in the PDD (version 6) that the energy meter are specified by the energy distribution company and approved by ONS (national agency). For SHP Buriti, the energy meter will be a Q 1000, manufactured by Schlumberger. The SHP have an individual meter per generator, whose measurement is done locally or remotely, in the *Centro de Operação do Sistema – COS* (Systems Operation Center), in Cuiabá. There is also a meter in the substation. This meter stores power data, which can be verified both by the SHP and the local distributor. The measurement is controlled in real time by the SHP. Measurement data is compared between the meter at the output of the generators and the meter in the substation, so any problems can be detected (like water shortage, materials inside the turbines, meter inaccuracy, etc).

- CAR 7: It was verified that the QA/QC provided in the PDD did not comply with that are required in the ACM0002.

To close out this finding, the PDD (version 6) was revised to present the correct information.

- CAR 8: As defined by methodology and in the Guidelines for completing the PDD, data shall be archived for 2 years following the end of the crediting period. The PDD (Section D) did not inform the correct period. It was informed that "*Data will be archived during the credit period according to internal procedures".*

To close out CAR 8, it was verified that version 6 of PDD included in Section D the correct period for data storage.

Considering that the CARs raised were adequately addressed, the validation team accepted the monitoring plan described in the PDD (version 6).

Environmental Impacts

During the desk study, it was verified that the PDD did not present a plan for monitoring sustainable

development indicators/ environmental Impacts and CAR 3 was raised.

It was informed that Pouso Alto Energia, the company that controls SHP Buriti, have hired expert company to execute their environmental programs. The hired company keep an environment engineer full time in the plant, and the programs included in the Environmental Basic Program are being executed by the SHP personnel. After the beginning of the commercial operations, restoration of degraded areas and of permanent preservation areas will be done according to the legal requirements. Studies done during the design phase of the project have identified the environmental and social impacts and indicated the mitigation measures to be adopted during the construction phase. A team of environment experts will monitor the compliance with the environmental agencies' regulations.

It was verified that the analysis of the environmental impacts of the project activity was sufficiently described in the documents related to EIA of SHP (EIA PCH Buriti, May, 2002). The environmental effects were identified in the EIA and mitigating measures were defined for address adverse impacts. In addition, the documented evidences that the project is in compliance with legal requirements were verified.

Detailed information regarding the environmental programmes and monitoring plan were included in the PDD (Annex 4). Reasonable environmental indicators were defined to be monitored as part of the Environmental Program of the plant. CAR 3 was closed out.

Comments by local stakeholders

Local stakeholders have been invited by letters to comment on the Atiaia – Buriti Small Hydropower Plant Project.

The invitation was sent to specific stakeholders, considered representative of the general public, as defined in the Resolution n° 1 of the DNA. The following stakeholders were contacted:

- *Prefeitura de Água Clara* (Água Clara City Hall)
- *Câmara Municipal de Água Clara* (Municipal Chamber of Água Clara)
- *Secretaria do Meio Ambiente de Água Clara* (Local Environmental Agency of Água Clara)
- *Associação de Pouso Alto* (Local community association)
- *Prefeitura de Chapadão do Sul (*Chapadão do Sul City Hall*)*
- *Câmara Municipal de Chapadão do Sul* (Municipal Chamber of Chapadão do Sul)
- *Secretaria do Meio Ambiente de Chapadão do Sul* (Local Environmental Agency of Chapadão do Sul)
- *Associação da Pedra Branca* (Local community association)

IMAP – Secretaria de Estado do Meio Ambiente do Mato Grosso do Sul (Mato Grosso do Sul Environmental Agency)

Ministério Público do Mato Grosso do Sul (State Attorney for the Public Interest of the State of Mato Grosso do Sul)

- *Fórum Brasileiro de ONGs e Movimentos Sociais para o Desenvolvimento e Meio Ambiente* (Brazilian Forum of NGOs and Social Movements for the Development and Environment)

Copies of the letters sent to stakeholders and records of receiving were verified (formal records from the post office).

During the consultation period, one comment was received from FBOMS, suggesting the use of Gold Standard or similar tools for monitoring of environmental/social indicator. The project participants considered that the requirements of Brazilian Government are sufficient to be used as sustainable indicators which are attended by the project activity.

Other requirements

The PDD should address all the specific requirements under each header of the PDD template. Some issues were raised during the document review relate to editorial requirements and completeness of the PDD:

- CAR 6: PDD, Section D - incorrect information under header D.4. The monitoring parameter *Electricity generation of the Project delivered to grid (EGy)* (page. 34) should be included under D.2.1.3 *"Relevant data necessary for determining the baseline of anthropogenic emissions by sources of GHGs within the project boundary and how such data will be collected and archived"* (page 28-29, PDD version 5). The document was revised and the latest PDD (version 6) presented the correct information. CAR 6 was closed out.

- CAR 9: There was a mistake/inconsistency in the references mentioned in the PDD regarding the version/year of ACM0002. It was informed in page 29 the version 2004, in page 30 it was informed year 2002 and in the Annex 5 informed 2004. The correct year is 2006. The PDD was revised to close out this CAR. The methodology used in the PDD (version 6) as the latest version of ACM0002 (version 6, issued on 19th May 2006). CAR 9 was closed out.

- CAR 10: The dates should be state in the following format: (DD/MM/YYYY). Dates of the starting of the project activity and the starting of the credit period were not complete, it was informed only the month and year. There was inconsistent information along the PDD. For the credits estimative, it was informed that the starting date will be in October 2006 and in Section C it was informed January 2007. To close out CAR 10, PDD was revised. The starting date of the project activity was informed as 19th July 2005 and starting date of the first credit period as 10th November 2006. CAR 10 was closed out.

- CAR 13: The table provided in Section E.6 of the PDD (version 7) did not comply with the format of the CDM PDD template. To close out CAR 13, the PDD was revised (see version 8).

Final comments and validation opinion

Steps have been taken to close out 13 Findings. The observation raised does not preclude the validation of the project, but should be considered as an opportunity for improvement for the verification process.

SGS has performed a validation of the project: Atiaia – Buriti Small Hydropower Plant.
The Validation was performed on the basis of the UNFCCC criteria and host country criteria, as well as criteria given to provide for consistent project operations, monitoring and reporting. Using a risk based approach, the review 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 the displacement of fossil fuels by renewable energy sources in the generation of electricity, the project results in reductions of greenhouse gas emissions that are real, measurable and give long-term benefits to the mitigation of climate change. A review of the barriers presented, specially lack of infrastructure, the project is not a common practice in Brazil, demonstrates that the proposed project activity is 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.

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 Atiaia – Buriti Small Hydropower Plant 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	

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