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	Garganta da Jararaca Small Hydroelectric Power Plant (SHP) – Atiaia Energia S.A. Project Activity
Project participants (Name(s))	Rio do Sangue Energia S/A (private entity/Brazil) Ecoinvest Carbon (private entity/Brazil)
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 Garganta da Jararaca Small Hydroelectric Power Plant (SHP) – Atiaia Energia S.A. Project Activity, 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 Garganta da Jararaca Small Hydro Power Plant , located in Campo Novo do Parecis and Nova Maringá, Mato Grosso, Brazil. During site visit, Atiaia's managers and Ecoinvest consultant were interviewed.

The plant is owned by Rio do Sangue Energia S/A. ICAL S.A. (Indústria, Comércio e Administração) is a holding that controls Rio do Sangue Energia. The holding is going through a societal restructuring, after which the 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. Garganta da Jararaca project is being financed by the Brazilian Development Bank - BNDES ("Banco Nacional de Desenvolvimento Econômico e Social").

The project activity consists of the construction of a new small hydro power plant with 29.3 MW total installed capacity and a reservoir with 2.87 km² . The plant is being installed in the Midwest region of Brazil, in Rio do Sangue (river).
Small hydro in Brazil must have installed capacity between 1 MW and 30 MW and reservoir area less than 3 km², or, if the area is between 3 km² and 13 km², it should have a minimum environmental impact. Garganta da Jararaca plant complies with the Brazilian legal criteria that define small hydropower plant.

The turbine system consists of two units of 15.10 MW each, and two generators of 14.65 MW.
The yearly minimum energy output expected is 190,000 MWh. Garganta da Jararaca is going to feed, simultaneously, isolated systems and the Brazilian interconnected grid, so that the project is set to deliver electricity partially into the Brazilian interconnected grid and partially into an isolated grid. For conservativeness reasons, the project proponents considered that all the energy will be fed to the interconnected grid South-Southeast-Midwest.

Total amount of emission reductions estimated for the first crediting period is 352,051 t CO_2 e

Baseline Scenario:
No investment in clean power generation; electricity generation from fossil-fuel thermal plants that would have otherwise been delivered to the interconnected grid and to isolated systems.

With-project scenario:
The project activity consists of the installation of a hydropower plant with capacity of 29.3 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 and to isolated systems.

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 facilities 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 Brazilian regulation requires an environmental licensing process, 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).

It was verified during the site visit that the plant obtained the preliminary and construction licenses. The licenses were issued by the Mato Grosso Environmental Agency (*SEMA - Secretaria Estadual do Meio Ambiente do Mato Grosso).* The following documents were verified: Technical opinion n° 054/COINF/DIMI/2005 and Installation license LI n° 102/2005 (dated on 16/02/2005).

In order to implement measures to mitigate adverse impacts identified in the Environmental Impact Assessment, the company prepared Environmental Control Plans and Basic Environmental Project which were approved by SEMA. They involve, among other: restoration of degraded areas; water resources monitoring; control of erosion; monitoring and rescue of fauna and archaeological rescue.

Regarding social and economic impacts, it is expected that small hydropower plants can provide local distributed generation, in contrast with the business as usual large hydropower and natural gas fired plants.

The section F of PDD presented in details the Atiaia Project's contribution to Sustainable Development aligned with Brazilian priorities (Contribution to the local environmental sustainability; Contribution to the development of the quantity and quality of jobs, Contribution to the fair income distribution, Contribution to the technological development and capacity building, Contribution to the regional integration and relationships among other sectors). The project was also reviewed under the checklist of "World Commission on Dams Guidelines for Good Practice" (WCD, 2000).

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 Garganta da Jararaca Small Hydroelectric Power Plant (SHP) – Atiaia Energia S.A. Project Activity. 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 in SHP Garganta da Jararaca on 12th May, 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	*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).**

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 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 and analyzed the validation report.

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).

ACM 0002 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/m²." The original PDD (version available for international stakeholder consultation) had included three plants. One of then was excluded because there were problems with social aspects. Considering the remained two plants, one was a small hydro plant (Porto das Pedras) which has a power density less than 4 W/m². It is not acceptable by ACM0002. A CAR (07) was raised. To close out CAR 7, the plant (Porto das Pedras) was also excluded of the PDD. Only the plant Garganta da Jararaca meets the applicability criteria of the methodology.

The project consists of installation of a new small hydro power plant. The project boundaries are defined by the emissions targeted or directly affected by the project activities. 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 all plants are connected to this grid and baseline calculations use the electric generation data from this region. Garganta da Jararaca SHP will be connected with isolated system and to the interconnected grid, the isolated system will be physically connected to the interconnected system. In Brazilian case, the emission factor to isolated systems is too much higher than the interconnected system. For conservatism reasons, all carbon credits related to the energy supplied were considered to the interconnected grid. 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) covering years 2002 -2004.

During the desk study it was verified that the emission factor calculation did not use the most recent value available. A CAR (2) was raised. To close out CAR 2, the emission factor was revised and the calculated value was included in the section E.4.of PDD. The emission factor calculated was 0.2647 tCO_2e/MWh.

During the validation process, the PDD was revised to apply the latest version of ACM0002. According to ACM0002 (version 6) new hydro electric power projects with reservoirs shall account for project emissions. The project emissions should be calculated considering the "power density" (installed power generation capacity divided by the surface area at full reservoir level). Once PE is dependent on the reservoir area and capacity installed of the plant, the methodology requires that "reservoir area" should be included as a monitoring item. No reference about PE was included in the PDD and consequently, a CAR (8) was raised.

To address CAR 8, information about PE calculation and demonstration why PE=zero was provided in the revised PDD (version 9). For SHP Garganta da Jararaca, considering the capacity of the project is 29.83MW and the area of reservoir is 2.87 Km², the power density was calculated from 29.3/2.87. The value obtained was 10.2 W/m². According to the methodology, If power density of the project is greater than 10W/m², PE is zero. CAR 8 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* will be 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, as spreadsheets with formulas and assumptions considered for the analysis was not provided during the desk study. A NIR (3) was raised.

To clarify NIR 3, spreadsheets were sent to the validator, presenting data and formulas to demonstrate how IRR was determined. A list describing the assumptions for the analysis was also provided. 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 the project activity.

The lack of infrastructure in the region of the project activity, such as roads, reliable electricity supply, communication and transports, was a significant barrier. The project sponsor had to develop these facilities before the implementation of the project. In addition there were no qualified personnel available in the region due of the lack of schools and universities. It was confirmed by the local assessor during the site visit.

The institutional barrier and the common practice analysis discussed in the PDD were supported by sufficient information and references. The sources and information mentioned (data available in ONS, ANEEL and Eletrobrás websites) were confirmed by the assessors. Also information publicly available at BNDES and PROINFA websites was verified. The PDD demonstrated that with absence of the incentive created by the CDM, this project would not be the most attractive scenario. The alternative to the project activity is the continuation of the current (previous) situation of electricity supplied by large hydro and thermal power stations – or by Diesel oil, in the case of isolated systems. As an alternative for the group company is the investment in other opportunities, like the financial market or in other traditional industrial areas of the group.

Monitoring plan

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

- CAR 4: Recording frequency and proportion of data (presented in section D.2.1.3 of PDD) did not comply with the requirements of ACM0002. To close out CAR 4, the PDD was adequately revised to comply with the methodology.

- NIR 5: 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. To clarify NIR 5, the PDD was revised and the authority and responsibility of project management was presented in Annex 4. It was informed that the plant staff is responsible for project management, training, monitoring, measurement and reporting activities. It was also confirmed by the local assessor during the site visit and by interviews with Atiaia's managers.

The plant is not in operation yet. As described in the PDD, the energy distribution company 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. It was also informed during the site visit that the project managers will prepare the Operation and Maintenance Manual for the SHP.

An Observation (1) 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.

Unintended emissions from the SHP are not expected. Other potential emergencies and trouble shooting procedures will be covered by the operational manual (see observation 1).

Considering that the CAR and NIR above were adequately addressed, the validation team accepted the monitoring plan described in the PDD.

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 (1) was raised.

The local assessor verified on site that Rio do Sangue Energia S/A have hired expert consultants to carry out Garganta da Jararaca's environmental programs. 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 and operation phases. A team of experts will monitor the compliance with the environmental regulation.

During the site visit, the above-mentioned information was verified through document review, interviews with Atiaia's managers and local observation. It was also verified that the analysis of the environmental impacts of the project activity was sufficiently described in the documents related to the environmental licensing of the plant. Adverse environmental effects were identified and mitigating measures were defined for address these impacts.

Information regarding the environmental programmes and monitoring plan were included in the PDD (Annex 4). CAR 1 was closed out.

Comments by local stakeholders

Local stakeholders have been invited by letters to comment on the Garganta da Jararaca Small Hydroelectric Power Plant (SHP) – Atiaia Energia S.A. Project Activity.

The invitation was sent to specific stakeholders, considered representative of the general public, as defined in the Resolution n° 1 (Brazilian DNA requirement). Copies of the letters sent to stakeholders and records of receiving were verified by the local assessor. It was confirmed that the consultation was carried out as described in the PDD.

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 project's starting date (25th January 2005) and operational lifetime (35 years) were clearly defined in the PDD and are reasonable. It was assumed a renewable crediting period which will start on 15th January 2007. The operational lifetime exceeds the crediting period.

The project design engineering reflects current good practices and is not likely to be substituted by other or more efficient technologies within the project period. Small hydro is considered to be one of the most cost effective power plants in Brazil.

A CAR (6) was raised during the document review relate to editorial requirements. The PDD template was not correctly applied and the document had been completed modifying headings, format and fonts. It was used a template "version 3" that is not a CDM document. The PDD was revised to be in compliance with the PDD-CDM template. CAR 6 was closed out.

Final comments and validation opinion

Steps have been taken to close out 8 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: Garganta da Jararaca Small Hydroelectric Power Plant (SHP) – Atiaia Energia S.A.
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 Garganta da Jararaca Small Hydroelectric Power Plant (SHP) – Atiaia Energia S.A. Project Activity 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