




**Validation report form for renewal of crediting period for
CDM project activities
(Version 03.0)**

Complete this form in accordance with the instructions attached at the end of this form.

BASIC INFORMATION

Title and UNFCCC reference number of the project activity	SHPs Albano Machado and Rio dos Índios CDM Project (JUN1115) UNFCCC #: 6465
Number and duration of the next crediting period	2 nd crediting period 02/07/2019 – 01/07/2026
Version number of the validation report	2
Completion date of the validation report	20/11/2020
Version number of PDD to which this report applies	2.1
Project participants	Rio do Lobo Energia Ltda; Casa de Pedra Energia S.A; and Carbotrader Assessoria e Consultoria em Energia EIRELI
Host Party	Brazil
Applied methodologies and standardized baselines	AMS-I.D – Grid connected renewable electricity generation - Version 18.0
Mandatory sectoral scopes	1 : Energy industries (renewable - / non-renewable sources)
Conditional sectoral scopes, if applicable	N/A
Estimated amount of annual average GHG emission reductions or GHG removals by sinks in the next crediting period	12,474 tCO ₂ e
Name and UNFCCC reference number of the DOE	Earthood Services Private Limited UNFCCC Ref. Number: E-0066
Name, position and signature of the approver of the validation report	 Dr. Kaviraj Singh Managing Director

SECTION A. Executive summary**Brief summary of the project activity**

The project activity consists in generating renewable energy through the construction of two small hydro power plants (SHP) with total installed capacity of 11.16 MW (3.06 MW of SHP Albano Machado and 8.1 MW of SHP Rio dos Índios). The SHPs also comprehend small reservoirs of 0.0893 km² and 0.2412 km² respectively.

The project activity reduces the GHG emissions through dispatching GHG-free electricity to the Brazilian National Interconnected System.

The SHP Albano Machado is located in Lajeado do Lobo river, between Trindade do Sul and Nonoai cities, Rio Grande do Sul State, Brazil.

SHP Rio dos Índios is located in Rio dos Índios river, in Nonoai city, Rio Grande do Sul State, Brazil

The existence and location of both SHPs was duly evidenced through on-site inspection (see section C.2), photographic evidences (see evidence /16/) and checked against geographical coordinates (see evidence /28/)

The operation start date of the Albano Machado is on 11/02/2011^{/15/} whereas the operation start date of SHP Rio dos Índios was on 04/05/2013^{/15/}

SHP Albano Machado**Generators**

Characteristic	Unit	value
Manufacturer/model		GE/ A20C
Quantity	-	2
Serial Numbers	-	79L1-1025 -
Type		Synchronous
Apparent power	kVA	1,800
Cos ϕ	-	0.85
Frequency	Hz	60
Total installed Power (both Generators)	MW	3.06

Turbines

Characteristic	Unit	value
Manufacturer		Demuth Energy
Quantity	-	2
Serial Numbers	-	6375 6376
Type		Francis
Power	MW	1.566
Flow	m ³ /s	1.86
Rotation	rpm	900
Head	m	93.23

Technical information

Characteristic	Unit	value
Reservoir area	Ha	8.93
Operation Start Date	date	11/02/2011

Geographical Location^{/28/}

Characteristic	Unit	value
Latitude	-	27°29'48"S
Longitude	-	52°48'13"W

SHP Rio dos Índios**Generators**

Characteristic	Unit	value
Manufacturer		DM&A Kraft Werk Maschinen
Quantity	-	2
Serial Numbers	-	PR-0220.G1 1215730116
Type		Synchronic
Apparent power	kVA	4,500
Cos ϕ	-	0.90
Frequency	Hz	60
Total installed Power (both Generators)	MW	8.1

Turbines

Characteristic	Unit	value
Manufacturer		DM&A
Quantity	-	2
Serial Numbers	-	PR-0220.T1 PR-0220.T1
Type		Francis
Power	MW	4.125
Flow	m ³ /s	1.96
Rotation	rpm	720
Head	m	240

Technical information

Characteristic	Unit	value
Reservoir area	Ha	24.12
Operation Start Date	date	04/05/2013

Geographical Location^{/28/}

Characteristic	Unit	value
Latitude	-	27°16'30" S
Longitude	-	52°47'38" W ¹

The SHPs Albano Machado and Rio dos Índios are connected to the National Interconnected System (SIN) through Entre Rios Substation and Vila Bormann Substation respectively.

The lifetime of the main equipment is 30 years as per information provided in the registered PDD.

The estimated ERs of the project activity is 12,474 tCO₂e/y and 87,316 tCO₂e for the entire crediting period.

Scope of validation

Casa de Pedra Energia S.A and Carbotrader Assessoria e Consultoria em Energia EIRELI have contracted ESPL to conduct the validation of the renewal of the crediting period of the project activity "SHPs Albano Machado and Rio dos Índios CDM Project (JUN1115)".

The scope of the validation is to establish that:

- the PA is in accordance with all relevant CDM rules and requirements;

¹ This information of Longitude from SHP Rio dos Índios was amended from registered PDD where it was described as 50°47'38" W (it was a typographical error). The information presented now correctly reflects the project location as it can be checked in evidence /28/ and Appendix 5. See CL 01 below.

- the PA is in accordance with conditions of the latest version of applied methodology AMS-I.D: Grid connected renewable electricity generation --- Version 18.0;
- the validation of the renewal of crediting period is in accordance with requirements of CDM methodological tool "TOOL11 – Assessment of the validity of the original / current baseline and update of the baseline at the renewal of the crediting period" – version 03.0.1.

Validation process

The validation process involved the following:

- Contract with Casa de Pedra Energia S.A and Carbotrader Assessoria e Consultoria em Energia EIRELI for the scope of validation of the renewal of the crediting period of the project activity;
- desk review;
- physical on-site inspection;
- issuance of validation findings;
- reporting, calculation checks, QA/QC and resolution of findings;
- issuance of draft validation report;
- independent technical review of the project documentation;
- issuance of the final validation report;
- submission of the request for renewal, as appropriate.

Conclusion

ESPL has performed the validation of the renewal of the crediting period of the CDM PA "SHPs Albano Machado and Rio dos Índios CDM Project (JUN1115)", having UNFCCC Ref. Number 6465 for the 2nd crediting period.

The validation team has confirmed that it is in accordance with all relevant CDM rules and requirements and conditions of the latest version of applied methodology AMS-I.D - Version 18.0. In addition, it was confirmed that the monitoring system is feasible and the estimated emission reductions are conservatively calculated.

The PA is expected to generate an annual average of 12,474 tCO₂e in the second crediting period.

The site visit has been performed in accordance to VVS for PA, version 02.0.

Therefore, the request for renewal of the crediting period of the PA is being submitted in accordance with the CDM procedures.

SECTION B. Validation team, technical reviewer and approver

B.1. Validation team member

No.	Role	Type of resource	Last name	First name	Affiliation (e.g. name of central or other office of DOE or outsourced entity)	Involvement in			
						Desk/document review	On-site inspection	Interview(s)	Validation findings
1.	Team Leader	OR	Sebben	Marcelo	Verifit	Y	Y	Y	Y
2.	Local Expert	OR	Sebben	Marcelo	Verifit	Y	Y	Y	Y
3.	Methodological Expert	OR	Sebben	Marcelo	Verifit	Y	Y	Y	Y

4.	Technical Expert	OR	Sebben	Marcelo	Verifit	Y	Y	Y	Y
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B.2. Technical reviewer and approver of the validation report for RCP

No.	Role	Type of resource	Last name	First name	Affiliation (e.g. name of central or other office of DOE or outsourced entity)
1.	Technical reviewer	IR	Garg	Shreya	Central Office
2.	Technical Expert	IR	Garg	Shreya	Central Office
3.	Approver	IR	Singh	Kaviraj	Central Office

SECTION C. Means of validation**C.1. Desk/document review**

A desk review was conducted by the validation team that included:

- a review of the data and information presented to assess its completeness;
- a review of the registered project activity, the applied methodology including applicable tool(s) and, where applicable, the applied standardized baseline;
- a review of supporting documents.

A complete list of documents/evidences reviewed is included as Appendix 3.

C.2. On-site inspection

Duration of on-site inspection: 17/03/2020 to 18/03/2020				
No.	Activity performed on-site	Site location	Date	Team member
1.	Opening Meeting: Introduction, scope and objective of work, roles and responsibilities of audit team, resources required, and timetable of the onsite audit including venue for closing meeting and any concerns from PP.	SHP Rio dos Índios – Nonoai, Brazil	17/03/2020	Marcelo Sebben
2.	SHP Rio dos Índios Implementation and operation of project activity (project boundary, technology, project equipment, monitoring and metering equipment) as per registered PDD/previous verification.	SHP Rio dos Índios – Nonoai, Brazil	17/03/2020	Marcelo Sebben
3.	Physical inspection of the project activity: <ul style="list-style-type: none"> - Site visit to the SHP (turbines and generators) - Site visit to Electricity Substation (Vila Bormann SUBSTATION – Check electricity meters Serial Number) 	SHP Rio dos Índios – Nonoai, Brazil	17/03/2020	Marcelo Sebben
4.	Revalidation checklist: compliance applicable Legislation and changes to the 2nd CP	SHP Rio dos Índios – Nonoai, Brazil	17/03/2020	Marcelo Sebben
5.	SHP Albano Machado Implementation and operation of project activity (project boundary, technology, project equipment, monitoring and metering equipment) as per registered PDD/previous verification.	SHP Albano Machado – Trindade do Sul, Brazil	18/03/2020	Marcelo Sebben
6.	Physical inspection of the project activity:	SHP Albano Machado –	18/03/2020	Marcelo Sebben

	<ul style="list-style-type: none"> - Site visit to the SHP (turbines and generators) - Site visit to Electricity Substation (Check electricity meters Serial Number) 	Trindade do Sul, Brazil		
7.	Management and monitoring procedures followed at project site.	SHP Albano Machado – Trindade do Sul, Brazil	18/03/2020	Marcelo Sebben
8.	Revalidation checklist: compliance applicable Legislation and changes to the 2nd CP	SHP Albano Machado – Trindade do Sul, Brazil	18/03/2020	Marcelo Sebben
9.	End of verification site visit.	SHP Albano Machado – Trindade do Sul, Brazil	18/03/2020	Marcelo Sebben

C.3. Interviews

No.	Interviewee			Date	Subject	Team member
	Last name	First name	Affiliation			
1.	Sartori	Rueliton	Creral	17/03/2020	- Description of project activity. Physical Inspection of site.	Marcelo Sebben
2.	Chertios	Diego	Creral	17/03/2020	- Description of project activity. Physical Inspection of site.	Marcelo Sebben
3.	Toniazzo	Igor	Casa de Pedra	17/03/2020	- Operation and maintenance of SHP Rio dos Índios	Marcelo Sebben
4.	Motta	Edemar	Grupo Petrópolis	18/03/2020	Operation and Maintenance of SHP Albano Machado - Meter diagram, Electricity measurement	Marcelo Sebben

C.4. Sampling approach

Not applicable as no sampling has been used during the validation.

C.5. Clarification requests (CLs), corrective action requests (CARs) and forward action requests (FARs) raised

Area of validation findings	No. of CL	No. of CAR	No. of FAR
Compliance with PDD form	-	-	-
Application and selection of methodologies and standardized baselines	-	-	-
Validity of original baseline or its update	-	CAR 01	-
Estimated emission reductions or net anthropogenic removals	-	CAR 02	-
Validity of monitoring plan	-	CAR 03	-
Crediting period	-	-	-
Project participants	-	-	-
Post-registration changes	-	-	-
Others (please specify) – Project location	CL 01	-	-

Total	1	3	-
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SECTION D. Validation findings**D.1. Compliance with PDD form**

Means of validation	The PDD was crosschecked with the CDM-PDD-FORM template available at the UNFCCC website and with the instructions for filling it out.
Findings	N/A
Conclusion	The latest version of the PDD template (CDM-PDD-FORM – version 11.0) available at the UNFCCC website has been used. It has been filled out in accordance with the instructions.

D.2. Application and selection of methodologies and standardized baselines

Means of validation	<p>The PA applies approved methodology AMS-I.D – Grid connected renewable electricity generation - Version 18.0, which is latest one available at UNFCCC website.</p> <p>All applicability conditions of the applied methodology and applied tools are met:</p> <table border="1"> <thead> <tr> <th>Applicability Criteria – AMS-I.D – v. 18.0</th><th>Assessment</th></tr> </thead> <tbody> <tr> <td>Small scale threshold (Type I - Renewable energy project activities with a maximum output capacity of 15 MW)</td><td>This project corresponds to the installation of two Small Hydro Power plants with added installed capacity equal to 11.16 MW, thus below the threshold of 15MW for small scale PAs. Therefore the small-scale methodologies are applicable.</td></tr> <tr> <td> a) Install a Greenfield power plant; b) Involve a capacity addition to (an) existing plant(s); c) Involve a retrofit of (an) existing operating plants/units; d) Involve a rehabilitation of (an) existing plant(s)/unit(s); or e) Involve a replacement of (an) existing plant(s)/unit(s). </td><td>The PA complies with the condition (a) as it was a greenfield power plant</td></tr> <tr> <td> Hydro power plants with reservoirs that satisfy at least one of the following conditions are eligible to apply this methodology: a) The project activity is implemented in an existing reservoir with no change in the volume of reservoir; b) The project activity is implemented in an existing reservoir, where the volume of reservoir is increased and the power density of the project activity, as per definitions given in the project emissions section, is greater than 4 W/m² ; c) The project activity results in new reservoirs and the power density of the power plant, as per definitions given in the project emissions section, is greater than 4 W/m² </td><td>Option C is applicable as the project was implemented in new reservoirs.</td></tr> <tr> <td>If the new unit has both renewable and non-renewable components (e.g. a wind/diesel unit),</td><td>This project corresponds to the installation of two Small</td></tr> </tbody> </table>	Applicability Criteria – AMS-I.D – v. 18.0	Assessment	Small scale threshold (Type I - Renewable energy project activities with a maximum output capacity of 15 MW)	This project corresponds to the installation of two Small Hydro Power plants with added installed capacity equal to 11.16 MW, thus below the threshold of 15MW for small scale PAs. Therefore the small-scale methodologies are applicable.	a) Install a Greenfield power plant; b) Involve a capacity addition to (an) existing plant(s); c) Involve a retrofit of (an) existing operating plants/units; d) Involve a rehabilitation of (an) existing plant(s)/unit(s); or e) Involve a replacement of (an) existing plant(s)/unit(s).	The PA complies with the condition (a) as it was a greenfield power plant	Hydro power plants with reservoirs that satisfy at least one of the following conditions are eligible to apply this methodology: a) The project activity is implemented in an existing reservoir with no change in the volume of reservoir; b) The project activity is implemented in an existing reservoir, where the volume of reservoir is increased and the power density of the project activity, as per definitions given in the project emissions section, is greater than 4 W/m ² ; c) The project activity results in new reservoirs and the power density of the power plant, as per definitions given in the project emissions section, is greater than 4 W/m ²	Option C is applicable as the project was implemented in new reservoirs.	If the new unit has both renewable and non-renewable components (e.g. a wind/diesel unit),	This project corresponds to the installation of two Small
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	the eligibility limit of 15 MW for a small-scale CDM project activity applies only to the renewable component. If the new unit co-fires fossil fuel, the capacity of the entire unit shall not exceed the limit of 15 MW.	Hydro Power plants with added installed capacity equal to 11.16 MW, thus below the threshold of 15MW for small scale PAs. Therefore, it does not correspond to units that has both renewable and non-renewable components and this condition is not applicable.				
	Combined heat and power (co-generation) systems are not eligible under this category	This project corresponds to the installation of two Small Hydro Power plants. Therefore, this condition is not applicable.				
	In the case of project activities that involve the capacity addition of renewable energy generation units at an existing renewable power generation facility, the added capacity of the units added by the project should be lower than 15 MW and should be physically distinct ¹ from the existing units	This project corresponds to the installation of two greenfield Small Hydro Power plants and there is no capacity addition. Therefore, this condition is not applicable.				
	In the case of retrofit, rehabilitation or replacement, to qualify as a small-scale project, the total output of the retrofitted, rehabilitated or replacement power plant/unit shall not exceed the limit of 15 MW.	This project corresponds to the installation of two greenfield Small Hydro Power plants and there is no retrofit, rehabilitation or replacement. Therefore, this condition is not applicable.				
	In the case of landfill gas, waste gas, wastewater treatment and agro-industries projects, recovered methane emissions are eligible under a relevant Type III category	This project corresponds to the installation of two greenfield Small Hydro Power plants and therefore Type I small scale project are applicable. The PA does not correspond to landfill gas, wastewater treatment and agro-industries projects. Thus, this condition is not applicable.				
	In case biomass is sourced from dedicated plantations, the applicability criteria in the tool “Project emissions from cultivation of biomass” shall apply	Not applicable as this project corresponds to the installation of two greenfield Small Hydro Power plants.				
The applicability conditions of all tools are also met as follows:						
<table><tr><th>Applicability Criteria – TOOL 07</th><th>Assessment</th></tr><tr><td>This tool may be applied to estimate the OM, BM and/or CM when calculating baseline emissions for a project activity that substitutes grid electricity that is where a project activity supplies electricity to a grid or a project activity that results in savings of electricity that would have been provided by the grid (e.g. demand-side energy efficiency projects).</td><td>The project claims baseline emission by substituting the grid electricity by renewable electricity. Thus, this tool is applicable</td></tr></table>			Applicability Criteria – TOOL 07	Assessment	This tool may be applied to estimate the OM, BM and/or CM when calculating baseline emissions for a project activity that substitutes grid electricity that is where a project activity supplies electricity to a grid or a project activity that results in savings of electricity that would have been provided by the grid (e.g. demand-side energy efficiency projects).	The project claims baseline emission by substituting the grid electricity by renewable electricity. Thus, this tool is applicable
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	Under this tool, the emission factor for the project electricity system can be calculated either for grid power plants only or, as an option, can include off-grid power plants.	The Grid emission factor is directly calculate by the Brazilian DNA, based on this TOOL. This calculation is already approved by EB. Therefore, this condition is met.
	In case of CDM projects the tool is not applicable if the project electricity system is located partially or totally in an Annex I country	The electricity system is not located partially or totally in the Annex I country.
	Under this tool, the value applied to the CO2 emission factor of biofuels is zero	The Grid emission factor is directly calculate by the Brazilian DNA, based on this TOOL. Therefore, this condition is met.
Findings	N/A	
Conclusion	<p>The correct version of all methodology and tools have been referenced in the PDD. All applicability conditions of the applied methodology and applied tools are met. This project corresponds to the installation of two Small Hydro Power plants with added installed capacity equal to 11.16 MW, thus below the threshold of 15MW for small scale PAs. Therefore the small-scale methodologies are applicable. The latest versions of applied tools have been used:</p> <ul style="list-style-type: none"> a. TOOL07: Tool to calculate the emission factor for an electricity system (version 7.0); b. TOOL11 – Assessment of the validity of the original/current baseline and update of the baseline at the renewal of the crediting period – version 03.0.1. <p>The methodology and tools are from UNFCCC CDM website.</p>	

D.3. Validity of original baseline or its update

Means of validation	<p>The baseline scenario is given by applied methodology AMS I.D – version 18.0: “The baseline scenario is that the electricity delivered to the grid by the project activity would have otherwise been generated by the operation of grid-connected power plants and by the addition of new generation sources into the grid”.</p> <p>In addition, in accordance with the directives for the renewal of the crediting period of a registered CDM project activity, the validity of the current baseline shall be reassessed using the latest version of the TOOL11 “Tool to assess the validity of the original/ current baseline and to update the baseline at the renewal of a crediting period” (version 03.0.1). However this assessment was not made in the PDD. Thus a CAR has been raised.</p>
Findings	<p>CAR 01</p> <p><i>PDD section B.4: the validity of current baseline has not been made in accordance to the TOOL 11 “Assessment of the validity of the original/current baseline and update of the baseline at the renewal of the crediting period” V 3.0.1 unlike required by PS.</i></p>
Conclusion	<p>After the findings resolution it has been observed that the baseline scenario remains valid for the new crediting period.</p> <p>The baseline scenario is the one given by the applied methodology AMS-I.D – v. 18.0</p> <p>The assessment of TOOL11 is made as follows:</p> <p><u>Step 1: Assess the validity of the current baseline for the next crediting period</u></p> <p><i>Step 1.1: Assess compliance of the current baseline with relevant mandatory national and/or sectoral policies:</i></p> <p>The current baseline scenario complies with all relevant mandatory national/sectoral legislation. The Operational Licenses^{17/} are found up to date and were provided to the validation team, which means that the project is duly following all applicable legislation.</p>

Step 1.2: Assess the impact of circumstances:

As the baseline scenario identified at the validation of the project activity was the continuation of the current practice without any investment the PP informed that there was no changes in the Market characteristics that affect the Project activity.

The conditions used to determine the baseline emissions in the previous crediting period are still valid. The baseline scenario determined by the methodology was the electricity being generated by all plants connected to the grid, which remains unaltered. Comparing to the moment which this project was validated, there is no further incentive to specific source of electricity generation. Therefore, there is no significant variation of prices in the power generation, neither availability of new fuels or raw materials in the power plants connected to the grid. The electricity prices in Brazil are not regulated by government. The rules for generation and commercialization of electricity in Brazil are determined by National Law of Electric Sector^{/27/}, issued on 2004, which is still the ruling law on this matter.

Step 1.3: Assess whether the continuation of use of current baseline equipment(s) or an investment is the most likely scenario for the crediting period for which renewal is requested:

The baseline scenario is not the continuation of use of current baseline equipment. The PA consists in the installation of greenfield hydro power plants where no power plant was installed before. Thus, this step is not applied.

Step 1.4: Assessment of the validity of the data and parameters:

The application of Steps 1.1, 1.2, 1.3 and 1.4 above confirmed that the current baseline remains valid for the subsequent crediting period and that fixed parameters were updated in accordance with applied methodology and tools.

The fixed parameters remained the same and are:

- $Cap_{AlbanoMachado}$ (Installed capacity of the hydro power plant before the implementation of the project activity. For new hydro power plants, this value is zero)
- $Cap_{RiodosIndios}$ (Installed capacity of the hydro power plant before the implementation of the project activity. For new hydro power plants, this value is zero)
- $A_{AlbanoMachado}$ (Area of the reservoir measured in the surface of the water, before the implementation of the project activity, when the reservoir is full (m2). For new reservoirs, this value is zero.)
- $A_{RiodosIndios}$ (Area of the reservoir measured in the surface of the water, before the implementation of the project activity, when the reservoir is full (m2). For new reservoirs, this value is zero.)

Moreover, there is the inclusion of the parameter EF_{BM} (build margin emission factor) which will be kept fixed ex-ante for this 2nd CP in accordance with requirements of TOOL07.

- $EF_{grid,BM}$: CO₂ Build Margin emission factor of the grid, in an year y (calculated ex-ante and remained fixed for the whole CP as per TOOL07). The values are directly calculated by Brazilian DNA^{/19/}. The value applied for the whole CP will be equal to 0.1370 and it is equivalent to the year 2018 (latest value available to date).

The estimated parameters (EF_{CM} and EF_{OM}) were also updated to the latest values available (values from 2018) as required by TOOL07, which are directly calculated by Brazilian DNA^{/19/} and will be monitored along the crediting period with exception of the EF_{bm} that will be calculated ex-ante and will remain fixed for the next CP as per TOOL07. Thus, the baseline emissions were updated for the 2nd crediting period and the Step 2 is assessed below:

Step 2: Update the current baseline and the data and parameters

	<p>Step 2.1: Update the current baseline:</p> <p>Although the current baseline is valid, the baseline emissions were updated in accordance using the latest information available for Grid Emission Factor (parameters EF_{CM}, EF_{OM} and EF_{BM})^{19/}.</p> <p>Step 2.2: Update the data and parameters:</p> <p>All fixed parameters required by applied methodology and tools were updated in accordance with the new version of applied methodology and tools.</p> <p>The baseline emissions were updated taking into account the latest available values of EF provided by the Brazilian DNA and the parameter $EG_{facility,y}$ which was based on most reliable evidence (long term hydrological studies), which remained unaltered from the validation phase.</p> <p>The calculations are in accordance with CDM rules and requirements.</p>
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D.4. Estimated emission reductions or net anthropogenic removals

Means of validation	<p>All equations, formulas and assumptions were correctly applied as per the applied methodology (AMD-I.D) and tools.</p> <p>The baseline emissions are calculated by the multiplication of the electricity supplied by the project activity to the grid by the combined margin of CO₂ emission factor as follows:</p> $BE_y = EF_{grid,CM,y} \times EG_{facility,y}$ <p>Where: BE_y = Baseline emissions in the year y $EF_{grid,CM,y}$ = Combined Margin Emission factor of the grid in the year y $EG_{Facility,y}$ = Net electricity of the SHP delivered to grid in the year y (hourly value aggregated for each year)</p> <p>The Combined margin emission factor of the grid ($EF_{grid,CM,y}$) was calculated as follows:</p> $EF_{grid,CM,y} = EF_{OM} \times w_{OM} + EF_{BM} \times w_{BM}$ <p>For this period, the parameter EF_{OM} will be determined ex-post and the parameter EF_{BM} will be determined ex-ante as required by TOOL07. The parameters w_{om} and w_{bm} will also be kept fixed as required by the same TOOL07.</p> <p>Considering that the plant consist in hydro power plants with reservoir, the project emissions are to be taken into account. According to the applied methodology project emissions are to be calculated if Power Density of the reservoir is greater than 4W/m² and less or equal than 10W/m². The power density is calculated as following:</p> $PD = \frac{Cap_{pj} - Cap_{bl}}{Apj - Abl}$ <p>Where PD = power density Cap_{pj} = Installed Capacity of the hydro power plant after the implementation of the project activity Cap_{bl} = Installed Capacity of the hydro power plant before the implementation of the project activity Apj: area of full reservoir after the implementation of project activity Abl: area of reservoir before the project activity implementation.</p> <p>In the case of this project activity the calculated PD is between 4w/m² and 10 W/m² the Project Emissions for reservoir shall be determined using the following equation:</p> $PE_{HPy} = \frac{EF_{res} \times TEG_y}{1000}$ <p>Where:</p>
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	<p>PE_{HP,y}: Power emissions from water reservoirs</p> <p>EF_{fres}: Default emission factor for emissions from reservoirs of hydro power plants in year y</p> <p>TEG_y: Total electricity produced by the project activity, including the electricity supplied to the grid and the electricity supplied to internal loads, in year y.</p> <p>As the PD for SHP Albano Machado was calculated using incorrect value, a CAR has been raised.</p>
Findings	<p>CAR 02</p> <p><i>PDD section B.6.1: the power density SHP Albano Machado is being calculated using the parameter Apj different from the one provided in the evidences and informed in section B.7.1 of the same PDD.</i></p>
Conclusion	<p>The methodology and tools were correctly applied in order to calculate the estimates of emission reductions, with reliable and conservative parameters.</p> <p>The EF_{OM} will be monitored ex-post. This parameter is annually calculated by the Brazilian DNA, in accordance with requirements of TOOL07. The EF_{BM} used was calculated based on most recent data available in accordance with applied TOOL07 and will be fixed ex-ante for this 2nd CP as required by TOOL07. The parameters Apj and Cap PJ for both SHPs will be determined at the beginning of the CP as per applied methodology and will remain fixed for the whole CP.</p> <p>The parameters used to calculate the emission reductions are conservative, traceable and from official, public and reliable sources.</p>

D.5. Validity of monitoring plan

Means of validation	<p>The PDD sets a monitoring plan, which is feasible and in accordance with the applied methodology and tools.</p> <p>The management structure and roles and responsibilities are established for data collection, calibration frequency of meters, data report and data archiving.</p> <p>Moreover, there are procedures set for crosschecking the monitored data.</p> <p>However there was some inconsistencies when describing the monitored parameters. Thus a CAR has been raised.</p>
Findings	<p>CAR 03</p> <p><i>The monitoring frequency of the parameters Cap_{PJ} and Apj (for both SHPs) and the EF_{bm} are not in accordance with latest version of ACM0002 (to which meth AMS-I.D v 18.0 refers) and TOOL 07.</i></p>
Conclusion	<p>The monitoring plan of the PA is in accordance with the approved monitoring methodology and the means of monitoring of the parameters contained in the monitoring plan are feasible.</p> <p>The management structure and roles and responsibilities are set for data collection, calibration frequency of monitoring equipment, data report and data archiving. In addition, procedures for quality assurance and quality control are be set, as well as specific training for involved personnel.</p> <p>There is no sampling plan set to monitor the parameters.</p> <p>The parameters fixed are listed in section above and the ones to be monitored necessary for the project activity are listed at the PDD section B.7.1, in accordance with the applied methodology and tools.</p> <p>The parameters required for monitoring are contained in the monitoring plan:</p> <ul style="list-style-type: none"> - EG_{AlbanoMachado,y}: Quantity of net electricity supplied by the project plant/unit to the grid in year y; (monitored continuously) - EG_{RiodosÍndios,y}: Quantity of net electricity supplied by the project plant/unit to the grid in year y; (monitored continuously) - EF_{grid,CM}: Combined Margin CO₂ emission factor for grid connected power generation in year y calculated using the latest version of the "Tool to calculate the emission factor for an electricity system (monitored yearly) - EF_{grid,OM-DD}: CO₂ Operating Margin emission factor of the grid, in an year y (monitored hourly) - Cap_{AlbanoMachado} : Installed capacity of the hydro power plant after the implementation of the project activity (determined at the start of CP) - Cap_{RiodosÍndios} : Installed capacity of the hydro power plant after the implementation of the project activity (determined at the start of CP)

	<ul style="list-style-type: none"> - A_{AlbanoMachado}: Area of the single or multiple reservoirs measured in the surface of the water, after the implementation of the project activity, when the reservoir is full (determined once at the beginning of CP). - A_{RiodosÍndios}: Area of the single or multiple reservoirs measured in the surface of the water, after the implementation of the project activity, when the reservoir is full (determined once at the beginning of CP) <p>The PP determined the parameter A_{PJ} as the flooded area of the water intake in order to be able to determine the PD and consequently, estimate Project emission (equal to zero). In both SHPs, it is confirmed that no PE due to CH₄ emissions from reservoir are applied to this project activity. Both parameters A_{PJ} were determined through topographical measurements and are part of the current environmental license^{/17/}</p>
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D.6. Crediting period

Means of validation	The crediting period is 7 years renewable. This is the 2 nd crediting period and its start date is 02/07/2019, which is the first date after the end of the 1 st crediting period and it ends on 01/07/2026.
Findings	N/A
Conclusion	<p>The 2nd crediting period is from 02/07/2019 – 01/07/2026 – the request for renewal of the crediting period is being done in accordance with PCP version 02, para 270 to 279.</p> <p>Earthood (DOE – E 0066) has started the renewal of the 2nd crediting period in accordance with EB105 Meeting Report ^{/22/}, paragraph 28, that the renewal grace period is extended to 30/09/2020</p> <p>Therefore, the project activity is in accordance with CDM requirements and EB directives.</p>

D.7. Project participants

Means of validation	The project participants are Rio do Lobo Energia Ltda; Casa de Pedra Energia S.A and Carbotrader Assessoria e Consultoria em Energia EIRELI. The information provided in the PDD is in accordance with UNFCCC website
Findings	N/A
Conclusion	<p>The name of the project participant included in the revised PDD were assessed in accordance with the applicable validation requirements related to the renewal of crediting period.</p> <p>All information is in accordance with UNFCCC website.</p>

D.8. Post-registration changes

Type of post-registration changes (PRCs)	Confirmation (Y/N)	Validation report for PRCs	
		Version	Completion date
Temporary deviations from the registered monitoring plan, applied methodologies, standardized baselines or other methodological regulatory documents ²	N	-	-
Corrections	N	-	-
Change to the start date of the crediting period	N	-	-
Inclusion of a monitoring plan	N	-	-
Permanent changes to the registered monitoring plan, or permanent deviation of monitoring from the applied methodologies, standardized baselines, or other methodological regulatory documents	N	-	-
Changes to the project design	N	-	-
Changes specific to afforestation and reforestation project activities	N	-	-

² Other standards, methodologies, methodological tools and guidelines (to be) applied in accordance with the applied(selected) methodologies are collectively referred to as the other (applied) methodological regulatory documents).

SECTION E. Internal quality control

The draft validation report that is prepared by validation team is reviewed by an independent technical review team (one or more members) to confirm if the internal procedures established and implemented by ESPL were duly complied with and such opinion/conclusion is reached in an objective manner that complies with the applicable CDM rules/requirements.

The technical review team is collectively required to possess the technical expertise of all the technical area/sectoral scope to which the project activity is related. All members of technical review team are independent of the validation team.

During the technical review process, additional findings may be identified or the closed-out findings may be opened, which needs to be satisfactorily resolved before the request for the renewal of the crediting period is submitted to UNFCCC. The independent technical reviewer may either approve the report as such or reject/return the same, in such case, providing the comments/findings/issues that needs to be resolved by the validation team. The decision taken by the technical reviewer is final and is authorized on behalf of ESPL.

SECTION F. Validation opinion

Earthood Services Private Limited, contracted by Casa de Pedra Energia S.A and Carbotrader Assessoria e Consultoria em Energia EIRELI, has performed the independent validation of the renewal of crediting period of the project “SHPs Albano Machado and Rio dos Índios CDM Project (JUN1115)” – Ref.: 6465 – in Brazil.

ESPL commenced the validation based on the baseline and monitoring methodology AMS-I.D. ver. 18.0, the registered PDD (from previous crediting period) and draft PDD (for the 2nd crediting period).

ESPL’s validation approach is based on the understanding of the risks associated with reporting the project activity, estimates of GHG emission data and the controls to be implemented to mitigate these. ESPL planned and performed the validation by obtaining evidence, other information and explanations that ESPL considered necessary to give reasonable assurance that the estimated GHG emission reductions are fairly to be achieved.

The validation team confirms, based on final version of revised PDD for the 2nd crediting period, that:

- the original baseline is still valid as it is given by the applied methodology;
- the project additionality is valid for the renewal of the crediting period. No regulatory surplus has been identified. The project is in accordance with all applicable regulations and legislations;
- the project description is in accordance with the characteristics identified on site;
- the monitoring plan is adequate to the project activity and it is in accordance with the applied methodology;

at this 2nd crediting period, the project activity is likely to achieve the estimated of 12,474 tCO₂e per year.

Appendix 1. Abbreviations

Abbreviations	Full texts
ACM	Approved Consolidated Methodology
BE	Baseline Emission
BM	Build Margin
CAR	Corrective Action Request
CDM	Clean Development Mechanism
CL	Clarification Request
CM	Combined Margin
CO ₂	Carbon dioxide
CO ₂ e	Carbon dioxide equivalent
CP	Crediting Period
DNA	Designated National Authority
DOE	Designated Operational Entity
EB	Executive Board
EIA	Environmental Impact Assessment
ESPL	Earthood Services Private Limited
FAR	Forward Action Request
GHG	Green House Gas
GSC/GSP	Global Stakeholder Consultation Process
IPCC	Intergovernmental Panel on Climate Change
KP	Kyoto Protocol
kW	kilo Watt
kWh	kilo Watt hour
LoA	Letter of Approval/Authorization
MoC	Modalities of Communication
MP	Monitoring Plan
MW	Mega Watt
MWh	Mega Watt hour
OM	Operating Margin
PA	Project Activity
PCP	Project Cycle Procedure
PDD	Project Design Document
PE	Project Emission
PLF	Plant Load Factor
PP	Project Participant
PS	Project Standard
tCO ₂ e	Tonnes of Carbon dioxide equivalent
UNFCCC	United Nations Framework Convention on Climate Change
VT	Validation Team
VVS	Validation and Verification Standard

Appendix 2. Competence of team members and technical reviewers

Competence Statement			
Name	Marcelo Sebben		
Country	Brazil		
Education	M.Sc. (Sustainable Energy System) B. Eng. (Chemical Engineering)		
Experience	12.5 Years		
Field	Chemical process industry, CDM, Energy, Climate Change		
Approved Roles			
Team Leader	Yes		
Validator	Yes		
Verifier	Yes		
Methodology Expert	Yes (ACM0001, ACM0002, ACM0006, AM0065, AMS ID, AMS-I.E, AMS-I.C, AM0026, AMS-I.A, AMS-I.F, GS: Ecologically Sound Fuel Switch to Biomass with Reduced Energy Requirement, GS: Technologies and Practices to Displace Decentralized Thermal Energy Consumption)		
Local expert	Brazil, Chile, Honduras		
Financial Expert	Yes		
Technical Reviewer	No		
TA Expert	Yes (TA 1.1, 1.2, 5.1, 9.1, 13.1)		
Reviewed by	Shreya Garg	Date	04/06/2019
Approved by	Anshika Gupta	Date	04/06/2019

Competence Statement			
Name	Shreya Garg		
Country	India		
Education	M.Sc. (Climate Science & Policy), TERI University		
Experience	6 Years +		
Field	Climate Change		
Approved Roles			
Team Leader	YES		
Validator	YES		
Verifier	YES		
Methodology Expert	AMS.I.A., AMS.I.C., AMS.I.D., AMS.I.F., AMS.II.D., AMS.II.G., AMS.II.J., AMS.III.AV., ACM0002, ACM0012		
Local expert	YES (India)		
Financial Expert	NO		
Technical Reviewer	YES		
TA Expert	YES (TA 1.2, TA 3.1)		
Reviewed by	Abhishek Mahawar	Date	01/03/2018
Approved by	Ashok Gautam	Date	01/03/2018

Appendix 3. Documents reviewed or referenced

No.	Author	Title	References to the document	Provider
1.	UNFCCC	Standard: CDM PS for PA	version 02.0	Other
2.	UNFCCC	Standard: CDM PCP for PA	version 02.0	Other
3.	UNFCCC	Standard: CDM VVS for PA	version 02.0	Other
4.	UNFCCC	Form: CDM-PDD-FORM	version 11	Other
5.	UNFCCC	<ol style="list-style-type: none"> 1. Project design document (revised due to PRC in the 1st CP approved on 05/11/2020 under PRC-6465-001 which is the valid version to date) 2. Assessment on Post registration changes, issued by ESPL 	version 6 – 29/07/2020 version 2 – 31/07/2020	PP
6.	RINA	Validation Report “SHPs Albano Machado and Rio dos Índios CDM Project (JUN1115)” issued by RINA, report # 2010-BQ-04-MD	Revision 1.3 – 17/01/2012	Other
7.	PP	Project design document (draft)	version 1 – 02/01/2020	PP
8.	PP	Project design document (revised/final)	version 2: 04/08/2020 version 2.1: 20/11/2020 (final)	PP
9.	PP	ER Spreadsheet (draft)	version 1	PP
10.	PP	ER calculation Spreadsheet (revised/final)	Versio 2 (final)	PP
11.	UNFCCC	<u>Methodology:</u> <ol style="list-style-type: none"> 1. AMS-I.D.: Grid connected renewable electricity generation – 2. ACM0002: Grid-connected electricity generation from renewable sources 	<ol style="list-style-type: none"> 1. version 18.0 2. version 20.0 	Other
12.	UNFCCC	<u>Methodological tools:</u> <ul style="list-style-type: none"> • TOOL07 – Tool to calculate the emission factor for an electricity system • TOOL 11 – Assessment of the validity of the original/current baseline and update of the baseline at the renewal of the crediting period 	version 7.0 version 03.0.1	Other
13.	PP	<u>Project Lifetime:</u> 30 years as per registered PDD	https://cdm.unfccc.int/Projects/DB/RINA1340214069.45/view	PP

		ANEEL guidelines Study of economics useful life time and depreciation (from the Portuguese “Estudo de Vida Útil Econômica e Taxa de Depreciação” dated on November/2000	http://www2.aneel.gov.br/aplicacoes/audiencia/arquivo/2006/012/documento/relatorio_vida_util_volume_2.pdf	
14.	Secretariat of Planning and Energetic Development	<u>Estimated EG_{facility}</u> SHP Albano Machado Registered PDD where it is stated 1.66 MW average. SHP Rio dos Índios Registered PDD where it is stated 4.336 MW average.	version 4 – 17/01/2012 version 4 – 17/01/2012	Other
15.	PP	<u>Operation start date</u> • Dispatch # 516 issued by ANEEL, from 10/02/2011 authorizing the start of operation from 11/02/2011 for SHP Albano Machado. • Dispatch # 1.359 issued by ANEEL, from 03/05/2013 authorizing the start of operation from 04/05/2013 for SHP Rio dos Índios.		Other
16.	PP	<u>Technical description:</u> 1. Pictures of plant 2. Pictures turbines and generators 3. Pictures of electricity meters from substations 4. Operation Manual of the SHPs	03/2020 03/2020 03/2020	PP
17.	PP	<u>Reservoir Area</u> Operational Permit of the SHP Albano Machado # 09029/2019 issued by FEPAM (State Environment Secretariat), stating the reservoir area (obtained through topographical means. This data is official as it is presented to the Environmental Agency). Value equal to 89,300 m ² Operational Permit of the SHP Rio do Índio # 714/2018 issued by FEPAM (State Environment Secretariat), stating the reservoir area (obtained through topographical means. This data is official as it is presented to the Environmental Agency). Value equal to 241,200 m ²	Validity: 27/03/2022 Validity: 05/02/2023	PP
18.	ONS (National Electric System Operator)	1. Procedure 12.2 from ONS (National Electric System Operator) regulating the		Others

		accuracy class of the electricity meters 2. Regulation (ONS Grid Procedure, submodule 12.3) issued on 01/01/2017 revision 2016/12 stating that from this date on 5 years calibration frequency is to be applied to electricity meters		
19.	EF	- Data provided by the Brazilian DNA website regarding the EF _{OM-DD,h} and EF _{BM,y}	http://www.mctic.gov.br/mctic/opencms/ciencia/SEPED/clima/textogeral/emissao_despacho.html	PP
20.	PP	<u>Installed capacity evidences</u> 1. Equipment plaques (generators) for the nameplate installed capacity		PP
21.	PP	<u>Trainings and Duties of Personnel:</u> • SHP operation course – Igor Toniazco (SHP Rio do Indio) Training certificate Mr. Motta	13/09/2019 26 to 28/02/2018	PP
22.	UNFCCC	<u>Grace period of Project activity renewal</u> - EB100 Meeting Report paragraph 32. EB105 Meeting report paragraph 28	- https://cdm.unfccc.int/filestorage/U/9/2/U92NIBAJF0SOH65YPWEZ8KCMQX3RDT/eb100_meeting_report.pdf?t=NWp8cTF4ejM2fDD2F7MsspbKFqs1jZGG75Pf https://cdm.unfccc.int/filestorage/I/Y/Q/IYQR9ABW62KMF3SD4O70HNXJ5GPCVL/eb105_meeting_report.pdf?t=dUV8cTF4eXV3fDCY4PwliApXsb65CBg0JKPK	Other
23.	MCTIC	DNA of Brazil	http://www.mct.gov.br	Other
24.	ANEEL	ANEEL – National Agency of Electric Energy	www.aneel.gov.br	Other
25.	EB	Email answered by CDM Registration <CDMRegistration@unfccc.int> to Mr. Arthur Moraes suggesting the submission of RfRenewal in parallel with RfIssuance+PRC stating “However, as 30 September 2020 deadline is approaching, you may also opt for parallel (and not together) submission of post-registration changes and renewal requests for the project activity”	18/05/2020	PP

26.	PP	<p>PRC requested during previous verification not yet approved to date.</p> <ul style="list-style-type: none"> - Revised PDD containing the Post registration changes requested during the previous verification. - DOE Validation on PRC report 	<p>version 6 – 29/07/2020</p> <p>version 2 – 31/07/2020</p>	Other
27.	Brazilian Government	<p>Law 10,848 issued on 15/03/2004 – which establish the rules for generation, commercialization and transmission of electricity in Brazil.</p>	<p>http://www.planalto.gov.br/ccivil_03/_Ato2004-2006/2004/Lei/L10.848.htm#:~:text=%C2%A7%202%C2%BA%20Submeter%2Dse%2D%C3%A3o,el%C3%A9trica%20para%20o%20mercado%20regulado.</p>	Other
28.	FEPAM	<p><u>Confirmation of project location</u></p> <ul style="list-style-type: none"> - Albano Machado: LI_AM - 878-2009-DL - Rio dos Índios - LI N. ° 375/2008-DL <p>Both evidences were used during the validation phase of this Project activity. The confirmation of plant operation has been carried out through on-site inspection and it can be evidenced through the plotting of geographical coordinates provided in the evidences above. The links are on the side (and the plots are in the appendix 5 below)</p>	<p>10/08/2009</p> <p>22/04/2008</p> <p>Albano Machado Google maps Link https://www.google.com.br/maps/place/27%C2%B029'48.0%22S+52%C2%B048'13.0%22W/@-27.4969531,-52.8042762,572m/data=!3m1!1e3!4m5!3m4!1s0x0:0x0!8m2!3d-27.4966667!4d-52.8036111</p> <p>Rio dos Índios Google Maps Link https://www.google.com.br/maps/place/27%C2%B016'30.0%22S+52%C2%B047'38.0%22W/@-27.2751813,-52.7952099,394m/data=!3m1!1e3!4m5!3m4!1s0x0:0x0!8m2!3d-27.275!4d-52.7938889</p>	Other
29.	-	IPCC publications	www.ipcc-nggip.iges.or.jp	Other
30.	-	UNFCCC	http://cdm.unfccc.int	Other

Appendix 4. Clarification requests, corrective action requests and forward action requests

Table 1. CL from this validation

CL ID	01	Section no.	A	Date : 20/11/2020
Description of CL				
<i>It is observed that using the reported GPS coordinates, it is not possible to visibly identify the existence of the plants on satellite map such as google maps.</i>				
Project participant response				Date : 20/11/2020
<i>The geographical coordinates of SHP Rio dos Indios presented a typographical error which was identified in the official document (installation licence) used during the validation process. Amended document was provided to the validation team ensuring the correct information and the PDD was revised accordingly</i>				
Documentation provided by project participant				
Revised PDD version 2.1 Installation License - LI # 375/2008-DL				
DOE assessment				Date : 20/11/2020
The revised PDD and installation license ^{/28/} were provided to the validation team ensuring the correct location of the SHP Rio dos Indios. Moreover, picture of the SHPs were provided in order to evidence the operational status of SHP (see appendix 5)				

Table 2. CAR from this validation

CAR ID	01	Section no.	D.3	Date : 25/03/2020
Description of CAR				
<i>PDD section B.4: the validity of current baseline has not been made in accordance to the TOOL 11 "Assessment of the validity of the original/current baseline and update of the baseline at the renewal of the crediting period" V 3.0.1 unlike required by PS.</i>				
Project participant response				Date : 30/03/2020
<i>The assessment of the validity of the current baseline, according TOOL 11, was included on section B.4.</i>				
Documentation provided by project participant				
PDD version 2				
DOE assessment				Date : 30/03/2020
The assessment of the baseline was carried out in accordance with TOOL11 and as per Project Standard requirements.				
CAR is closed				

CAR ID	02	Section no.	D.4	Date : 25/03/2020
Description of CAR				
<i>PDD section B.6.1: the power density SHP Albano Machado is being calculated using the parameter A_{pj} different from the one provided in the evidences and informed in section B.7.1 of the same PDD.</i>				
Project participant response				Date : 30/03/2020
<i>This is a mistake, the parameter A_{PJ} from SHP Albano Machado was adjusted accordingly on section B.6.1.</i>				
Documentation provided by project participant				
PDD version 02				
DOE assessment				Date : 30/03/2020
The values are now in accordance with excel calculations and considered correct by the validation team.				
CAR is closed				

CAR ID	03	Section no.	D.5	Date : 25/03/2020
Description of CAR				
<i>The monitoring frequency of the parameters Cap_{PJ} and A_{pj} (for both SHPs) and EF_{bm} are not in accordance with latest version of ACM0002 (to which meth AMS-I.D v 18.0 refers) and TOOL07.</i>				
Project participant response				Date : 30/03/2020
PDD version 02				

Documentation provided by project participant	
The monitoring frequency of the parameters Cap_{PJ} and A_{PJ} for both SHPs were adjusted accordingly latest version of ACM0002 " <i>Once at the beginning of each crediting period</i> " and the monitoring frequency of the parameter EF_{bm} was adjusted in accordance with TOOL07 for the 2 nd crediting period (calculated ex-ante) on section B.7.1.	
DOE assessment	Date: 30/03/2020
The parameters were adjusted in accordance with valid version of the applied methodology and tools.	
All data is being correctly determined during the next crediting period.	
CAR is closed.	

Table 3. FAR from previous validation

FAR ID	0x	Section no.	x	Date : xx
Description of CAR				
<i>Not applied</i>				
Project participant response				Date : DD/MM/YYYY
Documentation provided by project participant				
DOE assessment				
Date: DD/MM/YYYY				

Appendix 5. Pictures of project equipment and Plots of project location

Albano Machado:



Figure 1: Albano Machado Dam



Figure 2: Albano Machado Turbine (only one is represented but the SHP contains two similar machines)



Figure 3: Albano Machado Generator (only one is represented but the SHP contains two similar machines)

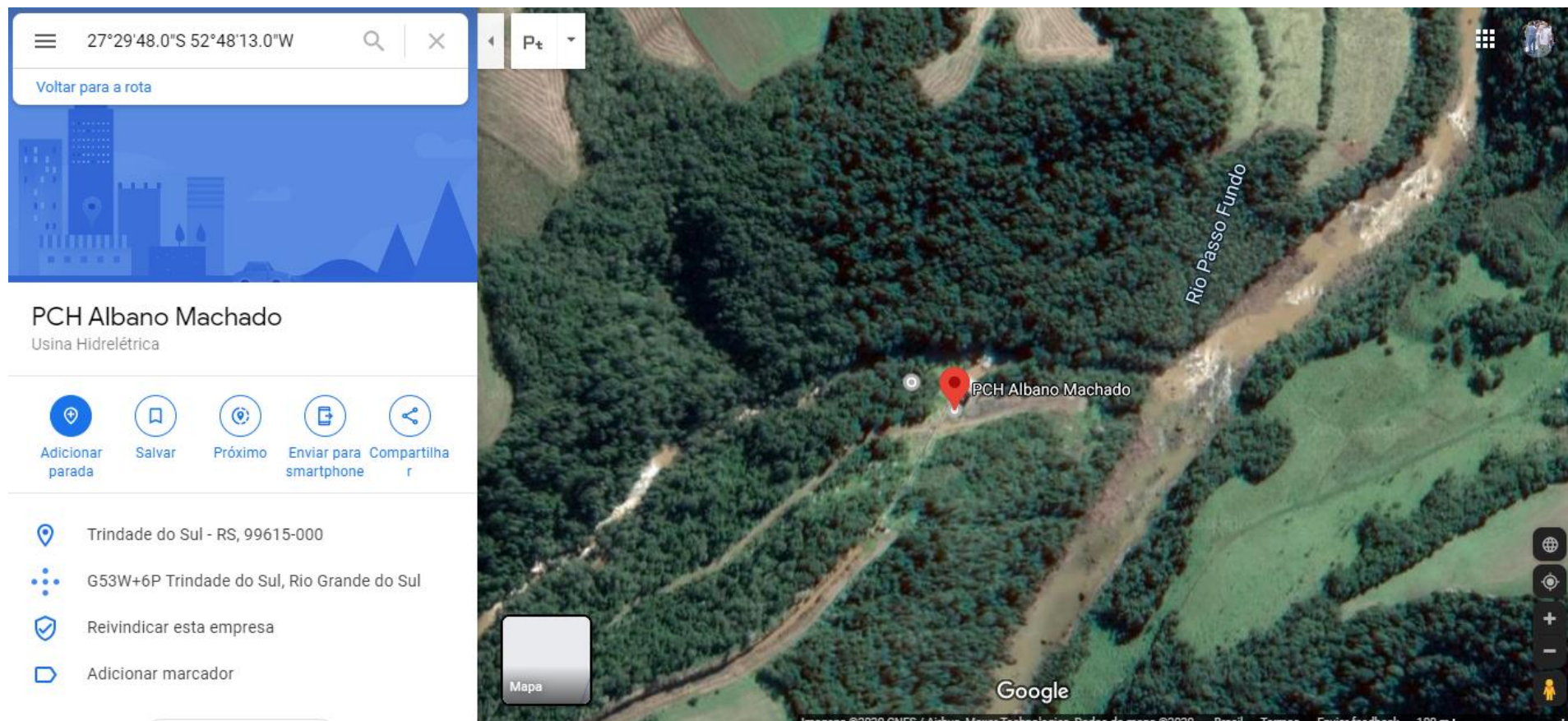


Figure 4: Plot of SHP Albano Machado (PCH Albano Machado in Portuguese)

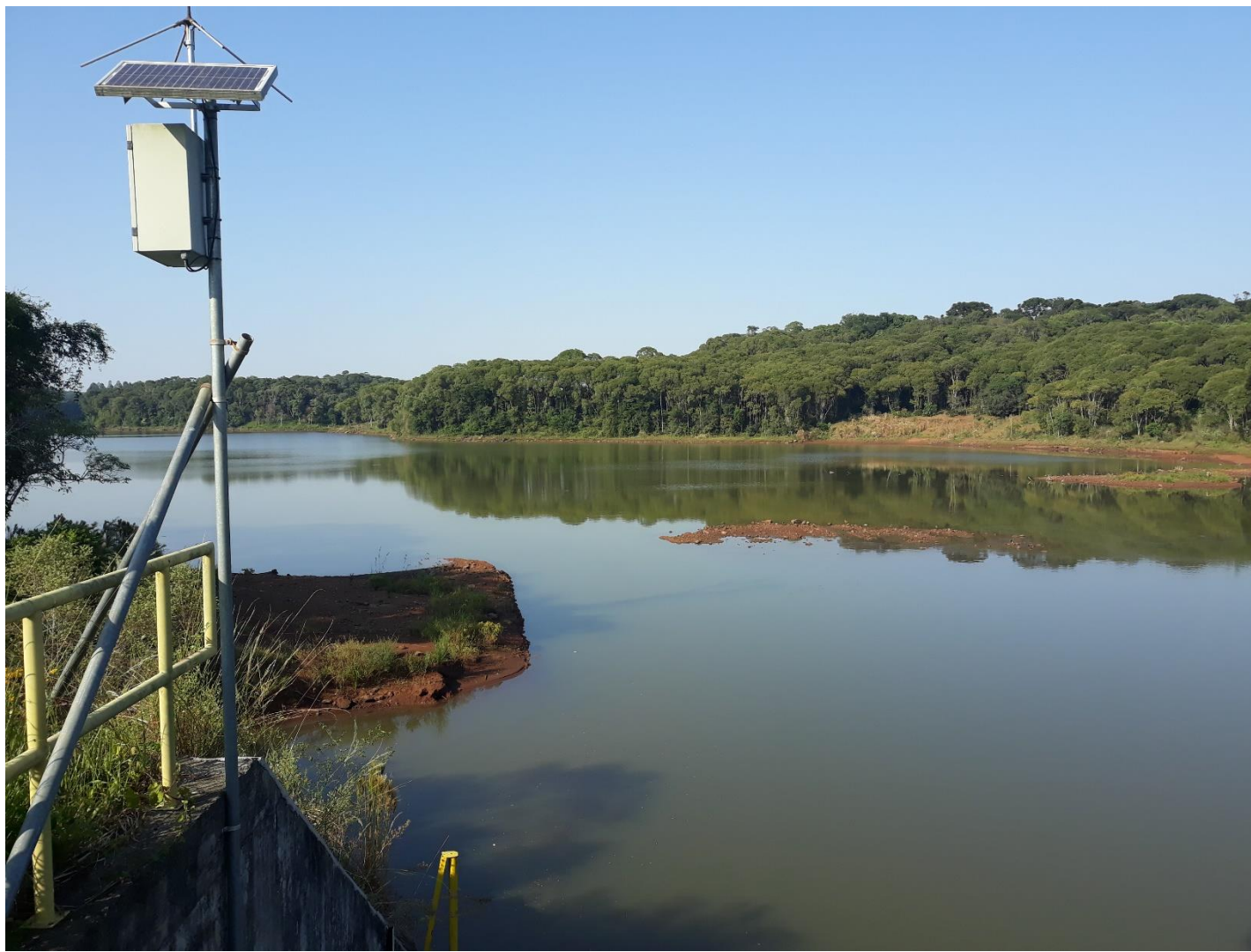
SHP Rio dos Índios (PCH Rio dos Índios in portuguese)**Figure 5: Rio dos Índios Reservoir**



Figure 6: Rio dos Índios conduct

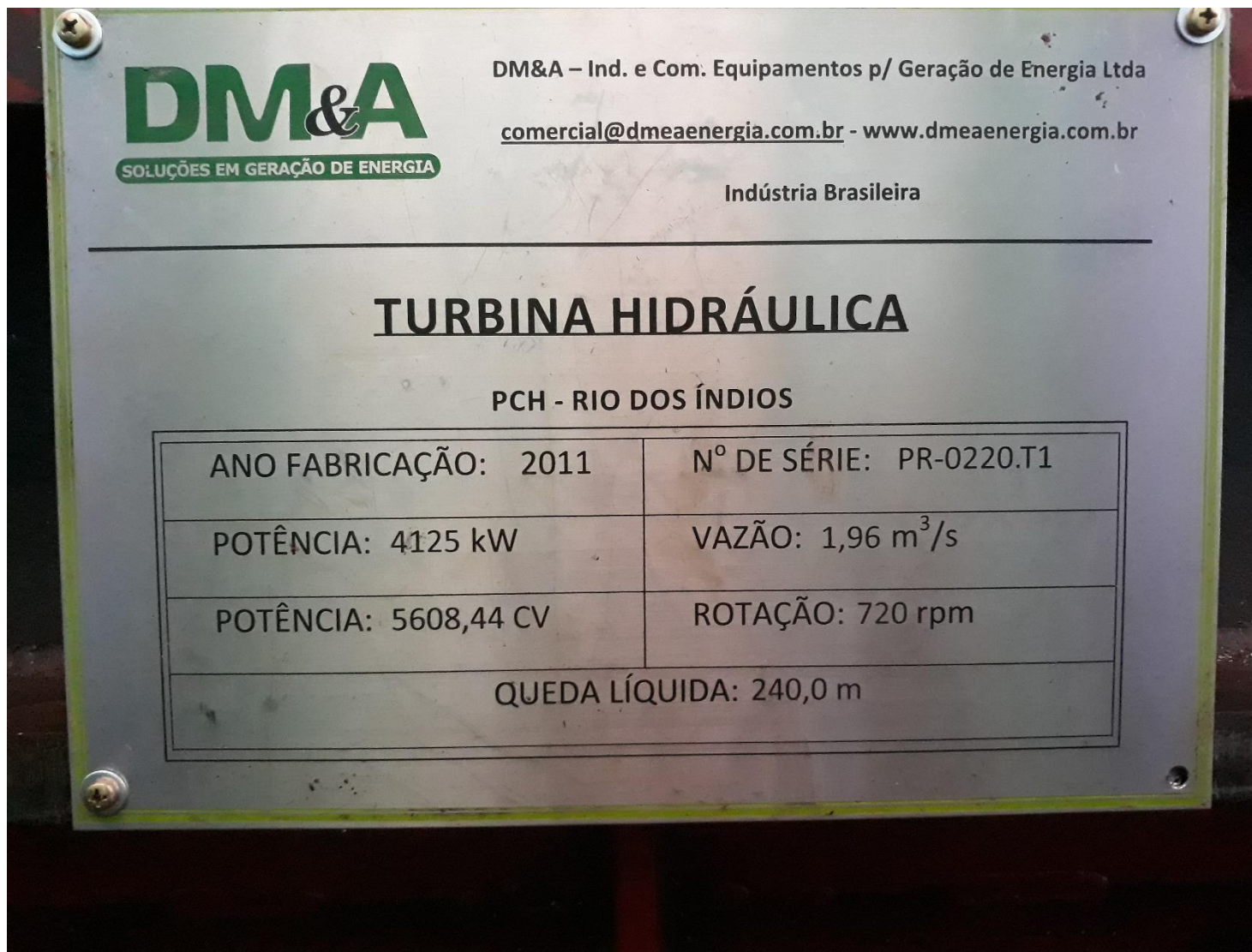


Figure 7: Rio dos Índios Turbine (only one is represented but the SHP contains two similar machines)

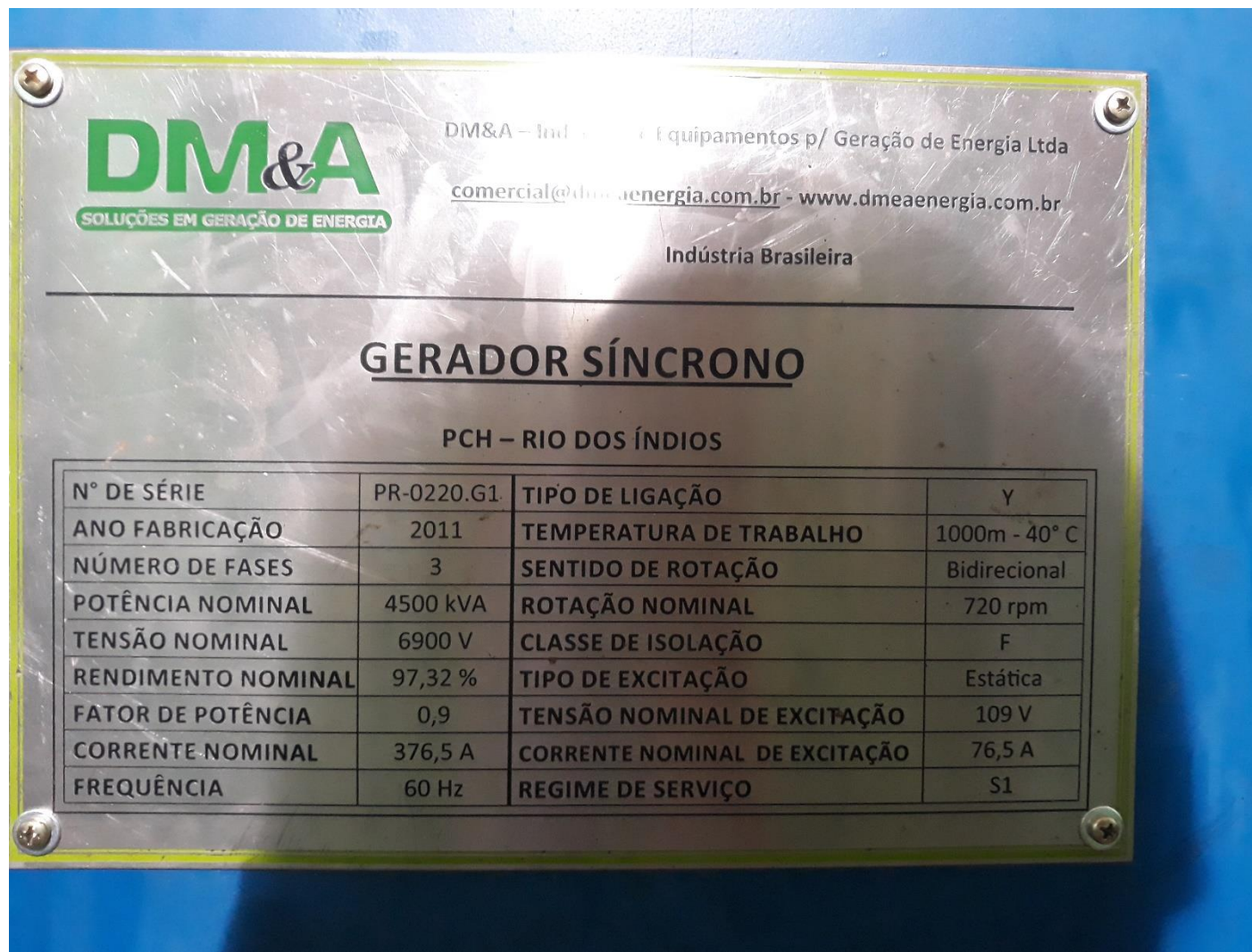


Figure 8: Rio dos Índios Generator (only one is represented but the SHP contains two similar machines)

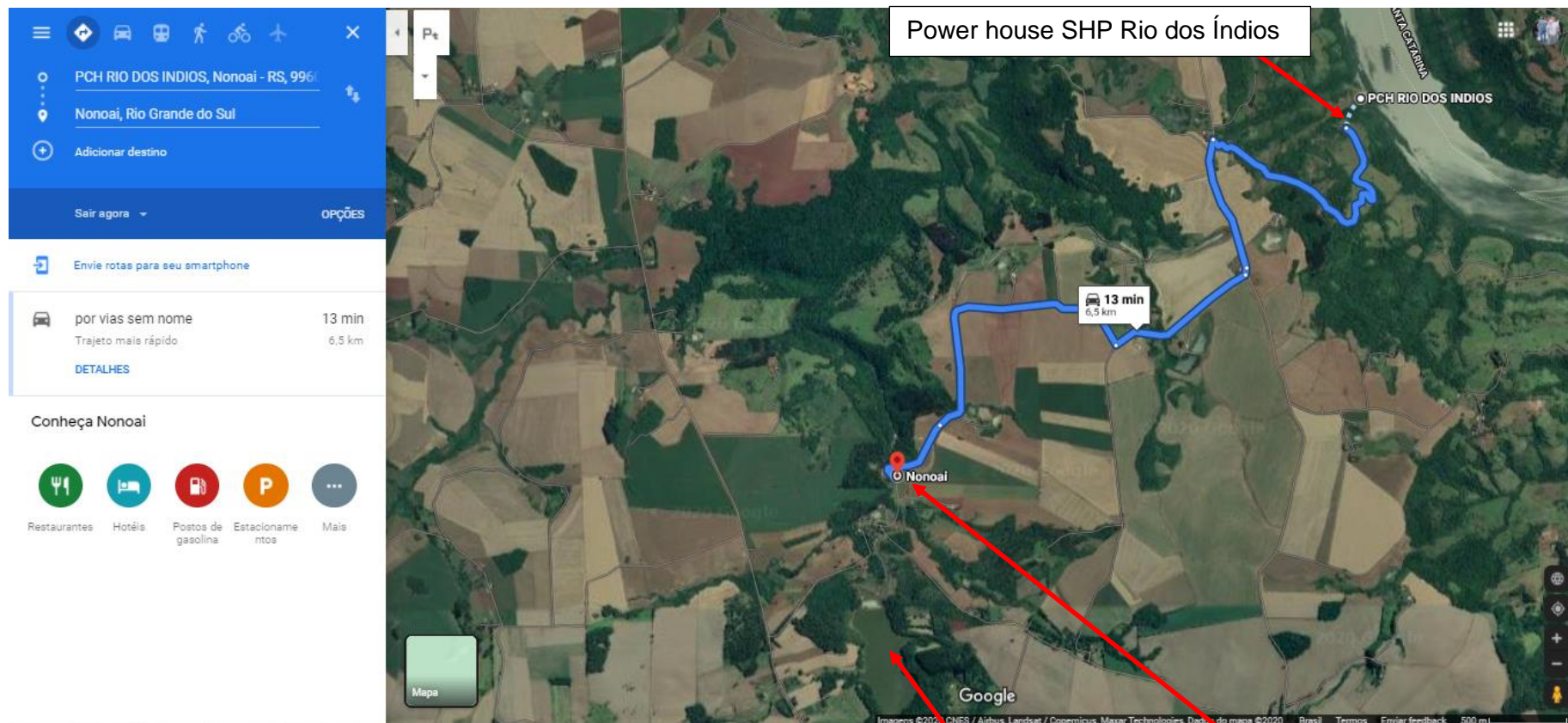


Figure 9: Plot of Reservoir, water canal and power house of Rio dos Índios

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Document information

<i>Version</i>	<i>Date</i>	<i>Description</i>
03.0	31 May 2019	Revision to: <ul style="list-style-type: none">• Ensure consistency with version 02.0 of the “CDM validation and verification standard for project activities” (CDM-EB93-A05-STAN) and version 02.0 of the “CDM project cycle procedure for project activities” (CDM-EB93-A06-PROC);• Make editorial improvements.
02.0	31 October 2017	Revision to align with the requirements of the “CDM validation and verification standard for project activities” (version 01.0).
01.0	23 March 2015	Initial publication.
Decision Class: Regulatory Document Type: Form Business Function: Renewal of crediting period Keywords: crediting period, project activities, validation report		