

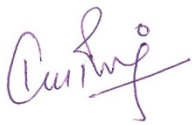


**Validation report form for post-registration changes for  
CDM project activities  
(Version 02.0)**

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

**BASIC INFORMATION**

<b>Title and UNFCCC reference number of the project activity</b>	SHPs Tambaú, das Pedras and Rio do Sapo CDM Project (JUN1132), Brazil UNFCCC ref. #: 9925
<b>Process track</b>	<input type="checkbox"/> Prior approval <input checked="" type="checkbox"/> Issuance <input type="checkbox"/> Renewal of crediting period
<b>Version number of the validation report on PRCs</b>	02.1
<b>Completion date of the validation report on PRCs</b>	08/02/2019
<b>Type(s) of PRCs</b>	<input checked="" type="checkbox"/> Temporary deviations from the registered monitoring plan, applied methodologies or applied standardized baselines <input checked="" type="checkbox"/> Corrections <input type="checkbox"/> Changes to the start date of the crediting period <input type="checkbox"/> Inclusion of a monitoring plan <input checked="" type="checkbox"/> Permanent changes to the registered monitoring plan, or permanent deviation of monitoring from the applied methodologies, standardized baselines, or other applied standards or tools <input type="checkbox"/> Changes to the project design <input type="checkbox"/> Changes specific to afforestation and reforestation project activities
<b>Version number of PDD to which this report applies</b>	Version 3.4
<b>Project participants</b>	Tambaú Energética S.A Euclides Maciel Energética S.A Rio do Sapo Energia S.A Carbotrader Assessoria e Consultoria em Energia Eireli.
<b>Host Party</b>	Brazil
<b>Applied methodologies and standardized baselines</b>	ACM0002 version 14 - Grid-connected electricity generation from renewable sources
<b>Mandatory sectoral scopes linked to the applied methodology</b>	Sectoral Scope 1 – Energy Industries (Renewable / Non-renewable Sources)
<b>Conditional sectoral scopes linked to the applied methodologies</b>	N/A

<b>Name and UNFCCC reference number of the DOE</b>	Earthood Services Private Limited (ESPL) (ref E- 0066)
<b>Name, position and signature of the approver of the validation report on PRCs</b>	 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 three small hydro power plant (SHP) with installed capacity as follows:

- 5.76 MW of installed capacity of SHP Rio do Sapo
- 8.82 MW of installed capacity of SHP Tambaú
- 5.67 MW of installed capacity of SHP das Pedras

The project activity reduces the GHG emissions through dispatching GHG-free electricity to the Brazilian National Grid (SIN).

The SHPs are located as following:

- SHP Rio do Sapo is located in the Central-West region of Brazil, in Sapo river, state of Mato Grosso and in the Municipality of Tangará da Serra
- SHP Tambaú is located in South region of Brazil, in Guarita river, State of Rio Grande do Sul, municipalities of Erval Seco and Redentora.
- SHP das Pedras is located in South region of Brazil, in Chapecó river, State of Santa Catarina, municipality of Água Doce.

The PA operation start date of each SHP is as following:

- SHP Rio do Sapo operation start date is on 27/02/2016<sup>/12/</sup>
- SHP Tambaú operation start date is on 28/03/2013<sup>/12/</sup>. As the Crediting period starts on 10/07/2014 the ERs are calculated from this date on.

SHP das Pedras operation start date is on 23/12/2017<sup>/12/</sup>. However, as per evidence provided, no monitoring was carried out during this monitoring period due to issues in SHP operation. The effective operation started on 02/01/2018 as per commissioning report provided by Eletrisa<sup>/12/</sup>. As no monitoring occurred, the verification team did not conduct site visit inspection in this unit.

### Scope of validation

Tambaú Energética S.A and Rio do Sapo Energia S.A have contracted Earthood Services Private Limited to conduct the verification and certification of emission reductions reported for the CDM project activity "SHPs Tambaú, das Pedras and Rio do Sapo CDM Project (JUN1132), Brazil" for the period 10/07/2014 to 31/12/2017 (including both days). Moreover, the DOE will be conducting the validation of this post registration change.

The validation of the Post registration changes is the independent review of the deviations from the project monitoring plan that have occurred due to the registered CDM project activity during the defined monitoring period.

The scope of the validation is to establish/verify that:

- the permanent changes, temporary changes and corrections proposed for the project activity are in accordance with applied version of the CDM Project Standard for PA, CDM Validation and Verification Standard for PA, applied methodology and tools;

### Validation process

The validation of this Post Registration Change is part of the verification process of this Project Activity. For the details on this process, please refer to the Verification Report to which this report is attached. This Post registration change will be requested in the issuance track, as it does not involve prior approval by the board.

### Conclusion

Earthood Services Private Limited has performed the validation of this correction of project information if the CDM PA "SHPs Tambaú, das Pedras and Rio do Sapo CDM Project (JUN1132), Brazil".

The validation team has confirmed that this deviation request complies with all eligibility criteria for the Post registration Changes in the registered CDM PA and that:

- the proposed corrections aim uniquely inform the actual data of the project activity.
- As the parameter  $TEG_{Rio do Sapo, y}$  was not determined as per monitoring plan, a temporary deviation with a conservative approach was proposed.
- The permanent change to the monitoring plan aims to align the information in the PDD with national regulation regarding electricity meter calibration

The validation team concluded that the proposed deviation complies with all relevant CDM procedures/standards/guidance.

## SECTION B. Validation team, technical reviewer and approver

This process is part of the verification process of this PA. For details, please refer to the section B of the Verification Report to which this report is attached.

## SECTION C. Means of validation

### C.1. Desk/document review

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

- a. a review of the data and information presented to verify its completeness;
- b. a review of installed equipment of all SHPs;
- c. A review of all applicable Standards, Guidelines and Procedures related to CDM PA.

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

### C.2. On-site inspection

This process is part of the verification process of this PA. For details, please refer to the section D.2 of the Verification Report to which this report is attached.

### C.3. Interviews

This process is part of the verification process of this PA. For details, please refer to the section D.3 of the Verification Report to which this report is attached

### 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

Areas of validation findings	No. of CL	No. of CAR	No. of FAR
Compliance with PDD form			
Temporary deviations from the registered monitoring plan, applied methodologies or applied standardized baselines	CL 3		
Corrections		CAR 5 CAR 6	
Changes to the start date of the crediting period			

Inclusion of a monitoring plan			
Permanent changes to the registered monitoring plan, or permanent deviation of monitoring from the applied methodologies, standardized baselines, or other applied standards or tools		CAR 7	
Changes to the project design			
Changes specific to afforestation and reforestation project activities			
Others (please specify)			
<b>Total</b>	1	3	-

## SECTION D. Validation findings

### D.1. Compliance with PDD form

The revised PDD has applied the latest available CDM-PDD-Form version 10.1. All information were correctly transferred from registered PDD version 3.2 to this revised new version 3.4. Only information updated due to this proposed corrections and permanent changes to the monitoring plan have been changed. Moreover, the revised PDD was completed in accordance with instructions for completing the PDD form version 10.1.

### D.2. Temporary deviations from the registered monitoring plan, applied methodologies or applied standardized baselines

Means of validation	Description:
	<p>A temporary deviation of the monitoring plan is being requested for the period between 27/02/2016 and 10/03/2019<sup>/16/</sup> for the SHP Rio do Sapo as the parameter TEG<sub>Rio do Sapo,y</sub> was not monitored in the exact location as it was determined in the Monitoring Plan. It happened as only one meter was installed at the power house (correct measure point of parameter TEGy), and the monitoring plan required that two meters (one main and one backup) shall be installed.</p> <p>Due to this issue, the parameter was initially measured at the interconnection point with SIN the internal consumption of the power plant were added in order to be conservative. However it is not in accordance with the monitoring plan.</p> <p>In this temporary deviation, the PP proposes an alternative monitoring. It was checked that the difference between the electricity measured at the power house and at the interconnection point was 2.28%<sup>/18/</sup>. Thus, the alternative monitoring proposed in this temporary deviation for determining the parameter TEGy will be the following:</p> <ul style="list-style-type: none"> <li>- For the period between 27/02/2016 (commercial start date of SHP) and 10/03/2019 (estimated date of 2<sup>nd</sup> electricity meter installation at the power house<sup>/16/</sup>), the parameter TEG will be determined as the net measurement of electricity generation (parameter EGY) plus 2.28% which is the difference between measurement at interconnection point and power house. In order to be further conservative, the internal consumption of the power plant (measured by the bidirectional electricity meters installed at the interconnection point) were also considered.</li> <li>- This temporary deviation is being requested as even with one meter being installed at the power house, the monitoring plan is not being fully attended as it requires two electricity meters (main and backup) to determine the parameter TEGy for SHP Rio do Sapo.</li> </ul> <p><b>Accuracy:</b></p> <p>The parameter TEGy is used to determine the project emissions of SHP Rio do Sapo due to methane release by the reservoir. The proposed temporary deviation is considered accurate by the validation team as the</p>

	<p>meters used to propose correction factors (at the power house and at the interconnection point) have the same accuracy or higher when compared to requirements of registered PDD (0.1 and 0.2 accuracy class respectively). Thus, the alternative monitoring arrangements result in accurate values.</p> <p><b>Conservativeness:</b> The measure proposed is conservative as add to the net electricity generation, the difference between electricity generated in the power house and interconnection point (2.28%) measured by the electricity meter installed at the power house and also the internal consumption of the power plant measured by the bidirectional electricity meters installed at the interconnection point. This alternative measure proposed during this temporary deviation is considered conservative by validation team. Even though values applied were measured in the correct location but with only one meter by adding 2.28% to the net electricity generation, the internal consumption were also added. Thus, the higher is the electricity generation accounted in the parameter <math>TEG_{Riodosapo,y}</math>, higher are the project emissions due to methane emissions from reservoir.</p> <p><b>Prior Approval</b> This change does not require prior approval as per Appendix of the CDM Project Standard for PA version 02.0 paragraph 1 b).</p> <p><i>Temporary deviations from the registered monitoring plan for which alternative monitoring arrangements are proposed, if the proposed alternative monitoring arrangements produce a conservative estimate of greenhouse gas (GHG) emission reductions or net anthropogenic GHG removals</i></p> <p>The condition above is fulfilled as the parameter TEG is determined conservatively as to the transmission losses between power house and interconnection point (2.28%) it was added the internal consumption for PE emissions calculations during all deviation period.</p>
<b>Findings</b>	<p>CL 3 <i>The monitoring report has not provided the line diagrams showing all relevant monitoring points as per section C.1 of the attachment Instructions for completing the CDM-MR FORM.</i></p>
<b>Conclusion</b>	<p>The validation team considers that the total difference between <math>EG_{Riodosapo,y}</math> and <math>TEG_{Riodosapo,y}</math> which is equal to 3.9% (internal consumption + transmission losses) which is way conservative considering that the distance between power house and interconnection point is only 5.7 km. Thus the determination of parameter <math>TEG_{Riodosapo,y}</math> proposed in this alternative measurement is conservative.</p> <p>The temporary deviations from the registered monitoring plan were assessed in accordance with applicable validation requirements related to the temporary deviations from the registered monitoring plan in the VVS. Thus, it is concluded that this change falls under the Paragraph 1) b) of the Appendix of the Project Standard version 02.0 and can be requested under issuance track (without prior approval)</p>

### D.3. Corrections

#### Correction #1:

Means of validation	Description:
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A correction has been requested as turbines information presented in the PDD for the three SHPs (das Pedras, Rio do Sapo and Tambaú) and the generator's information for SHP das Pedras were not in accordance with information observed during the site visit. Moreover, the installed capacity of the SHP das Pedras was also corrected (from 5.60 MW to 5.67 MW). The correct information of the turbines and generators are as follows:

SHP Rio do Sapo (installed capacity = 5.76 MW)

- 02 horizontal axis Generators (Synchronous) with 2.880 MW each, Serial #s 1001523149 and 1001523150
- 02 horizontal axis turbines (Francis) with 3.020 MW each, Serial #s 01 and 02
- nominal flow of 14.545 m<sup>3</sup>/s and water head of 23.01 m.

SHP Tambaú (installed capacity = 8.82 MW)

- 02 horizontal axis Generators (Synchronous) with 4.410 MW each, Serial #s 1011816064 and 1011816065
- 02 horizontal axis turbines (Francis) with 4.601 MW each, Serial #s 2151 and 2152,
- nominal flow of 16.40 m<sup>3</sup>/s and water head of 31.35 m.

SHP das Pedras (installed capacity = 5.67 MW)

- 02 Generators (Synchronous) with 2.835 MW each (Serial #s 1033654596 and 1033617977;
- 02 Vertical turbines (Saxo), 2.926 MW each, Serial #s 2285 and 2286, nominal flow of 16.12 m<sup>3</sup>/s and water head of 20.0 m.

#### **Accuracy:**

The information stated in the PDD is now in accordance with actual situation in the three SHPs. The updated information does not influence the applicability of methodology or the Estimation of emission reductions.

#### **Conservativeness:**

No influence in the ER calculations were observed due to this correction. . The typographic correction in the turbines characteristics does not influence the estimated ERs. The typographic corrections in the generators characteristics and in the installed capacity of SHP das Pedras also does not influence the Estimated electricity generated. The estimation of electricity generation is given by the Assured energy (MWh average). This assured energy is given by flow regime studies and it is approved by ANEEL (National agency of Electricity) through the ANEEL Ordinance 165 of 26.11.2012 approved during the validation phase of this project activity. Thus it is confirmed that these changes are just adjustments of PDDs information, considering that, at the moment of the PDD description, not all equipment had been acquired. The estimations of ERs remains unaltered.

#### **Prior Approval**

This change does not require prior approval as per Appendix of the CDM Project Standard for PA version 02.0, paragraph 1a).

*1)a) Any corrections to project information of a registered clean development mechanism (CDM) project activity that do not affect the design of the project activity;*

The condition above is fulfilled as the turbines and generators characteristics does not influence the estimated emission reduction calculations. The installed capacity also does not influence the ER

	estimations. The estimated electricity generation is given by assured energy approved by ANEEL which is the average generation through the operation period, based on flow regime studies and validated during validation phase.
<b>Findings</b>	CAR 5 <i>Information of the installed turbines of SHP Rio do Sapo and Tambaú and installed generators of SHP das Pedras described in PDD are not in accordance with real situation observed during site visit. Moreover, the total installed capacity of SHP das Pedras informed in the PDD is not in accordance with evidence provided</i>
<b>Conclusion</b>	The correction of project's information was assessed in accordance with applicable validation requirements related to the corrections from the registered PDD in the VVS. Thus, it is concluded that this change falls under Appendix of Project Standard version 02.0 paragraph 1a) and can be requested under issuance track (without prior approval). Both versions of the PDD (clean and tracking changes) have been provided to the validation team. All information was correctly transferred from version 3.2 (registered PDD) to version 3.4 (revised PDD) without changes, apart from the ones proposed by the PRCs mentioned in this document. Moreover, the PDD has been updated to the latest version of the CDM-PDD form, version 10.1.

**Correction #2:**

<b>Means of validation</b>	<p><b>Description:</b> A correction has been requested in order to clarify that the connection point of the SHP Rio do Sapo is not exactly located at the Itanorte Substation as informed in the registered PDD, but at an intersection of the distribution line close to this substation. This intersection does correspond to the connection point of the SHP with SIN (National interconnected System). This clarification is only a correction of meter location and it has been duly informed in the revised PDD.</p> <p><b>Accuracy:</b> The information stated in the PDD is now in accordance with actual situation in the connection point of the SHP Rio do Sapo. The updated information does not influence the applicability of methodology or the Estimation of emission reductions.</p> <p><b>Conservativeness:</b> No influence in the ER calculations were observed due to this correction. . This is a correction of meter location and does not affect the design of the project activity.</p> <p><b>Prior Approval</b> This change does not require prior approval as per Appendix of the CDM Project Standard for PA version 02.0, paragraph 1a).   <i>1)a) Any corrections to project information of a registered clean development mechanism (CDM) project activity that do not affect the design of the project activity;</i></p> <p>The condition above is fulfilled as the information is just a clarification that the connection point of the SHP is not exactly at the Itanorte Substation but at an intersection of the distribution line closed to this substation. Again, this still corresponds to the connection point between the SHP and the National Interconnected System.</p>
<b>Findings</b>	CAR 6



	<i>The interconnection point of electricity delivery of SHP Rio do Sapo is not correctly described in the PDD</i>
<b>Conclusion</b>	<p>The correction of project's information was assessed in accordance with applicable validation requirements related to the corrections from the registered PDD in the VVS.</p> <p>Thus, it is concluded that this change falls under Appendix of Project Standard version 02.0 paragraph 1a) and can be requested under issuance track (without prior approval). Both versions of the PDD (clean and tracking changes) have been provided to the validation team. All information was correctly transferred from version 3.2 (registered PDD) to version 3.4 (revised PDD) without changes, apart from the ones proposed by the PRCs mentioned in this document. Moreover, the PDD has been updated to the latest version of the CDM-PDD form, version 10.1.</p>

**D.4. Changes to the start date of the crediting period**

Not applicable to this Validation

**D.5. Inclusion of a monitoring plan**

Not applicable to this Validation

**D.6. Permanent changes to the registered monitoring plan, or permanent deviation of monitoring from the applied methodologies, standardized baselines, or other applied standards or tools**

<b>Means of validation</b>	<p><b>Description:</b></p> <p>A permanent change of monitoring plan has been requested as in the registered PDD, a calibration frequency of 2 years for the electricity meters was required, to comply with national regulations. However at the year of 2017 (01/01/2017) a new version of this regulation entered into force<sup>/15/</sup>. Thus, this change is to exclude the text fragment where it is said that the calibration "shall be conducted at least every two years", in section B.7.3\quality control, keeping the requirements of calibrating the electricity meters as per national regulations under national standards.</p> <p><b>Material impact on the applicability of the methodology</b></p> <p>This change does not cause impact on the applicability of the methodology. The calibration will still be done as per national regulations.</p> <p><b>Accuracy of monitoring:</b></p> <p>The meters will still be calibrated as per national regulations. This change will not modify the required accuracy of meters. The fact of calibrating as per national regulations and not mandatorily every two years will not affect the accuracy of the electricity meters as the informed calibration frequency is allowed by the national regulation.</p> <p><b>Completeness of monitoring:</b></p> <p>No influence in the completeness of monitoring is observed due to this change. The calibration will remain to be conducted as per national regulations.</p> <p><b>Prior Approval</b></p> <p>This change does not require prior approval as per Appendix of the CDM Project Standard for PA version 02.0, paragraph 1c).</p>
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	<p>1)c) <i>Changes to the monitoring of a registered CDM project activity that have no material impact on the applicability of the applied methodologies or the accuracy and completeness of the monitoring;</i></p> <p>The condition above is fulfilled as the proposed change only adapt the calibration frequency informed in the registered PDD to the requirements of national regulations. The impacts on the applicability of methodology, accuracy and completeness of monitoring are null.</p>
<b>Findings</b>	<p>CAR 7</p> <p><i>It is not clear the reason for supressing the information regarding calibration frequency in the section B.7.3 of the revised PDD (quality control)</i></p>
<b>Conclusion</b>	<p>The permanent change was assessed in accordance with applicable validation requirements related to the corrections from the registered PDD in the VVS.</p> <p>Thus, it is concluded that this change falls under Appendix of Project Standard version 02.0 paragraph 1c) and can be requested under issuance track (without prior approval). Both versions of the PDD (clean and tracking changes) have been provided to the validation team. All information was correctly transferred from version 3.2 (registered PDD) to version 3.4 (revised PDD) without changes, apart from the ones proposed by the PRCs mentioned in this document. Moreover, the PDD has been updated to the latest version of the CDM-PDD form, version 10.1.</p>

#### D.7. Changes to the project design

Not applicable to this Validation

#### D.8. Changes specific to afforestation and reforestation project activities

Not applicable to this Validation

### SECTION E. Internal quality control

The assessment of Post Registration Changes 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 verification 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 issuance 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 verification team. The decision taken by the technical reviewer is final and is authorized on behalf of ESPL

### SECTION F. Validation opinion

The following changes were requested during this verification process.

1. Temporary deviation of the measurement of parameter TEG<sub>Riodosapo</sub>
2. Correction of the turbines' and generators' technical characteristics stated in the registered PDD to be in accordance with actual information.
3. Correction of the location of interconnection point of the SHP Rio do Sapo
4. Permanent change of monitoring plan by correcting information regarding calibration frequency of electricity meters to be in compliance with national regulations.

These changes do not require prior approval by the board as they fall under following paragraphs of the Project Standard version 02.0:

1. Appendix, Paragraph 1)b): as the temporary deviation proposes alternative monitoring arrangements that produces a conservative estimate of greenhouse gas (GHG) emission reductions or net anthropogenic GHG removals;
2. Appendix, Paragraph 1)a) as it corresponds to correction of project information that does not affect the design of the project activity (typographic adjustment of turbines' and generators' information)
3. Appendix, Paragraph 1)a) as it corresponds to correction of meters location with no influence in the project design.
4. Appendix, Paragraph 1)a) as the proposed change does not cause impact on the applicability of methodology, or accuracy and completeness of the monitoring.

## Appendix 1. Abbreviations

Please refer to Appendix 1 of the Final Verification Report to which this report is attached

## 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)		
Local expert	Brazil, Chile, Honduras		
Financial Expert	No		
Technical Reviewer	Yes		
TA Expert	Yes (TA 1.1, 1.2, 5.1, 13.1)		
Reviewed by	Abhishek Mahawar	Date	01/03/2018
Approved by	Ashok Kumar Gautam	Date	01/03/2018

Competence Statement	
Name	Sergio Bonanno Cruz
Country	Brazil
Education	Post Graduate Diploma in Environment
Experience	25 Years
Field	Environmental Law, CDM, Energy, Climate Change
Approved Roles	
Team Leader	Yes
Validator	Yes
Verifier	Yes
Methodology Expert	Yes (ACM0001, ACM0002, AM0026, ACM0006, AMS ID)
Local expert	Brazil, Chile
Financial Expert	No
Technical Reviewer	Yes
TA Expert	Yes (TA 1.2, 13.1)

<b>Reviewed by</b>	Abhishek Mahawar	<b>Date</b>	01/03/2018
<b>Approved by</b>	Ashok Kumar Gautam	<b>Date</b>	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	Others
2.	UNFCCC	Standard: CDM PCP for PA	version 02.0	Others
3.	UNFCCC	Standard: CDM VVS for PA	version 02.0	Others
4.	UNFCCC	Form: CDM-MR-FORM	version 6.0	Others
5.	UNFCCC	Form: CDM-PDD-FORM	version 10.1	Others
6.	UNFCCC	Form: CDM-PRCV-FORM	version 02.0	Others
7.	PP	Monitoring Report (draft)	version 1.1 – 27/03/2018	PP
8.	PP	Monitoring Report (revised/final)	version 2 – 24/05/2018 Version 3 20/12/2018 Version 4 08/02/2019	PP
9.	PP	<u>ER Spreadsheet (draft)</u>  1. CERs RDS 1st MR  2. CERs TAB 1st MR	  1. Rev 0  2. Rev 0	PP
10.	PP	<u>ER Spreadsheet (final)</u>  1. CERs RDS 1st MR  2. CERs TAB 1st MR	  1. rev1round7  2. rev1round7	PP
11.	PP	Registered PDD	version 3.2 – 02/07/2014	Others
12.	PP	Revised PDD	version 3.4 – 12/12/2018	
13.	ANEEL	ANEEL Ordinance 165 of 26.11.2012 stating the assured electricity of SHP das Pedras in 3.00 MW average (MWh/h)		Others

14.	UNFCCC	Methodology: ACM0002 "Grid-connected electricity generation from renewable sources"	Version 14.0	Others
15.	ONS (National Electric System Operator)	Sub-module 12.3 – Maintenance of metering system for billing purposes.	Rev. 2016.12 entering into force from 01/01/2017	Others
16.	SHP Rio do Sapo	Letter from SHP Rio do Sapo director regarding the planned date when the 2 <sup>nd</sup> electricity meter will be installed at the power house of the SHP Rio do Sapo. The electricity meter is planned to be installed until 10/03/2019	12/12/2018	Other
17.	UNFCCC	- Tool to calculate the emission factor for an electricity system	version 4.0	
18.	PP	- Comparison between measurements from the electricity meter SEL300 installed at the power house and the net electricity generated at the interconnection point resulting in 2.28% difference (higher for the electricity measured in the power house by SEL300)		
19.	UNFCCC	UNFCCC	<a href="http://cdm.unfccc.int">http://cdm.unfccc.int</a>	Other

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

Table 1. CLs from this validation (the findings numbering is in accordance with verification report)

CL ID	03	Section no.	E.1	Date	:25/09/2018	
Description of CL						
<i>The monitoring report has not provided the line diagrams showing all relevant monitoring points as per section C.1 of the attachment Instructions for completing the CDM-MR FORM.</i>						
Project participant response				Date		:03/10/2018
<i>A line diagram showing all relevant monitoring points was included in the Monitoring Report section C.</i>						
Documentation provided by project participant						
MR version 3_4						
DOE assessment				Date		:26/10/2018
The PP has provided the monitoring report with line diagrams including all relevant monitoring points as per instructions for completing the MR form.						
However it has been observed that the parameter $TEG_{RiodosapoY}$ is not being measured in accordance with the monitoring plan that requires it to be measured at the power house (project site).						
CL remains open						
Project participant response				Date		29/10/2018
<i>The <math>TEG_{RiodosapoY}</math> was adjusted accordingly using the meter SEL300 with class accuracy 0.1 located inside the powerhouse. Also until March 2019 another meter with class accuracy 0.2 shall be installed inside the powerhouse focusing to increase the reliability. A temporary deviation was proposed</i>						
Documentation provided by project participant						
MR version 3						
DOE assessment				Date		: 29/10/2018

It was observed that only one meter was installed in the power house during this monitoring period which is not in accordance with the monitoring plan. Thus, the PP proposed a temporary deviation from MP. The proposed alternative plan is to add to the net electricity generated (parameter EGy) the transmission losses determined by the difference between measurements at power house and interconnection point (2.28%) plus internal losses (1.16%). This alternative measurements will be valid until the installation of another electricity meter at the power house. For further details regarding this temporary deviation, please refer to Assessment on PRC report which is attached to the Verification report.

**CAR is closed**

**Table 2. CARs from this validation (the findings numbering is in accordance with verification report)**

CAR ID	05	Section no.	E.4.2	Date	:21/05/2018
<b>Description of CAR</b>					
<i>Information of the installed turbines of SHP Rio do Sapo and Tambaú and installed generators of SHP das Pedras described in PDD are not in accordance with real situation observed during site visit. Moreover, the total installed capacity of SHP das Pedras informed in the PDD is not in accordance with evidence provided</i>					
<b>Project participant response</b>					<b>Date</b> :25/05/2018
<i>PDD version 3.3 was provided with the adjustments on Turbines and Generators characteristics – see Sections A.1 and A.3 Table 1, 2 and 3.</i>					
<b>Documentation provided by project participant</b>					
<i>PDD version 3.3</i>					
<b>DOE assessment</b>					<b>Date</b> : 29/05/2018
<i>The PDD's information is now in accordance with actual characteristics of the turbines and generators installed in the project activity.</i>					
<b>CAR is closed</b>					

CAR ID	06	Section no.	E.4.2	Date	:12/12/2018
<b>Description of CAR</b>					
<i>The interconnection point of electricity delivery of SHP Rio do Sapo is not correctly described in the PDD</i>					
<b>Project participant response</b>					<b>Date</b> :12/12/2018
<i>The information about point of electricity of SHP Rio do Sapo was adjusted accordingly in the section B.7.1 of the PDD version 3.4 of 12/12/2018.</i>					
<b>Documentation provided by project participant</b>					
<i>PDD version 3.4 of 12/12/2018</i>					
<b>DOE assessment</b>					<b>Date</b> :12/12/2018
<i>The interconnection point is now clarified in the revised PDD as it was observed during site visit. The interconnection point is an intersection of the distribution line to Itanorte Substation. A correction of PDD has been requested. For further details refer to Assessment on PRC attached to the Verification report.</i>					
<b>CAR is closed</b>					

CAR ID	07	Section no.	E.4.5	Date	:12/12/2018
<b>Description of CAR</b>					
<i>It is not clear the reason for suppressing the information regarding calibration frequency in the section B.7.3 of the revised PDD (quality control)</i>					
<b>Project participant response</b>					<b>Date</b> :12/12/2018
<i>Since the calibration frequency was updated on the national regulations (from 2 to 5 years) and can suffer other alterations during the project activity lifetime, the information regarding calibration frequency was suppressed and now is addressed to the properly national regulation standards.</i>					
<b>Documentation provided by project participant</b>					
<i>PDD version 3.4 of 12/12/2018</i>					

DOE assessment	Date: 12/12/2018
<p>A permanent change of monitoring plan has been requested as in the registered PDD, a calibration frequency of 2 years for the electricity meters was required, to comply with national regulations. However at the year of 2017 (01/01/2017) a new version of this regulation entered into force/15/. In this regulation (rev.2016.12) the calibration is to be conducted every 5 years.</p> <p>Thus, this change is to exclude the text fragment where it is said that the calibration “shall be conducted at least every two years”, in section B.7.3\quality control, keeping the requirements of calibrating the electricity meters as per national regulations under national standards. For further details refer to Assessment on PRC attached to the Verification report.</p>	
<b>CAR is closed</b>	

**Table 3. FARs from this validation**

Not applied



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**Document information**

<i>Version</i>	<i>Date</i>	<i>Description</i>
02.0	31 October 2017	Revision to align with the requirements in 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: Registration		
Keywords: post-registration change, project activities, validation report		