




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

BASIC INFORMATION

Title and UNFCCC reference number of the project activity	Cachoeirao CDM Project (JUN1092) Project reference number 4788
Number and duration of the next crediting period	2 nd crediting period – length: 7 years
Version number of the validation report	01Aa
Completion date of the validation report	29/06/2020
Version number of PDD to which this report applies	3
Project participants	Hidrelétrica Cachoeirão S.A. (Brazil) Carbotrader Assessoria e Consultoria em Energia Eireli (Brazil)
Host Party	Brazil
Applied methodologies and standardized baselines	ACM0002 – Grid-connected electricity generation from renewable sources, version 20.0
Mandatory sectoral scopes	Sectoral Scope: 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	34,059 tCO ₂
Name and UNFCCC reference number of the DOE	Name: RINA SERVICES SpA UNFCCC reference number: E-0037
Name, position and signature of the approver of the validation report	Laura Severino Head of Certification Innovation & Sustainability Unit 

SECTION A. Executive summary

Purpose and general description

The objective of the project activity “Cachoeirao CDM Project (JUN1092)” in Brazil is the generation and delivery of renewable electricity to the Brazilian connected grid, through the Cachoeirão small hydro power plant (SHP), installed in Minas Gerais State.

Emissions reductions are claimed from displacing grid electricity with the estimated electricity that will be generated by the hydroelectric plant and supplied to the grid. The installed capacity is 28.05 MW with an estimated generation of 143,401 MWh/year.

The project was registered as a CDM project on 03 February 2012 for a renewable 7-year crediting period, under the reference number 4788. The first crediting period of this project is from 03 February 2012 – 02 February 2019.

As a result, the project results in reductions of CO₂ emissions that are real, measurable and give long – term benefits to the mitigation of climate change.

The total emission reductions from the project are estimated to be on the average 34,059 tCO₂ per year over the selected 7 year for the 2nd crediting period. The emission reduction forecast has been checked, and it is deemed likely that the stated amount is achieved given that the underlying assumptions do not change.

Scope of validation

The purpose of a validation is to have an independent third party assess of the updated project design document to confirm that the original project baseline is still valid or has been updated taking in account of new data where applicable. In particular, the project's baseline, monitoring plan, and the project's compliance with relevant UNFCCC criteria are validated in order to confirm the correctness of the application of the approved baseline methodologies for the determination of the continued validity of the baseline or its update, and estimation of the emission reductions for the applicable crediting period.

The validation scope is defined as an independent and objective review of the updated project design document (PDD). The updated PDD is reviewed against Kyoto Protocol requirements, UNFCCC rules and the relevant decisions by the CDM Executive Board, including the approved baseline and monitoring methodology ACM0002 (version 20.0).

Validation process

This report summarizes the findings from the validation of the updated PDD of the project, performed on the basis of UNFCCC criteria for CDM, as well as criteria given by the CDM Validation and Verification Standard for project activities, CDM Project Cycle Procedure for project activities and CDM Project Standard for project activities and included an assessment of: (a) The impact of new relevant national and/or sectoral policies and circumstances on the baseline taking into account relevant guidance from the Board with regard to renewal of the crediting period at the time of requesting renewal of crediting period; (b) The correctness of the application of an approved baseline methodology for the determination of the continued validity of the baseline or its update, and the estimation of emission reductions from the applicable crediting period. This validation opinion is also to be seen in conjunction with the validation report at the time of requesting registration for the first crediting period. The Validation Opinion is not meant to provide any consultancy towards the project participants. However, stated requests for clarifications and/or corrective actions may have provided input for improvement of the project design.

Conclusion

Hidrelétrica Cachoeirão S.A. commissioned RINA SERVICES SpA to perform the validation for renewal of the crediting period of the registered project activity “Cachoeirao CDM Project (JUN1092)” in Brazil (hereafter called “the project”). In conclusion, it is RINA's opinion that the project meets all the relevant requirements for the renewal of the crediting period.

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/ Validator	ER	Leiroz	Andrea	RINA Brasil	✓	-	✓	✓

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	Principe Branco Saettoni	Geisa Maria	RINA BRAZIL
2.	Approver	IR	Severino	Laura	RINA HQ

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

The report is based on the assessment of the project design document version 1 and subsequent versions 2 and 3 /2/, application of standard auditing techniques including but not limited to desk review, follow up actions (e.g., electronic (telephone or e-mail) interviews) and also the review of the applicable approved methodological and relevant tools, guidance and CDM decisions.

All the documents used for arriving validation conclusion are listed in Appendix 03 and referenced accordingly in validation report.

C.2. On-site inspection

Duration of on-site inspection: N/A				
No.	Activity performed on-site	Site location	Date	Team member
	N/A	N/A	N/A	N/A

A complete desk review of the submitted PDD (version 1) /2/ and supportive evidences have been checked by the Validation Team.

In addition, audit team has conducted calls/interviews (telephonic) with PP on different topics as mentioned under section C.3 of this report.

Based on the videoconference, PDD review, as the review of UNFCCC procedures and guidelines, RINA Validation team has proceeded to skip the presential site visit due to the COVID-19 pandemic /30/. As per para 30 of CDM Validation and Verification Standard for project activities version 02.0 /8/, Validation team has used the following alternative means for its assessment and to justify that they are sufficient for the purpose of validation.

- By review of PDD;
- By taking follow up actions by conducted interview with PP, to gather information about knowledge of project design, current situation via videoconference. Cross-checked evaluation under the scope of all information and references provided in PDD. Details of interviewes, topics covered and additional information presented in the below section "C.3 – Interviews".

Validation team has also checked the site visit requirements mentioned in the VVS for Project Activity version 02.0 /8/ and concluded that no site visit is required. The justification for the site visit requirements of VVS PA version 02.0 /8/ have been mentioned below.

VVS PA version 02.0 requirements	Validation team justification
<p>Para 29 (b)</p> <p>(b) Follow-up actions (e.g. on-site inspection and telephone or e-mail interviews), including:</p> <p>(i) Interviews with relevant stakeholders in the host country, such as personnel with knowledge of the project design and implementation;</p> <p>(ii) Cross checks between the information provided by interviewed personnel (i.e. by checking sources or other interviews) to ensure that no relevant information has been omitted;</p>	<p>Validation team has done the follow-up actions by:</p> <ol style="list-style-type: none"> 1. Teleconference with PP. Skype and WhatsApp were used with the video camera function. PP walk in the plant so that the validation team was able to check the installed equipment. 2. Cross checks between information provided by interviewed personnel (i.e. by checking sources or other interviews) to ensure that no relevant information has been omitted.
<p>Para 30</p> <p>It is mandatory for the DOE to conduct an on- site inspection at validation for the proposed CDM project activity if:</p> <p>(a) Its estimated annual average of GHG emission reductions or net anthropogenic GHG removals is more than 100,000 t CO₂ eq; or</p> <p>(b) There is pre-project information that is relevant to the requirements for registration of the project activity and may not be traceable after the registration.</p>	<p>The validation team has not considered the presential site visit as mandatory due to the following reasons which are in line with the VVS PA version 02.0 requirements.</p> <p>For the CDM project activity to be renewed, this is not applicable as the estimated annual average of GHG emission reductions is less than 100,000 t CO₂ eq.</p> <p>Also there is no pre-project information that is relevant to the requirements for renewal of the CDM project activity and may not be traceable after the renewal.</p> <p>Hence for the proposed CDM project activity, it is not mandatory to conduct the site visit.</p>

C.3. Interviews

No.	Interviewee			Date	Subject	Team member
	Last name	First name	Affiliation			
1.	Moraes	Arthur	Carbotrader	03/06/2020	<ul style="list-style-type: none"> • Description of the project activity; • Technology to be employed; • Justification on the choice of the methodology; • Project boundary; • Validity of original baseline; • Monitoring Plan and monitoring arrangements; • Data management; • Emission reductions. 	Andrea Leiroz
2.	Duarte	Evanilson	PCH Cachoeirão	03/06/2020	<ul style="list-style-type: none"> • Project implementation. 	Andrea Leiroz

C.4. Sampling approach

Not applicable for this project activity.

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	-	03	-
Validity of original baseline or its update	-	01	-
Estimated emission reductions or net anthropogenic removals	01	-	-
Validity of monitoring plan	-	03	-
Crediting period	-	-	-
Project participants	-	-	-
Post-registration changes	-	-	-
Others (please specify)	-	-	-
Total	01	07	-

SECTION D. Validation findings**D.1. Compliance with PDD form**

Means of validation	PDD applies the applicable CDM-PDD-FORM: Project design document form version 11.0 /11/.
Findings	N/A
Conclusion	<p>Validation team confirms that final PDD is completed using the valid version of the applicable CDM-PDD-FORM: Project design document form version 11.0 /11/ in compliance with para 412 (a) (i) of VVS for PA version 02 /8/.</p> <p>All the information has been correctly transferred from registered PDD to the current PDD which is filled in the latest CDM PDD form available in UNFCCC website. Validation team confirms that the transfer of information from the old form to the new form is correct and materially the same as the information in the registered PDD in compliance with para 412 (a) (ii) of VVS for PA version 02 /8/.</p> <p>PDD is in compliance with the instruction provided in the template.</p>

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

Means of validation	<p>The project was originally registered based on version 12 of ACM0002 – “Grid-connected electricity generation from renewable sources” /13/. For the renewal of the second crediting period, the submitted revised CDM-PDD (version 3 dated 29/06/2020) /2/ correctly applies the latest version of the methodology, i.e. version 20.0 – “Grid-connected electricity generation from renewable sources” /12/. Therefore, the project was validated against ACM0002 version 20.0 /12/ requirements, as described in the following sections.</p> <p>Application of selected baseline and monitoring methodology</p> <p>The methodology ACM0002 (version 20.0) /12/ is applicable to grid-connected renewable energy power generation project activities that:</p> <ul style="list-style-type: none"> (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). <p>The methodology is applicable to the project as it has been demonstrated that the project activity is the installation of a greenfield renewable energy generation unit connected to the Brazilian grid. RINA confirmed the same from the ANEEL resolution /5/ and the environmental license /6/. Hence, the methodology is applicable to the proposed project activity.</p>
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The methodology is applicable under the following conditions:

- (a) The project activity may include renewable energy power plant/unit of one of the following types: hydro power plant/unit with or without reservoir, wind power plant/unit, geothermal power plant/unit, solar power plant/unit, wave power plant/unit or tidal power plant/unit;
- (b) In the case of capacity additions, retrofits, rehabilitations or replacements (except for wind, solar, wave or tidal power capacity addition projects) the existing plant/unit started commercial operation prior to the start of a minimum historical reference period of five years, used for the calculation of baseline emissions and defined in the baseline emission section, and no capacity expansion, retrofit, or rehabilitation of the plant/unit has been undertaken between the start of this minimum historical reference period and the implementation of the project activity.

According to the ANEEL resolution /5/, the project consists of a new renewable energy hydro power plant with new reservoir, therefore it is not a capacity addition, retrofitting or replacements of an existing power plant.

In case of hydro power plants, one of the following conditions shall apply:

- (a) The project activity is implemented in existing single or multiple reservoirs, with no change in the volume of any of the reservoirs; or
- (b) The project activity is implemented in existing single or multiple reservoirs, where the volume of the reservoir(s) is increased and the power density, calculated using equation (7), is greater than 4 W/m^2 ; or
- (c) The project activity results in new single or multiple reservoirs and the power density, calculated using equation (7), is greater than 4 W/m^2 ; or
- (d) The project activity is an integrated hydro power project involving multiple reservoirs, where the power density for any of the reservoirs, calculated using equation (7), is lower than or equal to 4 W/m^2 , all of the following conditions shall apply:
 - (i) The power density calculated using the total installed capacity of the integrated project, as per equation (8), is greater than 4 W/m^2 ;
 - (ii) Water flow between reservoirs is not used by any other hydropower unit which is not a part of the project activity;
 - (iii) Installed capacity of the power plant(s) with power density lower than or equal to 4 W/m^2 shall be:
 - a. Lower than or equal to 15 MW; and
 - b. Less than 10 per cent of the total installed capacity of integrated hydro power project.

The project will result in new reservoir and the power density of Cachoeirão SHP is greater than 4 W/m^2 . RINA could verify the installed capacity by checking photos of the equipments plates /7/ and the reservoir area through ANEEL resolution /5/ and operation license /6/.

SHP	Installed capacity (MW)	Reservoir area (km^2)	Power density (W/m^2)
Cachoeirão	28.05	1.021	51.36

In the case of integrated hydro power projects, project proponent shall:

- (a) Demonstrate that water flow from upstream power plants/units spill directly to the downstream reservoir and that collectively constitute to the generation capacity of the integrated hydro power project; or
- (b) Provide an analysis of the water balance covering the water fed to power units, with all possible combinations of reservoirs and without the construction of reservoirs. The purpose of water balance is to demonstrate the requirement of specific combination of reservoirs constructed under CDM project activity for the optimization of power output. This

	<p>demonstration has to be carried out in the specific scenario of water availability in different seasons to optimize the water flow at the inlet of power units. Therefore, this water balance will take into account seasonal flows from river, tributaries (if any), and rainfall for minimum of five years prior to the implementation of the CDM project activity.</p> <p>Since the project activity is not an integrated hydro power project, this methodology condition is not applicable.</p> <p>The methodology is not applicable to:</p> <ul style="list-style-type: none"> (a) Project activities that involve switching from fossil fuels to renewable energy sources at the site of the project activity, since in this case the baseline may be the continued use of fossil fuels at the site; (b) Biomass fired power plants/units. <p>The proposed project activity does not involve any switching from fossil fuel to renewable energy sources at the project site and the power generation does not comprise any biomass fired power plant, which was verified by RINA through the follow-up interview.</p> <p>In the case of retrofits, rehabilitations, replacements, or capacity additions, this methodology is only applicable if the most plausible baseline scenario, as a result of the identification of baseline scenario, is "the continuation of the current situation, that is to use the power generation equipment that was already in use prior to the implementation of the project activity and undertaking business as usual maintenance".</p> <p>According to the ANEEL resolution /5/, the project consists of a new renewable energy hydro power plant with new reservoir, therefore it is not a capacity addition, retrofitting or replacements of an existing power plant. This methodology condition is not applicable.</p> <p>The project activity applies the following methodological tools:</p> <ul style="list-style-type: none"> - Methodological "Tool to calculate the emission factor for an electricity system" version 07.0 /18/ is used since the project will supply electricity to the local grid and will consume electricity from the grid for internal use. The "Tool to calculate project or leakage CO2 emissions from fossil fuel combustion" version 03.0 /16/ will not be used since there will be no consumption of fossil fuel in project case as RINA could verify by reviewing the installation license /6/. The "Baseline, project and/or leakage emissions from electricity consumption and monitoring of electricity generation" version 03.0 /17/ is used in order to monitor the quantity of electricity supplied to the local grid. The "Tool to determine the remaining lifetime of equipment" (Version 01) /19/ will not be used since the project activity does not involve the replacement of existing equipment with new equipment or which retrofit existing equipment as part of energy efficiency improvement activities. The tool "Combined tool to identify the baseline scenario and demonstrate additionality" (Version 07.0) /15/ will not be used to identify the baseline scenario since the methodology identify the baseline scenario for greenfield power plant. The tool "Tool for the demonstration and assessment of additionality" (Version 07.0.0) /14/ and the tool "Positive lists of technologies" version 02.0 /21/ will not be used to demonstrate the additionality since the project is renewing the crediting period and thus, the tool "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) /20/ is used in order to assess the continued validity of the baseline and to update the baseline at the renewal of a crediting period, as required by paragraph 49 (a) of the modalities and procedures of the clean development mechanism.
Findings	CAR-01, CAR-02 and CAR-03 were raised and successfully closed. The findings are discussed in Appendix 04 of the validation report.
Conclusion	<p>The compliance of those applicability conditions was confirmed through the review of documentation, interviews and based on its sectoral knowledge.</p> <p>The assessment of the project's compliance with the applicability criteria of ACM0002 (version 20.0) are documented in detail above.</p> <p>Hence use of the selected methodology is appropriate for this project activity compliance with para 412 (a) (iii) of VVS for PA version 02 /8/.</p>

D.3. Validity of original baseline or its update

Means of validation	The following steps from the "Assessment of the validity of the original/current
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baseline and update of the baseline at the renewal of the crediting period" /20/ as per CDM-EB "Validation and Verification Standard for project activities" (version 02.0) /8/ were applied:

Step 1: Assess the validity of the current baseline for the next crediting period

The "CDM Project Standard for project activities" /9/ requires assessing the impact of new relevant national and/or sectoral policies and circumstances on the baseline. The validity of the current baseline is assessed using the following Sub-steps:

Step 1.1: Assess compliance of the current baseline with relevant mandatory national and/or sectoral policies

RINA has confirmed that no relevant mandatory national and/or sectoral policies applicable to the project activity came into effect after the submission of the project activity for validation. RINA was able to confirm that small hydro power projects are not common practice in Brazil and account for only 3.07% of total installed capacity /25/.

There are no new rules or legislations in Brazil that go against the previous established baseline i.e. electricity could continue to be generated by the plants feeding the grid.

For the second crediting period, the project complies with national requirements: The National Electric System Operator (ONS from the Portuguese Operador Nacional do Sistema Elétrico) /26/; The Electricity Regulatory Agency ("ANEEL" from the Portuguese Agência Nacional de Energia Elétrica) /29/; The Mines and Energy Ministry ("MME" from the Portuguese Ministério de Minas e Energia) /27/; The Chamber of Electrical Energy Commercialization ("CCEE" from the Portuguese Câmara de Comercialização de Energia Elétrica) /28/.

Thus, it is concluded that no relevant national and/or sectoral policies affected the validity of the project activity baseline.

Step 1.2: Assess the impact of circumstances

There are no new national/sectoral policies/legislation/circumstances that could affect the baseline scenario during the renewal of the crediting period. RINA confirmed that in the absence of the project, the electricity would be generated by grid connected power plants.

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

In the absence of the project activity, the electricity would be generated by grid connected power plants. The National Interconnected System (SIN, from the Portuguese "Sistema Interligado Nacional") is composed by more than 8,000 plants and each one has specific characteristics and equipment /25/. Thus this step does not apply, since the whole system would continue to supply energy independently of the lifetime of individual equipment.

The project has 30 years lifetime and consequently will be operational until 2037 which exceeds the end of the last crediting period.

Thus, this sub-step should not be applied.

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

The baseline emissions of the project activity were updated considering the last version of the methodologies and related applicable tools.

Conclusion on step 1

RINA confirms that the current baseline is still valid as per methodology ACM0002 (version 20.0) /12/ for the second crediting period.

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

Step 2.1: Update the current baseline

The current scenario is still valid, thus there is no need to be updated. The baseline emissions for the second crediting period have been updated, without reassessing the baseline scenario, based on the latest approved version of methodology ACM0002 /12/ and applicable tools /14/ - /21/.

Step 2.2: Update the data and parameters

The data and/or parameter(s) for the second crediting period were updated. The assessment is described in the sections below, considering that the CO₂ emission factor of the grid was updated to reflect the current delineation and matrix, following

	the latest version of TOOL07 /18/.
Findings	CAR-04 was raised and successfully closed. The findings are discussed in Appendix 04 of the validation report.
Conclusion	Validity of the baseline has been correctly assessed and the parameters are updated as per the Methodology Tool "Assessment of the validity of the original/current baseline and update of the baseline at the renewal of the crediting period" /20/ in the PDD submitted for the renewal of crediting period.

D.4. Estimated emission reductions or net anthropogenic removals

Means of validation	<p>Algorithms and/or formulae used to determine emission reductions</p> <p>The various algorithm/formulae for calculating baseline and project emissions have been transparently documented in line with the requirements of ACM0002 version 20.0 /12/.</p> <p><u>Project emissions:</u></p> <p>Project emissions are calculated as the sum of project emissions from fossil fuel consumption, emissions from the operation of dry, flash steam or binary geothermal power plants and emissions from water reservoirs of hydro power plants.</p> <p>No fossil fuel is consumed and there is no geothermal power plant in the project activity. Thus, emissions from fossil fuel consumption and emissions from the operation of dry, flash steam or binary geothermal power plants are considered as zero.</p> <p>Emissions from water reservoir of hydro power plants ($PE_{HP,y}$).</p> <p>The power density (PD) of the project activity is calculated as follows:</p> $PD = \frac{Cap_{PJ} - Cap_{BL}}{A_{PJ} - A_{BL}}$ <p>Where:</p> <p>PD = Power density of the project activity (W/m^2);</p> <p>Cap_{PJ} = Installed capacity of the hydro power plant after the implementation of the project activity (W);</p> <p>Cap_{BL} = Installed capacity of the hydro power plant before the implementation of the project activity (W). For new hydro power plants, this value is zero;</p> <p>A_{PJ} = 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 (m^2);</p> <p>A_{BL} = Area of the single or multiple reservoirs measured in the surface of the water, before the implementation of the project activity, when the reservoir is full (m^2). For new reservoirs, this value is zero.</p> <p>If the power density of the project activity is greater than $4 W/m^2$ and less than or equal to $10 W/m^2$:</p> $PE_{HP,y} = \frac{EF_{Res} \times TEG_y}{1000}$ <p>Where:</p> <p>$PE_{HP,y}$ = Project emissions from water reservoirs ($t CO_{2e}/yr$);</p> <p>EF_{Res} = Default emission factor for emissions from reservoirs of hydro power plants ($kg CO_{2e}/MWh$)</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 (MWh).</p> <p>If the power density of the project activity is greater than $10 W/m^2$:</p> $PE_{HP,y} = 0$ <p>Project emissions are not considered for Cachoeirão SHP since the reservoir power density is greater than $10 W/m^2$. For more information, please, refer to section D.2 of this report.</p> <p><u>Baseline emissions:</u></p> <p>Baseline emissions are the product of the Combined margin CO_2 emission factor ($EF_{grid,CM,y}$ in tCO_2/MWh) times the electricity supplied by the project activity to the</p>
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	<p>grid ($EG_{PJ,y}$ in MWh).</p> <p>For the ex-ante estimation of emissions reduction, the net electricity generated, according to the assured energy of the plant as established by the Brazilian Ministry of Mines and Energy as per ANEEL resolution /22/, is expected to be 143,401 MWh/year.</p> <p>The Combined margin CO_2 emission factor will be determined <i>ex-post</i> as a combined margin (CM), consisting of combination of the operating margin (OM) and build margin (BM) according to "Tool to calculate the emission factor for an electricity system" /18/. RINA is able to confirm that the most recent information available by the Brazilian DNA (2018) /23/ was used to determine the baseline emission factor of 0.2375 tCO_{2e}/MWh since the PDD was submitted on 20 May 2020 for starting the validation.</p> <p>The dispatch data analysis was the option selected for the calculation of the operating margin (OM). The build margin (BM) emission factor will be determined applying Option 2. According to the monitoring procedures established by the "Tool to calculate the emission factor for an electricity system" /18/, the emission factor will be determined for the year in which the project displaces the grid electricity. If data to calculate the emission factor is not available, the emission factor from the previous year (y-1) may be used. If data available is older than 18 months, then the emission factor to be used will be for year y-2. Monitoring procedures are correctly applied by the project participant.</p> <p>Based on 2018 data available at the time of submission of the PDD for validation, OM emission factor was estimated to be 0.5390 tCO_{2e}/MWh and the BM was determined to be 0.1370 tCO_{2e}/MWh /23/. As a result, the combined margin (CM) emission factor used for estimating purposes of the emission reductions in the PDD is 0.2375 tCO_{2e}/MWh, based on 0.25:0.75 weighting between OM and BM emission factor /23/.</p> <p>Thus, the total baseline emissions are estimated as 34,059 t CO_{2e}/year.</p> <p>As per ACM0002 requirements, leakage does not need to be considered.</p> <p>Based on the calculations and results presented in above, the implementation of the project activity will result in an average <i>ex-ante</i> estimation of emission reduction conservatively calculated to be 34,059 tCO₂ per year for the selected crediting period.</p>
Findings	CL-01 and CAR-06 were raised and successfully closed. The findings are discussed in Appendix 04 of the validation report.
Conclusion	<p>The assessment team confirms that:</p> <ul style="list-style-type: none"> • All assumptions and data used by the project participants are listed in the PDD and/or supporting documents, including their references and sources; • All documentation used by the project participants as the basis for assumptions and source of data is correctly quoted and interpreted in the PDD; • All values used in the PDD are considered reasonable in the context of the proposed CDM project activity; • The baseline methodology has been applied correctly to calculate project emissions, baseline emissions, leakage and emission reductions; • All estimates of the baseline, project and leakage emissions can be replicated using the data and parameter values provided in the PDD.

D.5. Validity of monitoring plan

Means of validation	<p>The project applies the approved monitoring methodology ACM0002 (version 20.0) – Grid-connected electricity generation from renewable sources /12/.</p> <p>The original monitoring plan was updated based on ACM0002 (version 20.0) /12/ latest requirements.</p> <p>The project monitoring plan is in compliance with the monitoring methodology ACM0002 (version 20.0) /12/.</p> <p>Parameters determined ex-ante</p> <p>The following parameters are made available <i>ex-ante</i>:</p> <p>According to ACM0002 version 20.0 /12/:</p> <ul style="list-style-type: none"> - CAP_{BL}: Installed capacity of the hydropower plants before the implementation of the project activity; this value is zero for the plant. - A_{BL}: Area of the reservoirs measured in the surface of the water, before the implementation of the project activity; this value is zero for the plant.
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	<p>According to the “Tool to calculate the emission factor for an electricity system” version 07.0 /18/:</p> <ul style="list-style-type: none"> - $EF_{grid,BM,y}$: Build margin emission factor; the value 0.1370 tCO₂e/MWh based on the most recent information available at Brazilian DNA at the time of submission of the request for renewal of the crediting period. <p>Parameters monitored ex-post:</p> <p>The monitoring plan allows for collection and archiving of the following key parameters related to the determination of emission reductions resulting from the project activity:</p> <p>According to ACM0002 version 20.0 /12/:</p> <ul style="list-style-type: none"> • Cap_{PJ} – installed capacity of the hydro power plant after the implementation of the project activity. RINA could verified the installed capacity by checking photos of the equipments plates /7/. Measured once at the beginning of each crediting period. • APJ – area of the reservoir measured in the surface of the water, after the implementation of the project activity, when the reservoir is full. The reservoir area was confirmed through ANEEL resolution /5/ and operation license /6/. Measured once at the beginning of each crediting period. <p>According to the tool “Baseline, project and/or leakage emissions from electricity consumption and monitoring of electricity generation” version 03.0 /17/:</p> <ul style="list-style-type: none"> • $EG_{facility,y}$ – quantity of net electricity generation supplied by the project plant/unit to the grid in year y. The net electricity dispatched will be measured through metering equipment at the Conselheiro Pena substation, the point of connection of the proposed project to the Brazilian grid. The power exported to the SIN will be monitored continuously and recorded on monthly basis. In addition, this data will be verified against data provided in the CCEE databank. <p>There will be two bi-directional electricity meters (one principal and one backup) located at Conselheiro Pena substation. Both meters will be in accordance with the established CCEE Procedures /24/.</p> <p>According to the “Tool to calculate the emission factor for an electricity system” version 07.0 /18/:</p> <ul style="list-style-type: none"> • $EF_{grid,CM,y}$ – combined margin emission factor will be determined ex-post based on the most recent information available at Brazilian DNA; the detailed calculations of the combined margin emission factor are described in section D.4. • $EF_{grid,OM,y}$ – operating margin emission factor will be determined ex-post based on the most recent information available at Brazilian DNA; the detailed calculations of the combined margin emission factor are described in section D.4. <p>Management system and quality assurance</p> <p>Detailed monitoring procedures, including responsibilities for project management and procedures for QA/QC of monitoring reports are defined in the PDD.</p> <p>The monitoring plan contains all necessary parameters described in accordance with the monitoring methodology. The monitoring plan, including data management and QA/QC procedures, will give opportunity for real measurements of achieved emission reductions, which can hence be reported <i>ex-post</i> and verified. The application of the monitoring methodology is transparent and RINA considers the project participants able to implement the monitoring plan.</p>
Findings	CAR-05, CAR-06 and CAR-07 were raised and successfully closed. The findings are discussed in Appendix 04 of the validation report.
Conclusion	It is RINA's opinion, that the project participants are able to implement the monitoring plan in compliance with para 412 (a) (iv) of VVS for PA version 02 /8/.

D.6. Crediting period

Means of validation	The second crediting period starts on 03/02/2019, in line with the end of the second
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	crediting period.
Findings	N/A
Conclusion	RINA confirmed that the second crediting period of the registered CDM project activity commences on the day immediately after the expiration of the current crediting period in compliance with para 412 (a) (v) of VVS for PA version 02 /8/.

D.7. Project participants

Means of validation	The involved party is Brazil as the host Party. There is no Annex I Party identified yet. The project participants are Hidrelétrica Cachoeirão S.A. and Carbotrader Assessoria e Consultoria em Energia Eireli of Brazil. The Project participants are listed in section A.4 of the PDD and the information is consistent with the contact details in Appendix 1 of the PDD.
Findings	N/A
Conclusion	RINA verified that the project participants included in the updated PDD are consistent with the names of the project participants in the project view page and are the same as 1 st crediting period in compliance with para 412 (a) (vi) of VVS for PA version 02 /8/.

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 ¹	N	NA	NA
Corrections	N	NA	NA
Change to the start date of the crediting period	N	NA	NA
Inclusion of a monitoring plan	N	NA	NA
Permanent changes to the registered monitoring plan, or permanent deviation of monitoring from the applied methodologies, standardized baselines, or other methodological regulatory documents	N	NA	NA
Changes to the project design	N	NA	NA
Changes specific to afforestation and reforestation project activities	NA	NA	NA

SECTION E. Internal quality control

The final version of the validation opinion report before being submitted to UNFCCC for request of renewal of crediting period is subjected to an independent internal technical review to confirm that all verification activities had been completed according to the pertinent RINA instructions.

The technical review is performed by a technical reviewer(s) qualified in accordance with RINA's qualification scheme for CDM validation and verification.

SECTION F. Validation opinion

RINA has been contracted by 'Hidrelétrica Cachoeirão S.A.' to perform a validation of the CDM registered project 'Cachoeirao CDM Project (JUN1092) (UNFCCC Ref #4788) in Brazil for renewal of crediting period.

The validation was performed in accordance with the UNFCCC criteria for the Clean Development Mechanism, latest version of Validation and Verification Standard for project activities and related Standards/Guidance and host country criteria, as well as criteria given to provide for consistent project operations, monitoring and reporting.

The CDM project activity will result in reductions of greenhouse gas (GHG) emissions that are real, measurable and give long-term benefits to the mitigation of climate change. In our opinion, the project meets all relevant UNFCCC, CDM criteria and all relevant host country criteria.

¹ 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).

The review of the project design documentation and the subsequent follow-up interviews have provided validation team with sufficient evidence to determine the validity of the original baseline and/or its update through an assessment. The project design document (dated 29/06/2020) correctly applies large scale methodology ACM0002 version 20.0. It is demonstrated that the project baseline scenario is not changed and also all necessary parameters are updated correctly for the 2nd crediting period.

The total emission reductions from the project are estimated to be 238,415 tCO₂e for the 2nd crediting period during 03/02/2019 to 02/02/2026, averaging 34,059 tCO₂ annually. The emission reduction forecast has been checked and it is deemed likely that the stated amount is achievable given the underlying assumptions do not change.

The monitoring plan provides for the monitoring of the project's emission reductions. The monitoring arrangements described in the monitoring plan are feasible within the project design, and it is validation team's opinion that the project participants are able to implement the monitoring plan.

In summary, it is validation team's opinion that the CDM project activity "Cachoeirao CDM Project (JUN1092)" (UNFCCC Ref #4788) in Brazil meets all relevant UNFCCC requirements for the renewal of the crediting period. Hence RINA requests the renewal of the crediting period of the project.

Appendix 1. Abbreviations

Abbreviations	Full texts
ANEEL	Brazilian Electric Energy Agency (from Portuguese “Agência Nacional de Energia Elétrica”)
BE	Baseline Emissions
CAR	Corrective Action Request
CDM	Clean Development Mechanism
CEMIG	Energetic Company of the Minas Gerais State (from Portuguese “Companhia Energética do Estado de Minas Gerais”)
CER	Certified Emission Reduction
CL	Clarification request
CO ₂	Carbon dioxide
DNA	Designated National Authority
DOE	Designated Operational Entity
EB	Executive Board
EF	Emission Factor
ER	Emission Reduction
FAR	Forward Action Request
FEAM	Environmental Foundation of the Minas Gerais State (from Portuguese “Fundação Estadual do Meio Ambiente”)
GHG	Greenhouse gas(es)
ONS	National Grid Operator (from Portuguese “Operador Nacional do Sistema”)
PDD	Project Design Document
PE	Project Emissions
PP	Project Participant
PRC	Post registration change
PS	Project Standard
PCP	Project Cycle Procedure
Ref.	Document Reference
RINA	RINA Services S.p.A.
SHP	Small Hydro Power Plant
SS(s)	Sectoral Scope (s)
tCO _{2e}	Tonnes of CO ₂ equivalents
TA(s)	Technical Area(s)
UNFCCC	United Nations Framework Convention on Climate Change
VVS	Validation & Verification Standard

Appendix 2. Competence of team members and technical reviewers



CERTIFICATO DI QUALIFICA QUALIFICATION CERTIFICATE

Si attesta che il sig./sig.ra:
We declare that Mr/Mrs/Ms:

TEIXEIRA LEIROZ ANDREA

è qualificato come¹:
is qualified as:

TL, VAL, VER and TEC

per le seguenti aree tecniche:
for the following technical areas:

1.1, 1.2, 5.1, 13.1, 13.2

AREE TECNICHE TECHNICAL AREAS	DESCRIZIONE DELL'AREA TECNICA TECHNICAL AREA DESCRIPTION	SCOPO SETTORIALE SECTORAL SCOPE
1.1	Thermal Energy Generation	1
1.2	Renewables	1
5.1	Chemical industry	5
13.1	Solid waste and wastewater	13
13.2	Manure	13

in accordo alle istruzioni della Unità Certification Innovation and Sustainability.
in accordance with the instructions of the Certification Innovation and Sustainability Unit.

REVISIONE REVISION	DATA DATE	MOTIVAZIONI PER LA REVISIONE REASON FOR THE REVISION
0	17/09/2019	First Issue
1	15/11/2019	Update qualification with "Sampling and surveys for CDM PAs and PoAs"

Il Resp. CEINS
Head of CEINS

¹ Legend:

VAL: Validator
VER: Verifier
TEC: Technical Expert
TL: Team Leader
FIN-EXP: Financial Expert
DET: Determiner

CDM: Clean Development Mechanism
VCS: Verified Carbon Standard
GS4GG: Gold Standard For Global Goals
SCS: SocialCarbon Standard
JI: Joint Implementation

RINA Services S.p.A. è accreditato da UNFCCC, quale Entità Operativa Designata (DOE), per condurre la Validazione e la Verifica di Progetti CDM, da VCSA per condurre la Validazione e la Verifica di Progetti VCS, da GS Foundation, per condurre la Validazione e la Verifica di Progetti GS, da Ecologica Institute per condurre la Validazione e la Verifica di rapporti SCS

RINA Services S.p.A. is accredited by the UNFCCC, as Designated Operational Entity (DOE), to carry out Validation and Verification of CDM Projects, by the VCSA, to carry out Validation and Verification of VCS Projects, by the GS Foundation, to carry out Validation and Verification of GS4GG Projects and by the Ecologica Institute, to carry out Validation and Verification of SCS Reports

GHG_QUAL_CERT_EN(07-2018)

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**CERTIFICATO DI QUALIFICA
QUALIFICATION CERTIFICATE**

Si attesta che il sig./sig.ra:

Geisa Maria Principe BRANCO SAETTONI

We declare that Mr/Mrs/Ms:

è qualificato come¹:
is qualified as:

CDM-TEC, VAL, VER, TL, ITRP, REG-EXP²

per le seguenti aree tecniche:
for the following technical areas:

1.1, 1.2, 13.1

AREE TECNICHE TECHNICAL AREAS	DESCRIZIONE DELL'AREA TECNICA TECHNICAL AREA DESCRIPTION	SCOPO SETTORIALE SECTORAL SCOPE
1.1	Thermal Energy generation	1
1.2	Energy generation from renewable energy sources	1
13.1	Waste Handling and Disposal	13

in accordo alle istruzioni della Unità Certification Innovation and Sustainability.
in accordance with the instructions of the Certification Innovation and Sustainability Unit.

REVISIONE REVISION	DATA DATE	MOTIVAZIONI PER LA REVISIONE REASON FOR THE REVISION
0	27-08-2009	-
10	31-03-2017	Added qualification as ITRP
11	07/12/2018	Added qualification as REG-EXP
12	15/11/2019	Update qualification with "Sampling and surveys for CDM PAs and PoAs"

Il Resp. CEINS
Head of CEINS

¹ Legend:

VAL: Validator
VER: Verifier
TEC: Technical Expert
TL: Team Leader
FIN-EXP: Financial Expert
DET: Determiner

CDM: Clean Development Mechanism
VCS: Verified Carbon Standard
GS: Gold Standard
SCS: SocialCarbon Standard
JI: Joint Implementation

² Argentina, Perú, Colombia, Mexico, Honduras, Panama, Dominican Republic, Guatemala

RINA Services S.p.A. è accreditato da UNFCCC, quale Entità Operativa Designata (DOE), per condurre la Validazione e la Verifica di Progetti CDM, da VCSA per condurre la Validazione e la Verifica di Progetti VCS, da GS Foundation, per condurre la Validazione e la Verifica di Progetti GS, da Ecologica Institute per condurre la Validazione e la Verifica di rapporti SCS

RINA Services S.p.A. is accredited by the UNFCCC, as Designated Operational Entity (DOE), to carry out Validation and Verification of CDM Projects, by the VCSA, to carry out Validation and Verification of VCS Projects, by the GS Foundation, to carry out Validation and Verification of GS Projects and by the Ecologica Institute, to carry out Validation and Verification of SCS Reports

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Appendix 3. Documents reviewed or referenced

No.	Author	Title	References to the document	Provider
/1/	Hidrelétrica Cachoeirão S.A.	CDM-PDD for Project activity "Cachoeirão CDM Project (JUN1092)" in Brazil for the first crediting period.	Version 04 of 12/01/2012	Other
/2/	Hidrelétrica Cachoeirão S.A.	CDM-PDD for Project activity "Cachoeirão CDM Project (JUN1092)" in Brazil for the second crediting period.	Version 1 of 18/05/2020 Version 2 of 22/06/2020 Version 3 of 29/06/2020	Project participant
/3/	Hidrelétrica Cachoeirão S.A.	Emission reduction spreadsheet for the project activity "Cachoeirão CDM Project (JUN1092)" in Brazil: CER_JUN1123_rev1.xls.	Version 1 of 18/05/2020	Project participant
/4/	RINA	Validation report for Project activity "Cachoeirão CDM Project (JUN1092)" in Brazil for the first crediting period.	Version 1.4 of 03/02/2012	Other
/5/	ANEEL	ANEEL authorizations: <ul style="list-style-type: none"> Resolution No. 282 issued 26/07/2000; Resolution No 908 issued on 08/05/2007; Dispatch No. 4830 issued on 30/12/2008; Dispatch No. 559 issued on 11/02/2009; Dispatch No. 714 issued 27/02/2009. 	08/05/2007 30/12/2008 11/02/2009 27/02/2009	Other
/6/	FEAM (Environmental Foundation of the Minas Gerais State)	Environmental Operation Licenses: <ul style="list-style-type: none"> LO No 027 valid until 07/12/2013 and respective administrative process No. 273/1998/005/2013. 	10/10/2008 29/05/2013	Project participant
/7/	Hidrelétrica Cachoeirão S.A.	Equipment nameplate capacity: <ul style="list-style-type: none"> Turb_19453_VoithSiemens.jpg; Turb_19454_VoithSiemens.jpg; Turb_19455_VoithSiemens.jpg; Ger_227001530_GE.jpg; Ger_227001531_GE.jpg; Ger_227001532_GE.jpg. 	-	Project participant

/8/	CDM Executive Board	Clean Development Mechanism Validation and Verification Standard for project activities.	Version 02.0	Other
/9/	CDM Executive Board	Clean Development Mechanism Project Standard for project activities.	Version 02.0	Other
/10/	CDM Executive Board	Clean Development Mechanism Project Cycle Procedure for project activities.	Version 02.0	Other
/11/	CDM Executive Board	CDM-PDD-FORM: Project design document form.	Version 11.0	Other
/12/	CDM Executive Board	Large-scale Consolidated Methodology ACM0002: Grid-connected electricity generation from renewable sources.	Version 20.0	Other
/13/	CDM Executive Board	Large-scale Consolidated Methodology ACM0002: Grid-connected electricity generation from renewable sources.	Version 12	Other
/14/	CDM Executive Board	TOOL01: Methodological tool: Tool for the demonstration and assessment of additionality.	Version 07.0.0	Other
/15/	CDM Executive Board	TOOL02: Methodological tool: Combined tool to identify the baseline scenario and demonstrate additionality.	Version 07.0	Other
/16/	CDM Executive Board	TOOL03: Methodological tool: Tool to calculate project or leakage CO ₂ emissions from fossil fuel combustion.	Version 03.0	Other
/17/	CDM Executive Board	TOOL05: Methodological tool: Baseline, project and/or leakage emissions from electricity consumption and monitoring of electricity generation.	Version 03.0	Other
/18/	CDM Executive Board	TOOL07: Methodological tool: Tool to calculate the emission factor for an electricity system.	Version 07.0	Other
/19/	CDM Executive Board	TOOL10: Methodological tool: Tool to determine the remaining lifetime of equipment.	Version 01	Other
/20/	CDM Executive Board	TOOL11: Methodological tool: 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	Other
/21/	CDM Executive Board	TOOL32: Methodological tool: Positive lists of technologies.	Version 02.0	Other
/22/	ANEEL	ANEEL Decree No 18 with information regarding assured energy of the SHP.	25/05/2007	Other
/23/	MCTI	Interministerial Commission of Global Climate Change (Brazilian DNA): Grid emission factor for the year 2018. Available at Brazilian DNA official website: http://www.mctic.gov.br/mctic/open/cms/ciencia/SEPED/clima/textogeral/emissao_despacho.html?searchRef=fator%20de%20emissao&tipoBusca=expressaoExata .	Accessed on 02/06/2020.	Other

/24/	ONS	Grid Procedures: Module 12. Procedure for energy meter class: Sub-module 12.2 v2019.08. Available at: http://www.ons.org.br/%2FProcedimentosDeRede%2FMódulo%2012%2FSubmódulo%2012.2%2FSubmódulo%2012.2%202019.08.pdf . Procedure for calibration: Sub-module 12.3 v2016.12. Available at: http://www.ons.org.br/%2FProcedimentosDeRede%2FMódulo%2012%2FSubmódulo%2012.3%2FSubmódulo%2012.3%202016.12.pdf .	04/09/2019 01/01/2017	Other
/25/	Electricity Regulatory Agency (ANEEL)	Installed capacity and power plants. Available at: https://app.powerbi.com/view?r=eyJrIjoiNjc4OGYyYjQtYWM2ZC00YjILWJlYmEtYzdkNTQ1MTc1NmM2liwidCI6IjQwZDZmOWI4LWVjYTctNDZhMi05MmQ0LWVhNGU5YzAxNzBIMSIsImMiOiR9	Accessed on 25/06/2020	ANEEL Website
/26/	National Electric System Operator (ONS)	http://www.ons.org.br		Brazilian Government Website
/27/	The Mines and Energy Ministry (MME)	http://www.mme.gov.br		Brazilian Government Website
/28/	The Chamber of Electrical Energy Commercialization (CCEE)	Operator of Brazilian electric energy market. Available at: https://www.ccee.org.br/		Brazilian Government Website
/29/	Electricity Regulatory Agency (ANEEL)	http://www.aneel.gov.br		ANEEL Website
/30/	CDM Executive Board	CDM Executive Board agrees to relax mandatory site visits by DOEs for a period of three months (23 March to 23 June 2020) because of COVID-19.	-	Other

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

Table 1. CL from this validation

CL ID	01	Section no.	D.4	Date: 21/06/2020
Description of CL				
PDD - Section B.6.1: It is mentioned in Section B.6.1 of the PDD that the project activity is the installation of four new grid-connected renewable power plants/units. PP is requested to clarify.				
Project participant response				Date: 22/06/2020
This is an editorial mistake since is the installation of 1 new grid-connected renewable power plant (SHP Cachoeirão). The Section B.6.1 was adjusted accordingly.				
Documentation provided by project participant				
DOE assessment				Date: 25/06/2020

RINA verified that the number of SHPs is correct in the revised PDD. Thus, this CL is closed.
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Table 2. CAR from this validation

CAR ID	01	Section no.	D.2	Date: 21/06/2020
Description of CAR				
PDD - Section B.1: In section B.1 of the PDD not all tools applied to the project activity are listed.				
Project participant response				Date: 22/06/2020
All applied tools related to the project activity were included in Section B.1.				
Documentation provided by project participant				
DOE assessment				Date: 25/06/2020
A revised PDD was provided and RINA was able to confirm that all tools applied to the project activity are listed under section B.1. Thus, this CAR is closed.				

CAR ID	02	Section no.	D.2	Date: 21/06/2020
Description of CAR				
PDD - Section B.2: The PDD does not assess all the applicability criteria established in the applied methodology ACM0002 version 20.0. PP is requested to justify each applicability criteria of the applied methodology in the PDD and provide evidence in order to confirm each one. In addition, the PDD does not assess all tools established in the applied methodology ACM0002 version 20.0.				
Project participant response				Date: 22/06/2020
The section B.2 was adjusted accordingly; all applicability criteria established in methodology ACM0002 version 20.0 was assessed and justified. Also was assessed the TOOLS established in the methodology ACM0002 version 20.0.				
Documentation provided by project participant				
DOE assessment				Date: 25/06/2020
A revised PDD was provided and RINA was able to confirm that all the applicability criteria and all tools established in the applied methodology ACM0002 were assessed under section B.2. Thus, this CAR is closed.				

CAR ID	03	Section no.	D.2	Date: 21/06/2020
Description of CAR				
PDD - Section B.3: The emission sources described in the table under Section B.3 of the PDD are not in accordance with the applied methodology ACM0002 version 20.0.				
Project participant response				Date: 22/06/2020
The table on Section B.3 was adjusted in accordance with the applied methodology ACM0002 version 20.0.				
Documentation provided by project participant				
DOE assessment				Date: 25/06/2020
RINA verified that section B.3 of the PDD was correctly updated according to ACM0002 and project activity description. Thus, this CAR is closed.				

CAR ID	04	Section no.	D.3	Date: 21/06/2020
Description of CAR				
PDD - Section B.4: PP is requested to provide more information regarding the assessment of the validity of the current baseline. The information provided is very generic.				
Project participant response				Date: 22/06/2020
Was included more information regarding the assessment of the current baseline on Section B.4. Regarding the Brazilian policies for small hydro was highlighted: - Brazilian Resolution #652 of 09/12/2003 from National Electric Energy Agency (ANEEL) for Small Hydro Power Plant; - ONS (<i>Operador Nacional do Sistema Elétrico</i>) module 12 rules/requirements. - CCEE SINERCOM Databank (electricity dispatched to the Grid).				
Documentation provided by project participant				

DOE assessment	Date: 25/06/2020
RINA confirmed that updated PDD describe the relevant mandatory national policies applicable to the project activity and PP provided evidences in order to confirm that no relevant mandatory national policies applicable to the project activity came into effect after the submission of the project activity for validation. Thus, this CAR is closed.	

CAR ID	05	Section no.	D.5	Date: 21/06/2020
Description of CAR				
PDD – Section B.6.2: According to ACM0002:				
<ul style="list-style-type: none"> The parameter default emission factor for emissions from reservoirs is used for the calculation of emissions from water reservoirs of hydro power plants. However, project emissions are not considered for the project activity. 				
Project participant response				Date: 22/06/2020
The emission factor for emissions from reservoirs was removed from Section B.6.2 (project emissions not considered).				
Documentation provided by project participant				
DOE assessment				Date: 25/06/2020
A revised PDD was provided and RINA confirmed that information regarding use the parameter default emission factor for emissions from reservoirs was removed . Thus, this CAR is closed.				

CAR ID	06	Section no.	D.4 and D.5	Date: 21/06/2020
Description of CAR				
PDD – Section B.6.3 and B.7.1: According to the “Tool to calculate the emission factor for an electricity system”:				
<ul style="list-style-type: none"> $EF_{grid,BM,y}$ – build margin emissions factor: When applying Option 2 for the second crediting period, the build margin emissions factor should be calculated ex ante as described in Option 1 of the tool. However, this parameter was included under section of monitoring parameters and consequently is not properly addressed as per tool. 				
Project participant response				Date: 22/06/2020
The ($EF_{grid,BM,y}$) build margin emissions factor was included on Section B.6.2 as a fixed parameter. Removed from Section B.7.1.				
Documentation provided by project participant				
DOE assessment				Date: 25/06/2020
RINA verified the revised PDD and confirmed that the it is not clearly described the option applied for the determination of the build margin under sections B.6.1 and B.6.3.				
Project participant response				Date: 29/06/2020
The option applied for the build margin ($EF_{grid,BM,y}$) was revised in sections B.6.1 and B.6.3.				
Documentation provided by project participant				
DOE assessment				Date: 29/06/2020
RINA verified the revised PDD and confirmed that the option applied for the determination of the build margin was clearly mentioned in sections B.6.1 and B.6.3. Thus, this CAR is closed.				

CAR ID	07	Section no.	D.5	Date: 21/06/2020
Description of CAR				
PDD – Section B.7.3: As stated in section B.7.3 of the PDD, the calibration of the meters will be carried out in accordance with the established Grid Procedures defined by the National Electric System Operator (ONS). However, the sub-modulo 12.2 mentioned only refers to the accuracy class of the meter. PP is requested to review the information provided under this section of the PDD.				
Project participant response				Date: 22/06/2020
The information regarding the calibration of the meters was adjusted accordingly. Now in accordance with ONS sub-modulo “12.3 Maintenance of the Measurement System for Billing”.				
Documentation provided by project participant				
DOE assessment				Date: 25/06/2020

RINA verified the updated PDD and confirmed that information regarding the calibration of the meters was correctly revised.
Thus, this CAR is closed.

Table 3. FAR from this validation

FAR ID	xx	Section no.	Date: DD/MM/YYYY
Description of FAR			
Project participant response			Date: DD/MM/YYYY
Documentation provided by project participant			
DOE assessment			Date: DD/MM/YYYY

- - - - -

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		