



VERIFICATION REPORT

LAS PIZARRAS PROJECT



Document Prepared By LGAI Technological Center, S.A. (Applus+ Certification)

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Summary:

LGAI Technological Center, S.A. (hereafter referred to as “Applus+ Certification”) was commissioned by Empresa Eléctrica Río Doble S.A. to perform the 2nd periodic verification of achieved greenhouse gas (GHG) emission reductions for the project-based initiative registered under Verified Carbon Standard (VCS) (VCS project activity) titled “Las Pizarras Project” (VCS Ref. No. 1348) (hereafter referred to as “the VCS project activity”).

Applus+ Certification verification assessment and its verification opinion are based on information and data reported in the latest version of the Monitoring Report ^{/1/} for the monitoring period from 01/10/2015 to 30/09/2021 of the VCS project activity (hereby termed as “the considered monitoring period”). GHG emission reductions for the considered monitoring period are claimed as Verified Carbon Units (VCU) under guidelines, rules and procedures of VCS version 4.4 ^{/5/}.

The VCS project activity was previously validated by the Validation and Verification Body (VVB) AENOR INTERNACIONAL S.A.U. (AENOR). Details for the VCS project activity are available online at the VERRA/VCS registry (<https://registry.verra.org/app/projectDetail/VCS/1348>). The project activity was previously registered under the UNFCCC’s Clean Development Mechanism (CDM) (with registration date 19/10/2012 and with date of registration action 13/11/2013).

The VCS project activity encompasses the installation and operation of a hydropower plant with total combined nameplate installed capacity of 19.992 MW hydropower plant, located at the department of Cajamarca and Lavalaja, in the Northern region of Peru. Electricity generated by the VCS project activity is supplied to the national grid of Peru (SEIN).

As part of the VCS project activity, electricity is generated through the utilization of hydraulic energy resource from River Chancay in the run-of-the-river hydropower project’s electricity generation infrastructure encompassing two set of turbine-generators (with nameplate installed capacity of 9.996 MW each).

During the considered monitoring period, the project has operated with no significant number of operational stops, the relevant events/situations been reported were maintenance stops and some isolated forced shutdown events as listed in the Monitoring Report.

The Las Pizarras Project serves as source of electricity from renewable sources to be supplied to the National grid of Peru (SEIN). The VCS project activity therefore promotes real and permanent GHG emission reductions through displacing electricity that would otherwise be generated (in the same amount) in the absence of the VCS project activity (baseline scenario) by existent grid-connected electricity generation facilities (incl. fossil fuel fired power plants) and addition of new power generation sources within the National Electricity Grid of Peru.

The purpose and scope of the VCS verification assessment is to ensure that reported emission reductions for a VCS project activity within a considered monitoring period are deemed/sufficiently complete, accurate and determined based on appropriate monitoring and calculation approaches under

conformance with applicable VCS standard regulatory documents ^{/5/} and applied baseline and monitoring methodology in order to be certified.

Extensive document desk-review, remote on-site inspection, interviews with representatives of the project proponents and additional complementary auditing measures were conducted by the verification team appointed by Applus+ Certification in order to verify and confirm the correctness and appropriateness of information and data included in the Monitoring Report ^{/1/}.

Applus+ Certification confirms the following documentation has been reviewed:

- Registered VCS Project Description Document (VCS-PD) ^{/2/} (version 2.0, dated 08/08/2014);
- Monitoring plan included in the registered CDM Project Design Document (CDM-PDD) ^{/2/} (version 4, dated 16/07/2012);
- The Verification Report for the VCS project activity ^{/3/} for the 1st monitoring period from 30/04/2013 to 30/09/2015 (version 02, dated 04/03/2016);
- The Validation Report for the VCS project activity ^{/3/} (version 01, dated 04/09/2014);
- The Validation Report for the CDM project activity ^{/3/} (No. P31719.33, dated 19/10/2012);
- Monitoring Report ^{/1/} for the considered monitoring period (from 01/10/2015 to 30/09/2021) for the VCS project activity (version 7.0, dated 16/02/2024)";
- The applied CDM baseline and monitoring methodology and applied CDM methodological tool:
 - ACM0002 "Consolidated baseline methodology for grid-connected electricity generation from renewable sources"; Version 12.3.0 ^{/6/}
 - "Tool to calculate the emission factor for an electricity system --- Version 02.2.0" ^{/19/} VCS standard (version 4.4) ^{/5/} and VCS guidance Validation and Verification Manual (version 3.2) ^{/4/}, as well as relevant applicable UNFCCC CDM requirements.
- All information and references relevant to the VCS project activity resulting in emission reductions.

As part of the performed verification assessment, a set of fourteen (14) Corrective Action Requests (CARs) were identified/raised by the appointed Applus+ Certification's verification team.

All of such raised CARs were confirmed as being appropriately/sufficiently addressed by the project proponents through the completion of a revised version of the Monitoring Report ^{/1/} for the considered monitoring period addressing such CARs.

Applus+ Certification hereby confirms that in general the VCS project activity is implemented and has operated within the considered monitoring period from 01/10/2015 to 30/09/2021 under

conformance with project design details established in its previously completed and registered VCS PD ^{/2/}.

As also confirmed by the Applus+ Certification's verification team, the design of the monitoring plan for the VCS project activity is under conformance with applicable requirements of the applied CDM baseline and monitoring methodology ACM0002 (version 12.3.0) ^{/6/} + applied CDM methodological tool.

Furthermore, as also confirmed by the Applus+ Certification's verification team, monitoring related activities for the VCS project activity have been carried out during the considered monitoring period under full conformance with requirements and guidance of the monitoring plan as per both the registered CDM PDD and registered VCS PD ^{/2/}. The monitoring system for the VCS project activity is in place and has been operated in a way that emission reductions achieved are correctly determined based on available monitoring data without material misstatements, uncertainties and under a deemed reasonable level of assurance.

By acknowledging that an individual or an aggregate of undetected errors, uncertainties, omissions and misinterpretations as well as the risks inherent in a remote inspection and in the verification process could potentially undermine the possibility of achieving a verification opinion under reasonable and fair level assurance as an outcome of the verification assessment, aspects of the concept of materiality were thus considered in the context of the verification assessment in line with the requirements of the CDM Guideline "Guideline - Application of materiality in verification" (version 02.0) ^{/18/}, the CDM validation and verification standard for project activities (CDM-VVS-PA) (version 03.0) ^{/21/}, VCS Validation and verification manual (version 3.2) ^{/4/}, VCS standard (version 4.4) ^{/5/}.

In the context of the verification risk assessment and planning stages, while aiming to minimize both the risk of having potential material discrepancies or uncertainties not being detected in the course of the verification assessment (detection risk) and risks inherent in the verification assessment, Applus+ Certification performed an identification of potential risks that could lead to quantitative material errors, omissions, uncertainties and misstatements in its verification opinion as further seen in Section 2.4.

Based on assessed and reviewed information, Applus+ Certification hereby confirms that the implementation of the project and its operation resulted on achieved GHG emission reductions of 333,741 tCO₂e during the monitoring period from 01/10/2015 to 30/09/2021 (including both days)

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1 INTRODUCTION

1.1 Objective

LGA Technological Center, S.A. (Applus+ Certification) was commissioned by Empresa Eléctrica Río Doble S.A. to perform the 2nd periodic verification assessment of GHG emission reductions for the VCS project activity titled “Las Pizarras Project” (VCS Ref. No. 1348) for the monitoring period from 01/10/2015 to 30/09/2021 as reported in the Monitoring Report ^{/1/}.

LGA Technological Center, S.A. (Applus+ Certification) in the position of the selected Validation and Verification Body (VVB) responsible for performing the verification assessment is accredited both as a VVB under VCS and as a Designated Operational Entity (DOE) under the CDM for the technical scope the VCS project activity falls into (Technical scope 1). Applus+ Certification also meets applicable competence requirements as established in Standard ISO 14065:2007. These aspects and status qualify Applus+ Certification to act as a VVB responsible for performing the periodic verification assessment for the VCS project activity.

The objective of the verification assessment is to have an independent review and ex-post determination by an appointed VVB of determined reductions of GHG emissions that have occurred as a result of the registration of VCS project and its operation during a considered monitoring period. Certification is the written assurance by the VVB/DOE that, during a considered monitoring period, a VCS project activity achieved reductions in anthropogenic emissions by sources of GHGs under a reasonable level of assurance.

The objective of this verification/certification assessment is to verify and certify emission reductions, reported for the VCS project activity “Las Pizarras Project”, for the monitoring period from 01/10/2015 to 30/09/2021.

1.2 Scope and Criteria

The verification scope is defined as an independent and objective review of the content of the registered VCS PD ^{/2/} (incl. the project’s baseline study), Monitoring Report (MR) for the considered monitoring period and other relevant documents. The information in these documents is reviewed inter alia against VCS Standard Version 4.4 requirements, UNFCCC rules.

The verification assessment is not meant to provide any consulting towards the project proponents and/or any other Party. However, stated requests for forward actions and/or corrective actions may eventually provide input(s) for improvement of the project monitoring.

1.3 Level of Assurance

In line with applicable VCS requirements and under conformance with Standard ISO 14064-3:2019^{/8/}, a reasonable level of assurance was defined and was followed for the performance of the verification assessment for the VCS project activity.

By taking into account applicable guidance from the CDM Guideline - Application of materiality in verifications (version 02.0)^{/18/}, VCS standard version 4.4 (dated 17/01/2023)^{/5/} and Validation and verification manual (version 3.2)^{/4/} materiality was considered in conducting the verification.

As part of the performance of the verification assessment, the previously elaborated verification plan^{/25/} was directly applied (without being revised) in order to have potentially detected errors, omissions or misstatements being addressed through additional (and not previously planned) audit/verification procedures during the sub-sequential phases of the performance of verification assessment (e.g. document desk review, interviews with representatives of the project participant, identification and resolution of outstanding issues (CARs and CLs), etc.).

As per monitoring and QA/QC procedures applied as part of operation of the VCS project activity, as confirmed by the Applus+ verification team, emission reductions are accounted only for monitoring data that is deemed correct, authentic and reliable (based proof of measurements performed by calibrated and well-maintained monitoring equipment/instruments, checking of correctness and reasonability in recorded/reported monitoring data (e.g. data values within an acceptable/plausible range)).

In this context it is also crucial to note that, as also confirmed by the Applus+ Certification's verification team, in case of identification of uncertainties related to correctness/reasonability of reported monitoring data for a particular time period (e.g. continuous measurements related monitoring for a particular minute) as part of the monitoring of the VCS project activity, the monitoring procedure applied by the project participant Empresa Eléctrica Río Doble S.A. ensures that no emission reductions for such particular time period are claimed/accounted under such circumstances (thus minimizing risks of overestimations of claimed GHG emission reductions).

Furthermore, it is also crucial to note that as per the monitoring and GHG calculation approaches that are valid for the project activity (as established in the CDM PDD, the VCS PD^{/2/} and the applied CDM baseline and monitoring methodology + applicable methodological tool^{/19/}) no sampling procedure and no sampling-based monitoring are valid/required for the determination of achieved emission reductions.

Finally, it is also relevant to note that, as a response to risks identified during the planning phase of the verification, for minimizing the risks of having incorrect monitoring data (measurement records) being considered in the context of the calculation and reporting of achieved emission reductions (in a way that calculated emission reductions are overestimated), the verification assessment encompassed the performance of a checking of authenticity of all electricity generation related monitoring data as follows:

Data authenticity check: As part of the performed verification assessment, the Applus+ verification team was able to confirm that the monthly emission reduction calculation spreadsheets ^{/20/} completed by the host country project participant Empresa Eléctrica Río Doble S.A. are basically MS-Excel spreadsheets that, in theory, could have recorded data being easily edited/modified (intentionally or unintentionally). Thus, these spreadsheets, if inappropriately edited, could potentially tamper reported monitoring records, thus resulting in unreal and incorrect calculation and reporting of emission reductions achieved by the project activity during the considered monitoring period. In order to ensure that all emission reductions calculations are entirely and correctly based on authentic and real monitoring records valid for the considered monitoring period, a data authentic checking was performed as part of the verification assessment. Such checking aimed to ensure that only authentic and unmodified monitoring data records were used by the project participant for performing the emission reduction calculation for the considered monitoring period (thus ensuring that measurement records made available in the MS-Excel format “raw data” input files ^{/16/} and measurement records reported in the monthly emission reduction spreadsheets were not intentionally or unintentionally edited/modified during the generation or handling of these files).

In summary, Applus+ Certification has established an internal quality control process in order to ensure, as part of its technical assessment, that information and values provided in the Monitoring Report ^{/1/} are materially correct and fairly represent the implementation status and operation of the VCS project activity within the considered monitoring period, is completed under conformance with applicable VCS requirements + specific requirements of the applied CDM methodology being also sufficiently met for the calculation and reporting of GHG quantification and monitoring activities within the considered monitoring period.

1.4 Summary Description of the Project

Project title	Las Pizarras Project
VCS reference number	1348
Project Proponent	Empresa Eléctrica Río Doble S.A.
Other entities involved in the project	-

Location of the project	The VCS project activity is located within the District of Santa Cruz and Sexi, Province of Santa Cruz, and Department of Cajamarca. The powerhouse is placed along the right margin of the Chancay River. Geographic coordinates: Geographical coordinates: Longitude: -78.99442485 Latitude: -6.620835649
Project start date	30/04/2013 (start of commercial operation of the project activity)
Project Crediting Period	10-year fixed crediting period from 30/04/2013 to 29/04/2023.
Version of VCS PD	Version 2.0, dated 08/08/2014 ^{/2/}
Monitoring period	01/10/2015 to 30/09/2021
Initial version of the Monitoring Report	Version 1.0, dated 25/07/2023
Final version of the Monitoring Report	Version 7.0, dated 16/02/2024
Applied Methodology/Version	CDM baseline and monitoring methodology ACM0002 “Consolidated baseline methodology for grid-connected electricity generation from renewable sources” (version 12.3.0) ^{/6/}
Scope/Technical Area	1

The VCS project activity encompasses the installation and operation of a run-of-river hydropower plant located in the District of Santa Cruz and Sexi, Province of Santa Cruz, and Department of Cajamarca, in Northern region of Peru. The total combined installed capacity of the VCS project activity is 19,992 MW.

Las Pizarras Project serves as renewable energy generation unit with expected displacement of a total amount of 106.598 GWh/year. During the considered monitoring period, the VCS project activity promoted real and permanent GHG emission reductions by displacing electricity that would otherwise be generated in the absence of the VCS project activity (baseline scenario) by existent grid-connected electricity generation facilities (incl. fossil fuel fired power plants) and addition of new power generation sources within the National Electricity Grid of Peru.

The VCS project activity was previously validated by a Validation and Verification Body (VVB) accredited under VERRA/VCS. Details and related documents are available online (<https://registry.terra.org/app/projectDetail/VCS/1348>).

The VCS project activity was previously validated by an accredited Designated Operational Entity (DOE) under the UNFCCC's CDM. Details and related documents are available online (<https://cdm.unfccc.int/Projects/DB/SQS1344589168.03/view>)

2 VERIFICATION PROCESS

2.1 Method and Criteria

The VCS verification assessment was performed by applying Applus+ Certification's procedures in line with the requirements specified in the VCS Standard (version 4.4) ^{/5/}, the latest version of the CDM Validation and Verification Standard for project activities (version 03.0) and relevant UNFCCC requirements (whenever applicable) as well as through the application of standard auditing techniques.

As part of performed verification assessment, Applus+ Certification completed a strategic review and risk assessment of the VCS project activity and processes in order to gain a full understanding of:

- Activities, aspects and circumstances associated with all the sources contributing to the project related GHG emissions (baseline and project emissions) and emission reductions.
- Protocols and methodological approaches used to measure and/or determine GHG emissions associated with these sources.
- Collection and handling of monitoring data.
- Controls on the gathering, processing, recording and reporting of monitoring data.
- Means of verifying reported monitoring data; and
- Compilation of the Monitoring Report ^{/1/}.

The appointed Applus+ Certification's verification team verified the implementation and operationalization of the monitoring plan for the VCS project activity and performed a detailed assessment of monitoring data reported in the Monitoring Report ^{/1/} for the considered monitoring period. This assessment work was fully based on a desk review of the content of the Monitoring Report, interviews with representatives of the project proponents and additional auditing measures.

The information of the assessment team is included in below:

Verification team

According to the applicable sectoral scope / technical area and experience in the sectoral or national business environment, Applus+ Certification has composed an assessment team in compliance with the Contract Review and Assessment Team appointment rules in the internal Quality Management System of Applus+ Certification as well as in compliance with the applicable requirements in the Accreditation Standard.

The composition of the verification team has been approved by Applus+ Certification during the Contract Review process ensuring that the required skills and capabilities are covered.

The qualification levels for verification team members assigned by aforementioned appointment rules are as presented below:

- Lead Auditor (LA).
- Auditor (A).
- Technical Expert (TE).
- Technical Reviewer (TR).
- Any of the above-mentioned roles in training (iT, e.g. AiT for auditor in training).

The Sectoral Scope / Technical Area required knowledge linked to the applied methodology (ies) is covered by the Assessment Team as shown below:

Verification Team:

Name	Qualification	Coverage of scope	Coverage of technical Area	Host country experience	Attendance to the On-Site Assessment
Marco A. Ratton	LA/TE	Y	Y	Y	N

Technical Review and Approval Team:

Name	Qualification
Miguel A. Cortes Díaz	Technical Reviewer / Technical Expert
Agustín Calle de Miguel	Report Approver

The curricula vitae of the Applus+ Certification's verification team members are provided below:

Mr. Marco A. Ratton:

Marco A. Ratton is based in Brazil and has acted as a GHG auditor since 2007. He holds vast experience with independent assessments of GHG project activities within the area of renewable energies, solid waste management and effluent treatment implemented in Latin America and other regions. He also has previous working experience with planning of municipal waste management as well as educational background in mechanical fabrication and manufacturing technologies, economics and environmental management & policy. He has undergone extensive training on GHG validation and verification and is a qualified Expert for Sectoral Scope 13 under Technical Area “Waste management” and Sectoral Scope 1, among others and in accordance with procedures of Applus+. He also has years-long previous experience on conducting ISO 9001/14001 assessments.

Mr. Miguel Cortes Díaz:

Miguel Cortes Díaz has a Master Degree and Bachelor Degree in Civil Engineering. Mr. Cortes has 11 years of GHG experience, of which 6 years he has acted as a project developer and with other 6 years has acting as a Technical Reviewer and Lead Assessor within different Designated Operational Entities (DOEs). As member of assessment or technical review certification teams, Mr. Cortes has been involved with 26 validations and 22 verifications in Renewable Energies (Scope 1), Manufacturing (Scope 4), Mineral Production (Scope 8) and Metal Production (Scope 9) under the CDM and other schemes/standards for GHG emission reduction initiatives. Furthermore, he has accumulated more than 9 years of direct technical and management experience within the Cement industry (including cement production and mineral extraction/mining related activities). His CDM experience also includes provision of consultancy and advisory services for GHG emission reduction projects within in the sectoral scopes involving manufacturing, mining, metal production, (including waste heat recovery (WHR) initiatives), biofuels, biomass production and hydropower projects.

2.2 Document Review

The initial version of the Monitoring Report ^{/1/} was submitted to Applus+ Certification. This document was initially assessed as part of the performed desk review of project documentation. The main objectives of the desk review step as part of the verification assessment are summarized as follows:

- Verifying the completeness of the data and the information presented in the initial version of the Monitoring Report ^{/1/} along with the monthly emission reduction spreadsheets ^{/20/}
- Checking the compliance of the Monitoring Report ^{/1/} with respect to the monitoring plan described in the registered CDM PDD for the project activity ^{/2/}, inter alia by verifying that all applicable monitoring requirements (as established by the applied CDM baseline and monitoring methodology and as outlined in the VCS PD ^{/2/}) were sufficiently and reasonably met for the considered monitoring period. Particular attention to the frequency of measurements, specification requirements and functional aspects of monitoring equipment/instruments was paid by the Applus+ Certification's verification team (including compliance of applicable calibration and functional requirements of equipment/instruments, any eventually occurred deviations of requirements of the monitoring plan as per the CDM PDD ^{/2/}, and the quality assurance and quality control procedures considered as part of the application of the monitoring plan of the VCS project activity;
- Evaluating data management and the quality assurance and quality control system in the context of their influence on fairly generation and appropriate reporting of the operation of the VCS project activity within the considered motoring period as well as reporting of achieved emission reductions.
- Verifying the power generation data records (primary monitoring records for electricity generation and electricity consumption) ^{/16/}, the monthly electricity commercialization receipts (period from 01/10/2015 to 30/09/2021) for the electricity generation infrastructure ^{/11/} and all related calibration certificates valid for all electricity meters issued by Peruvian Enterprise SAC ^{/7/ /10/ /12/}.

A complete list of documents reviewed by the Applus+ Certification's verification team is available in Appendix 1 of this Verification Report.

2.3 Interviews

The key personnel interviewed by the Applus+ Certification's verification team on 08/03/2023 are summarized in the table below:

Interviewed personnel	Role / organization	Subject
Ms. Cristina Blázquez	SMARTENER SL	Interviews remotely performed using Skype application and encompassing the following topics (+ production/generation of set of sequential live videos (movies) + photographs (pictures) to allow confirmation/assessment of the Applus + verification team for the topics): - General implementation and operational aspects of the VCS project activity. - Technical equipment and operational issues for installed equipment. - Specifications and operation of monitoring and measurement equipment/Instruments. - Calibration procedures for installed monitoring instruments/equipment. - Quality management system and related compliance with valid QA/QC procedures. - Implementation and operation of the project's monitoring plan. - Monitoring data handling and management (incl. data gathering, recording and reporting).
Mr. Javier Rodriguez	SMARTENER SL	
Mr. Diego Bonacchi	Empresa Eléctrica Río Doble S.A.	
Ms. Elena Oliva Pellon Gil	NTT DATA EUROPE & LATAM GREEN ENGINEERING	
Ms. Laura Vaquero Morion	NTT DATA EUROPE & LATAM GREEN ENGINEERING	

		- Data uncertainty and residual risks. - Performance of emission reduction calculations. - Procedural aspects of the verification. - Performance of related maintenance and repair events. - Performance of the crosschecking procedures according to the monitoring plan.
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2.4 Site Visits

No physical on-site inspection (with the physical presence of the Applus+ Certification's verification team) was conducted as part of the performed VCS verification assessment. A remote on-site inspection was performed.

According to VCS Standard (version 4.4) ^{/5/} Section 4.1.9, a site visit inspection shall be conducted under the following conditions:

"1. The first verification of the project after validation". Not applicable as the first verification was already performed and approved, thus the current verification represents the second monitoring period to be verified after the VCS project activity validation as confirmed by Applus+ verification team at: <https://registry.verra.org/app/projectDetail/VCS/1348>

"2. Verification of project baseline reassessments". Not applicable as the scope of this verification does not include reassessment of the project's baseline.

"3. Verifications that assess a project description deviation where the deviation impacts the applicability of the methodology, additionality or the appropriateness of the baseline scenario". Not applicable as there are no identified deviations which impact the applicability of the methodology, additionality or appropriateness of the baseline scenario, as confirmed by Applus+ verification team in Sections 3.2 and 3.3 below.

Moreover, the VCS Standard (version 4.4) ^{/5/} also describes the following: *“Where a site visit to facilities and/or project areas is not required under Section 4.1.9, the validation/verification body shall identify whether a site visit is needed based on an independent risk assessment. Such risk assessment shall identify the risk of a material misstatement or nonconformity with the audit criteria. Where it is determined that no site visit is required, the validation/verification body shall justify and document the rationale for the decision”*. Thus, Applus+ verification team has performed a risk assessment as follows:

By acknowledging that an individual or an aggregate of undetected errors, omissions and misinterpretations as well as the risks inherent in a remote inspection could potentially undermine the possibility of achieving a verification opinion under reasonable and fair level assurance as an outcome of the verification assessment, aspects of the concept of materiality were thus considered in the context of the verification assessment in line with the requirements of the “CDM Guideline - Application of materiality in verification” (version 02.0) ^{/18/}, the CDM validation and verification standard for project activities (CDM-VVS-PA) (version 03.0) ^{/21/}, VCS Validation and verification manual (version 3.2) ^{/4/}, and VCS standard (version 4.4) ^{/5/}.

In the context of the verification risk assessment and planning stages, while aiming to minimize both the risk of having potential material discrepancies not being detected in the course of the verification assessment (detection risk) and risks inherent in a remote inspection, Applus+ Certification performed an identification of potential risks that could lead to quantitative material errors, omissions and misstatements in its verification opinion.

Furthermore, the identification of actions to be potentially performed by the appointed Applus+ Certification’s verification team during the verification assessment as responses to such identified potential risks were also included/considered in the verification risk assessment and planning phases and with such actions being later performed in the subsequent phases of the verification assessments (document desk review, interviews with representatives of the project participant(s), remote inspection to the project site, identification/addressing of findings and reporting).

In order to ensure a deemed complete, transparent and timely execution of the verification assessment, the appointed Applus+ Certification’s verification team (that holds sufficient experience and expertise in VCS and CDM verification assessments for project activities encompassing electricity generation from renewable sources and also holds sufficient experience with handling and operation of information and communication technologies (ICT) tools normally/typically used to the performance of remote inspections (i.e. photo and/or video cameras, online video conferencing systems/applications, online/cloud-based data/file management and transferring tools/applications, etc.) planned a complete sequence of assessment events that were regarded as necessary to detect potentially existent major potential material risks, errors, omissions and discrepancies and, upon addressing of such outstanding issues, arrive at a substantiated and reasonable final verification opinion (with the potential risks that such risks, errors, omissions and discrepancies could lead to quantitative material errors,

omissions and misstatements in its verification opinion being thus sufficiently identified and mitigated/reduces).

As part of the verification planning, no sampling approach was considered as required for monitoring and cross-checking of data against primary data source (no sampling-based monitoring or no data cross-checking based on sampling). While it was later confirmed that no sampling approach was indeed required in the context of assessment of monitoring data, risks related to sampling for these aspects were thus not identified and, therefore, no design of sampling plan for addressing such aspects was considered in the context of the verification planning.

The table below summarizes the following elements of the verification planning:

- Identified risks that could lead to material errors, omissions or misstatements (including their assessment details)
- Summary of the responses/actions to such identified risks that were later considered during the performance of the verification assessment.

Risk that could lead to material errors, omissions or misstatements	Assessment of the risk		Response to the risk in the verification plan and/or sampling plan
	Risk level	Justification	
Risks inherent to the performance of a remote inspection to the project site (as an alternative to the performance of an on-site inspection with the physical presence of the verification team). Related potential risks include: - Risk of not sufficient quality and/or non-availability of communication infrastructure (i.e. internet connection) at the project site - Risk of unavailability and/or lack of	High	Potential incomplete or insufficient assessment/confirmation of the project implementation status and its operation during the considered monitoring period by the Applus+ verification team, (including the implementation and operation of the project's monitoring system). This risk might lead to partial impossibility of the Applus+ verification team on confirming the overall correctness of information made available in the	The appointed Applus+ verification team shall have sufficient overall expertise on performing remote assessment/inspections. The Applus+ verification team shall establish a verification plan with clearly definition of the assessment tasks to be performed as part of the remote inspection to the project site and consider, whenever applicable, measures to eliminate or reduce identified related risks. The Applus+ verification team shall confirm whether appropriate ICT tools normally/typically

expertise/competence from the verification team and/or from the representative(s) of the project participant(s) on operating appropriate Information and Communication Technologies (ICT tools) normally/typically used to the performance of remote inspections (i.e. photo and/or video cameras, online video conferencing systems/applications, online/cloud-based data/file management and transferring tools/applications, etc.). - Risk of incomplete or insufficient coverage of the project's available infrastructure and/or available GHG emission sources while performing a remote inspection. - Risk of incomplete or insufficient comprehension of available project's monitoring data gathering, processing, recording and reporting routines and processes.		Monitoring Report for the considered monitoring period and in the VCS PD for the project activity, thus leading to material error in calculation and reporting of achieved emission reductions.	used to the performance of remote inspections (i.e. photo and/or video cameras, online video conferencing systems/applications, online/cloud-based data/file management and transferring tools/applications, etc.) are available and whether both the verification team and the representative(s) of the project participant(s) have the required expertise/competence to operate such ICT tools. Furthermore, the Applus+ verification team shall conduct a desk review prior to performing the remote inspection to the project site in order to gain a prior understanding of the project design and project monitoring system (e.g. records and documentation control processes applied by the project participant(s)). The Applus+ verification team shall also confirm whether communication infrastructure (i.e. internet connection) under sufficient capacity (data upload and download speed) is available at the project site. In case part of the whole project site is not sufficiently covered by communication infrastructure under a satisfactory quality, alternative and/or
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			complementary assessment measures (backup plan) should be considered and evaluated (e.g. offline digital recording of set of movies, pictures by representative covering the whole or part of the project's infrastructure and procedures with date and location references for recorded data being included in the files + later transferring of such evidences (picture and movie format files) to the Applus+ verification team). The Applus+ verification team shall also confirm whether the remote inspection covers all project's available infrastructure and/or available GHG emission sources by cross checking made available project boundary information against credible source (e.g. Google Earth application, satellite images, online search engines (e.g. Google search engine), etc.). The Applus+ verification team shall also confirm whether the remote inspection allows deemed complete and sufficient comprehension of available project's monitoring data gathering, processing, recording and reporting routines and processes by
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			cross checking made available project's monitoring information/details against credible source (e.g. internal documented procedures, evidence(s) from previously conducted physical or remote inspections to the project site, etc.). In case identified potential risks inherent to the performance of a remote inspection to the project site (as an alternative to the performance of an on-site inspection with the physical presence of the verification team) are not sufficient mitigated or reduced or, additional unmitigated risks are identified during the performance of the remote inspection, the Applus+ verification team may decide to extend or even terminate the remote inspection.
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The Applus+ Certification's verification team thus performed its document review and interviews with representatives of the project proponents (of which details are included in Sections 2.2 and 2.3 respectively) by incorporating, as part of the performed remote on-site inspection, the following additional checking's/assessments (complementary auditing measures) which were performed on 08/03/2023 under conformance with Applus+ Certification's working procedures (including performance of risk analysis of for the conduction of remote inspection):

- *Remotely (online) watching/visualizing by the Applus+ Certification's verification team of set of sequential live videos (movies) + photographs (pictures) produced/generated by member of project operational staff located on-site (allowing remote complete and comprehensive assessment and observations for the VCS project activity as if the Applus+ verification team were on site):*

Upon previous request from the Applus+ Certification's verification team, the representatives of the project proponent Empresa Eléctrica Río Doble S.A. organized the production of a sufficiently complete set of sequential live videos (movies) + photographs (pictures) produced/generated online in the project site by using appropriate Information Communication Technology (ICT) tools (e.g. mobile phone with camera) with the goal of making it possible to the Applus+ Certification's verification team to remotely assess and confirm the implementation and operation of the VCS project activity (as if the verification team were on-site).

The set of sequential live videos (movies) + photographs (pictures) were watched/visualized online by the Applus+ Certification's verification team while being produced/generated on 08/03/2023 and were later fully made available to Applus+ Certification for further assessment/watching and archiving as auditing evidence.

By watching/visualizing (more than once) the content of the set of sequential live videos (movies) + photographs (pictures), the Applus+ Certification's verification team was able to have a comprehensive and complete remote assessment of the VCS project activity as if the team were on-site. The produced set of sequential live videos (movies) + photographs (pictures) (recorded as .mp4 video format files and .jpg picture format) include/show the following:

- Details of the whole project's infrastructure promoting electricity generation from renewable energy source (e.g. installed turbines, generator, power transformers, control systems, etc.);
- Details about all monitoring instruments/equipment (of which the latest version of the Monitoring Report ^{/1/} refers to),
- Details about the functioning of the process for gathering, recording and archiving of monitoring data (i.e. measurement records for electricity generated by the VCS project activity).

Watching and visualizing the set of sequential live videos (movies) + photographs (pictures) sufficiently and successfully provided to the appointed Applus+ Certification's verification team the following assessment outcomes:

- The possibility of having a complete and transparent remote visualization of the current implementation and operation of the VCS project activity (as if the Applus+ Certification's verification team were on site), thus making it possible to the verification team to confirm the correctness of information included in the Monitoring Report ^{/1/} and VCS PD ^{/2/} regarding both the implementation of the VCS project activity (project design) and its operation.
- The possibility of having a complete and transparent remote visualization¹ of the implementation and operation of available information and data flows/procedures for generating, gathering, aggregation, recording and reporting data for the ex-post determined monitoring parameter (as if the Applus+ Certification's verification team were on site), thus making it possible to the verification team to confirm the correctness and appropriateness of related data gathering, processing, recording and data recording by the available project's monitoring infrastructure as well as to confirm correctness of related information included in the Monitoring Report ^{/1/} and VCS PD for the VCS project activity ^{/2/}.
- The possibility of performing a remote (but comprehensive) checking of all project's monitoring instruments/equipment (including confirmation of occurred performance of appropriated related calibration events in such instruments/equipment) as well as checking of monitoring practices as part of the operation of the VCS project activity vis-à-vis related requirements of the registered VCS PD ^{/2/} as well as the applied CDM baseline and monitoring methodology. Such checking included confirmation of existence and archiving in the project site of original documents (e.g. certificates of calibration) in the project site + additional documentation used for cross-checking of calculation and information, with electronic format copies of such documents and evidences being also made available to the Applus+ Certification's verification team for its remote assessment (as part of the performed desk review assessment phase).
- The possibility of performing a comprehensive checking of the project's quality control and quality assurance (QA/QC) procedures in place to prevent and/or identify and/or correct errors or omissions in the reported monitoring parameters.

Based on its accumulated expertise and experience with CDM/VCS assessments for other similar project-based initiatives (including previous experience of the Applus+ verification team with the

¹ As assessed by Applus+ verification team during the remote on site visit by interviewing and checking the pictures and real time recorded movies made available by Empresa Eléctrica Río Doble S.A. that are not dam or flooding area and the VCS project activity is implemented and has been operating in accordance with description made available in the registered VCS PD.

performance of remote inspections to the project sites of CDM/VCS project activities which promote renewable electricity generation), it is Applus+ Certification's opinion that objectives to be expected for a physical on-site inspection to the project site were sufficiently reached by the Applus+ Certification's verification team through watching/visualizing online (and later re-watching/re-visualizing for further assessment/review) of the set of sequential live videos (movies) and pictures produced on-site by the representatives of the project proponent Empresa Eléctrica Río Doble S.A. on 08/03/2023.

In summary, by taking all above-presented aspects into account vis-à-vis applicable requirements established in VCS Standard (version 4.4) ^{/5/}, CDM Validation and Verification Standard for project activities (version 03.0) ^{/21/} and VCS Validation and Verification Manual (version 3.2) ^{/4/}, the Applus+ Certification's verification team judged that performing the above-described additional checking's/assessments (complementary auditing measures) instead of performing the previously scheduled physical on-site inspection to the project site is deemed acceptable and sufficient to have the overall quality and completeness of the performed verification assessment not being negatively affected.

2.5 Resolution of Findings

As an outcome of a VCS verification process, the appointed verification team may raise different types of findings for identified issues.

Where a non-conformance arises the verification team shall raise a Corrective Action Request (CAR). A CAR is issued, where:

- Non-compliance with applicable requirement from the monitoring plan and/or applied baseline and monitoring methodology is identified in applied monitoring and/or reported in the Monitoring Report ^{/1/} and/or reporting and has not been sufficiently documented by the VCS project proponents, or if the evidence provided to prove conformity is insufficient.
- Occurred modifications to the implementation, operation and monitoring of the VCS project activity occurred and were not sufficiently documented and/or reported in the Monitoring Report ^{/1/}.
- Errors, inconsistencies and/or mistakes in applying assumptions, data and/or calculations of emission reductions (that impact the quantity of emission reductions) are identified.
- Issues previously identified in Forward Action Request (FAR) as part of validation or previously performed verification assessment for the VCS project activity (which would be required to be considered/addressed for the monitoring period encompassed by the verification assessment) are not addressed by the project proponents.

The verification team shall raise a Clarification Request (CL) if information is insufficient or not sufficiently clear to determine whether the applicable CDM requirements have been met.

All CARs and CLs raised during verification shall be resolved prior to submitting a request for issuance.

As part of the performed verification assessment, the following 17 CARs were raised by the Applus+ Certification's verification Team. No CL and no FAR were raised as part of the performed verification assessment.

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2.5.1 Forward Action Requests

No Forward Action Request (FAR) was raised as part of the performed verification assessment. Furthermore, there are no FAR previously raised (as part of the previously performed validation assessment for the VCS project activity) which would be required to be considered/addressed for the considered monitoring period encompassed by the verification assessment.

2.6 Eligibility for Validation Activities

This section is not applicable for present verification, as Applus+ Certification holds the accreditation for Validation of projects under this Sectoral Scope.

3 VALIDATION FINDINGS

3.1 Participation under Other GHG Programs

Through reviewing the registered VCS PD ^{/2/} and validation report ^{/3/}, it was validated that the project has been registered as VCS project which is available at <https://registry.verra.org/app/projectDetail/VCS/1348>.

Moreover, the project is registered under CDM with reference number 6967 on 19/10/2012, available at: <https://cdm.unfccc.int/Projects/DB/SQS1344589168.03/view>. However, as also assessed by Applus+ Certification's verification team, there is no request for issuance at UNFCCC database. The compliance of the VCS project activity with the applicable rules of Section 3.22: "Participation under other GHG Programs" from VCS Standard (version 4.4) ^{/5/}, is assessed by Applus+ verification team as follows:

VCS Standard (version 4.4.)	Applus+ Certification's verification team assessment:
3.22.1 <i>Project proponents shall not seek credit for the same GHG emission reduction or removal under the VCS Program and another GHG program. Projects issuing GHG credits under both the VCS Program and another GHG program shall also conform with the rules and requirements set out in the VCS Program document Registration and Issuance Process.</i>	While the VCS project activity was previously registered under the CDM (with reference number 6967 on 19/10/2012 ²) it has never issued CERs under the CDM, thus the VCS project activity is eligible to request CERs.
3.22.2 <i>Projects registered under other GHG programs are not eligible for VCU issuance beyond the end of the total project</i>	The total project crediting period of the registered CDM project activity "Las Pizarras Project" is 21 years (from 01/01/2013 to 31/12/2034) as seen at: https://cdm.unfccc.int/Projects/DB/SQS1344589168.03/view .

² Available at: <https://cdm.unfccc.int/Projects/DB/SQS1344589168.03/view>

crediting period under those programs (see Section 3.9.7 for further information).	Thus, the VCS issuance request for the considered monitoring period from 01/10/2015 to 30/09/2021 is deemed as correct and under VCS applicable rules.
3.22.3 Projects registered under another GHG program, with activities that are included within the scope of the VCS Program (see Section 2.1), shall only be eligible to complete a gap validation and/or register under the VCS Program where the conditions set out in Appendix 2 are met.	The VCS project activity encompasses the installation and operation of a run-of-river hydropower plant with total combined installed capacity of 19.992 MW, therefore within the scope of the VCS Program. Moreover, the VCS project activity was eligible to complete its registration under the VCS Program as confirmed by its approval/registration as seen at: https://registry.verra.org/app/projectDetail/VCS/1348
3.22.4 Projects shall not alter their design during the gap validation process, except for projects described in Section 3.22.6.	Not applicable.
3.22.6 For projects registered under the CDM: 1) Multiple CPAs registered under the CDM that have the same project proponent, the same project activity, and occur within 10 km of one another shall register under the VCS as a single project. Such projects shall complete a full VCS Project Description Template. A validation/verification	Not applicable.

body shall undertake a validation of the full project description.	
3.22.6 For projects registered under the CDM: 2) Multiple CPAs registered under the CDM that have the same project proponent and project activity may register under the VCS as a single project. Such projects shall complete a full VCS Project Description Template. A validation/verification body shall undertake a validation of the full project description.	Not applicable.
3.22.6 For projects registered under the CDM: 3) Projects or single CPAs registered under the CDM that register under the VCS as a standalone project shall complete the cover page and sections 1.1, 1.2, 1.3, 1.4, 1.5, 1.6, 1.7, 1.8, 1.9, 1.10, 1.12, 1.13, 1.14, 1.15.1, 1.16, 1.17, 1.18 and 3.6 of the VCS Project Description Template. A validation/verification body shall undertake a validation of same, which shall be accompanied by a validation representation,	The cover page and sections 1.1, 1.2, 1.3, 1.4, 1.5, 1.6, 1.7, 1.8, 1.9, 1.10, 1.12, 1.13, 1.14, 1.15.1, 1.16, 1.17, 1.18 and 3.6 of the VCS PD ^{/2/} were correctly completed in accordance with the VCS Project Description Template (version 4.2) ^{/22/} as confirmed by its approval/registration as seen at: https://registry.verra.org/app/projectDetail/VCS/1348

to provide a gap validation for the project's conformance with the VCS Program rules.	
3.22.6 For projects registered under the CDM: 4) A CPA shall not subdivide into smaller projects or combine subdivided CPAs into one VCS project.	Not applicable.
3.22.7 Projects registered under the JI program shall complete a new VCS Project Description Template (applying a methodology eligible under the VCS Program). A validation/verification body shall undertake a full validation of same in accordance with the VCS Program rules. The validation report shall be accompanied by a validation representation.	Not applicable.
3.22.8 Projects registered under the Climate Action Reserve shall complete the cover page and sections 1.1, 1.2, 1.3, 1.5, 1.6, 1.7, 1.8, 1.9, 1.10, 1.12, 1.13, 1.15.1, 1.16, 1.17, 1.18, 2.1, 2.2, 2.3, 2.4 and 3.6 of the VCS Project Description Template. A	Not applicable.

<i>validation/verification body shall undertake a validation of same, which shall be accompanied by a validation representation, to provide a gap validation for the project's conformance with VCS Program rules.</i>	
<i>3.22.9 The approved GHG program validation (or verification, where the approved GHG program does not have a validation step) or VCS validation shall be completed within the relevant validation deadline as set out in Section 3.8. Validation (or verification) is deemed to have been completed when the validation (or verification) report that is submitted to the relevant program to request registration has been issued.</i>	Not applicable.
<i>3.22.10 Projects registered under a GHG program that is not an approved GHG program may also register with the VCS Program where a validation or verification report has been issued under such program (by an entity approved under the program to issue such</i>	Not applicable.

reports). For such projects, the following applies: 1) The project start date shall be on or after 19 November 2007.	
3.22.10 2) A new VCS Project Description Template shall be completed (using a methodology eligible under the VCS Program) and a validation/verification body shall undertake a full validation of same in accordance with the VCS Program rules. The validation report shall be accompanied by a validation representation.	Not applicable.
3.22.10 3) The validation or verification that is submitted to request registration under the other GHG program shall be completed within the relevant validation deadline set out in Section 3.8. Validation or verification is deemed to have been completed when the validation or verification report that is submitted to the other GHG program to request	Not applicable.

registration has been issued.	
3.22.11 Projects rejected by other GHG programs due to procedural or eligibility requirements can be considered under the VCS Program, but the following conditions shall be met: 1) The project description (where the other GHG program has rejected the project before VCS validation) or monitoring report (where the other GHG program has rejected the project after VCS validation) shall clearly state all GHG programs to which the project has applied for registration and the reason(s) for rejection. Such information shall not be deemed as commercially sensitive information.	Not applicable.
3.22.11 2) The validation/verification body shall be provided with the rejection document(s), including any additional explanations.	Not applicable.
3.22.11	Not applicable.

3) The project shall be validated against the VCS Program rules. For projects where the other GHG program has rejected the project after VCS validation, this means a complete revalidation of the project against the VCS Program rules.	
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Applus+ Certification checked the registry/database for Program of Renewable Energy Certificates (RECs) in Brazil (I-REC Brazil) and confirmed that the VCS project activity is not accredited / registered under I-REC Brazil program. The Applus+ Certification's verification team also checked publicly information and registration details valid for the REC/CER registries/programs below and confirmed that the VCS project activity has not previously seek registration in such REC/CER registries/programs (and therefore was not rejected by such REC/CER registries/programs either):

- Gold Standard for Global Goals (GS4GG) (<https://www.goldstandard.org/>)
- The International REC Standard (<https://www.irecstandard.org/>)
- Global Carbon Council (GCC) (<https://www.globalcarboncouncil.com/>)
- CERCARBONO (Certified Carbon Standard) (<https://www.cercarbono.com/>)

Therefore, Applus+ Certification considers the project is eligible to participate under the VCS Program as there is no double counting for the emission reduction during any period.

3.2 Methodology Deviations

Not applicable as no deviation from the application of the selected baseline and monitoring methodology and/or from the application of the monitoring plan (as per the registered CDM PDD /2/) occurred within the considered monitoring period (encompassing the 1st periodic verification of the VCS project activity). It is important to note that the Deviation 2 and Deviation 3 (which are summarized in Section 3.3 below) do not represent methodology deviations.

3.3 Project Description Deviations

As confirmed by the Applus+ Certification's verification team, there are several PD deviations that are applicable for this project activity (as per the currently published version of the registered VCS PD /^{2/}). The deviations listed below with no. 1, 4 and 5 were previously identified during the previous monitoring period and hence reflected and approved by the previous VVB in the last Verification Report (encompassing the 1st periodic verification of the VCS project activity). Those identified below with no. 2 and 3 have been identified during the current monitoring period.

Deviation 1: Values described for installed capacity in both the initial version of the Monitoring Report and the registered VCS PD /^{2/} were not in accordance.

The Applus+ Certification's verification team performed the assessment of evidence of the project activity made available at Verra website (<https://registry.verra.org/app/projectDetail/VCS/1348>) and confirmed that the reported value for installed capacity was indeed changed from 9 MW to 9.996 MW in the previous monitoring report and accepted by VERRA. The identified inconsistency is summarized as follows in the previous Monitoring Report:

"There was a change on the turbines and total installed capacity of the Project, recorded in the first monitoring period. It was stated in the VCS PD that the project would employ two new Francis turbines with horizontal shafts of 9 MW each and the total capacity this would be 18 MW, with an electricity generation potential of 103.32 GW-h per year.

In reality, two generators with 9.996 MW each were employed, the total installed capacity is now 19.992 MW, and the total electricity generation potential is 106.598 GW-h per year.

Given that the VCS PD redaction was carried out during the project phase, this change occurred during the construction phase when it was detected a mistake in the river daily flow, could produce a reduction on the estimated energy production. In order to get the estimated energy production, it was decided to change the turbines previously considered and increment the total installed capacity up to 19.992 MW.

The difference in production is mainly due to two factors with opposing effects:

For once, calculation was revised when it was found out that the river daily flow would yield an income of about 3% lower than originally planned. Which led to a subsequent detailed study by the engineering department of the manufacturer, allowing the PP to work with the distributor of the turbine to change it, which meant a greater flow path and therefore greater peak power and higher output (but only in those moments where the plant is at full load). With which fortunately it was able to counteract the above factor".

The referred deviation is assessed according to the VCS Validation and Verification Manual (version 3.2)^{4/}. Values of estimated electricity generation are updated in the Monitoring Report as per the corrected value for nameplate installed capacity of the project activity. As confirmed by the Applus+ Certification's verification team, the occurred increase of about +3.1% in the annual estimate of the amount of electricity to be generated by the project activity (as a direct result of its increase of installed capacity and adjustment of capacity factor) does not undermine the previously identified additionality for the VCS project activity.

As per the investment analysis previously performed as part of the demonstration of the additionality for the VCS project activity (at the time of its previously performed CDM validation and occurred registration under the CDM), a theoretical increase of the load factor of 38 percentile points as part of performed sensitivity analysis (load factor of the power generation facility changing from 66% to 91%³), the hypothetical resulted increased in generation of electricity (and therefore increase in revenues due to commercialization of generated electricity) would make the project's internal rate of return (IRR) reach the previously considered benchmark rate of 12%.

In this sense the occurred marginal/slightly increase in the ex-ante estimates of electricity generation (in the range of 3.1%) due to the occurred increase in nameplate installed capacity of the turbine-generator set clearly does not adversely affect the previously demonstrated additionality of the project activity. In this particular context and taking into account the amount of electricity generated by the project activity during each year of the considered monitoring period, it is also relevant to take into consideration that for none of the all years encompassed by the considered monitoring period (year 2015 to year 2021) the accumulated electricity generation amount has exceed the previously considered value for electricity generation correspondent to a plant load factor of 91% as per the conducted sensitivity analysis as part of the performed investment analysis (143,520 MWh). In this sense, the previously demonstrated additionality of the VCS project activity is not undermined even vis-à-vis promoted electricity generation in the year of the considered monitoring period with the best performance of the project activity in terms of net electricity generation.

Hence, even if the deviation was previously accepted in the previous monitoring report, due to the nature of the same concerning the generation of electricity, Applus+ Certification's verification team performed an assessment on the impact in the additionality of the deviation and concluded that the proposed deviation does not affect to the additionality of the project activity and neither affects the appropriateness of the baseline scenario, nor the applicability of the methodology and the project remains in conformance with the applied methodology so it is in line with the VCS Standard 4.4. Section 3.20.2. (2), thus accepted.

The PP has included the deviation and the assessment against the sensitivity analysis for this monitoring period in the Section 3.2.2. of the monitoring report.

Deviation 2: Parameter $EF_{CO2,l,y}$ and $EF_{CO2,m,i,y}$ listed as both ex-ante and ex-post parameter:

³ Plant Load Factor (PLF) refers to the ratio of the actual electricity generated by a power plant to the maximum possible energy it could have generated during a given period.

The parameter CO₂ emission factor of fossil fuel type *i* used year *y* ($EF_{CO_2,i,y}$ and $EF_{CO_2,m,i,y}$) is listed as both ex-ante and ex-post parameter in the VCS PD ^{/2/}. Applus+ Certification team has assessed the latest version of the Monitoring Report ^{/1/} and confirmed that the correction made by the project participant in Section 3.2 of the Monitoring Report is deemed as correct. The parameter described in the registered VCS PD ^{/2/} is now listed as an ex-ante determined parameter.

The addition of these two types of fuels is complementary to those considered at the time of registration of the project. At that time Peruvian electrical grid did not have power plants with these technologies, so were not included and during this monitoring period it has been identified and hence it has been necessary to incorporate the new types of fuels present in the national electricity system, thus reflecting all plants in the ex post EF_{OM} calculations.

The referred deviation is assessed according to the VCS Validation and verification manual (version 3.2) ^{/4/}, confirming that the identified errors while listing the ex-ante and ex-post parameter does not affect the additionality, nor the appropriateness of the previously identified baseline scenario nor the applicability of the baseline and monitoring methodology ACM002 (version 12.3.0) ^{/6/}. Therefore the VCS project activity remains in conformance with the applied methodology so it is in line with the VCS Standard 4.4. Section 3.20.2. (2).

Deviation 3: Parameter $EF_{grid,BM,y}$ is not correctly listed in the VCS PD and in the Monitoring Report:

The parameter Build margin CO₂ emission factor for the project electricity system in year *y* ($EF_{grid,BM,y}$) is not listed as an ex-ante monitoring parameter in the VCS PD ^{/2/}. Applus+ Certification team has assessed the latest version of the Monitoring Report ^{/1/} and confirmed that the correction made by the project participant in Section 3.2 of the Monitoring Report is deemed correct.

Also, it is important to note that Applus+ verification team has confirmed that $EF_{grid,BM,y}$ was correctly considered and reported in the emission reductions spreadsheet ^{/1/}. Thus, the only required correction is to present this parameter in Section 4.2 of the Monitoring Report ^{/1/}.

The referred deviation is assessed according to the VCS Validation and verification manual (version 3.2) ^{/4/}, confirming that the identified errors while listing both parameters above mentioned does not affect the additionality nor the appropriateness of the previously identified baseline scenario or the applicability of the selected baseline and monitoring methodology ACM002 (version 12.3.0) ^{/6/}.

Deviation 4: Changes on electricity meters location

The registered VCS PD ^{/2/} does not specify the design structure of the electricity meters and only mentions the information as presented in the registered CDM-PDD ^{/2/}.

However, according to the Verification Report from the previous monitoring period ^{/13/}, the project participant has made the following change on the original design of the electricity meters:

As mentioned in the previous Verification Report ^{/13/}: *“AENOR team requested project participants to provide information in order to explain this deviation. According to the PP, the tentative Meters M1 and M2 (main meters) are redundant, so these have been unified at current M1. In the other hand, tentative M4 and M3 are not considered useful since the current meters are bidirectional, and these measure the value of net electricity to the grid. M5 has been substitute by two backup meters: M2 and M3. According to this explanation the DOE has verified that the deviation to the registered monitoring plan described in the monitoring report, is in compliance with the applied methodology and do not reduce the level of accuracy of the monitoring compared with the requirements contained in the registered monitoring plan”.*

The referred deviation has been previously accepted and reflected in the previous verification hence found acceptable by the VVB. Moreover, is assessed according to the VCS Validation and verification manual (version 3.2) ^{/4/}, confirming that the identified change in the electricity meters position does not affect the additionality nor the applicability of the methodology of the VCS project activity, since the applicable methodology ACM002 (version 12.3.0) ^{/6/} does not specifies the meters position and also the monitoring plan is correctly followed and is not affected by the change in the meters position.

Deviation 5: Change on the original Organizational Structure

As per the Verification Report for the previous verification period ^{/13/}, the registered CDM-PDD ^{/2/} indicates some tasks of the Organizational Structure of the General Manager which have been assigned to the Plant Manager as follows:

The Plant Manager supervises the Technical Operators and is responsible for:

- Compile and analyze all the monthly monitoring reports.
- Compile all the calibration certifications.
- Ensure that the Technical Operators are appropriately trained for monitoring/checking the different parameters/meters with training sessions and an instruction manual.

As mentioned in the previous Verification Report ^{/13/}: *“AENOR team confirms that this deviation does not reduce the level of accuracy of the monitoring procedures compared with the requirements contained in the registered monitoring plan. Therefore, in AENOR’s opinion the methodology deviations applied to the project activity are valid and considered more accurate practices for monitoring procedures”.*

The referred deviation has been previously accepted and reflected in the previous verification hence found acceptable by the VVB. Moreover, is assessed according to the VCS Validation and verification manual (version 3.2) ^{/4/}, confirming that the identified change in the original organizational structure does not affect the additionality nor the applicability of the methodology of the VCS project activity, since the applicable methodology ACM002 (version 12.3.0) ^{/6/} does not specifies the organizational structure and also the monitoring plan is correctly followed and is not affected by the change in the organizational structure.

In summary, the identified changes do not represent negative or incorrect impact on the previously calculated estimation of emission reductions, applicability of the methodology, additionality or the appropriateness of the baseline scenario.

Applus+ Certification team confirmed that the identified deviations in the VCS PD do not affect the applicability of the methodology, additionality nor appropriateness of the baseline scenario, thus the only correction requested by VERRA in VCS-VVM (version 3.2, dated 19/10/2016) ^{/4/} is the description of such corrections in Section 3.2 of the Monitoring Report as follows: *“Where the deviation does not impact the applicability of the methodology, additionality or the appropriateness of the baseline scenario, and the project remains in compliance with the applied methodology, the project proponent must describe and justify the deviation in the monitoring report. The deviation is documented in the monitoring report in recognition of the deviation being a more limited change to the project”*.

Applus+ Certification verification team has appropriately confirmed that the related corrections are described and justified in Section 3.2. of the Monitoring Report (version 7.0, dated 16/02/2024) as required by VCS rules and also the applicable guidance of VCS-VVM (version 3.2, dated 19/10/2016) ^{/4/}.

3.4 Grouped Project

Not applicable, The VCS project activity does not represent and is not part of Grouped Project under VCS and/or under any other GHG program.

4 VERIFICATION FINDINGS

4.1 Project Implementation Status

The Applus+ Certification's verification team was able to confirm as part of performed assessment through performed document desk review, interviews with representatives of the project proponent and additional complementary measures (summarized in Section 2.4) that all physical features (despite of the above mentioned deviations) of the VCS project activity as included in its project design description in the registered CDM PDD ^{/2/} and where applicable in the VCS PD ^{/2/} are in place, thus confirming the implementation status of the monitoring plan and the completeness of monitoring, including the suitability of the implemented monitoring system (i.e., process and schedule for obtaining, recording, compiling and analyzing the monitored data and parameters).

The project activity started its commercial operations on 31/12/2012. From this date till the current monitoring period, the run-of-river power plant has been operating mostly in normal and expected conditions, moreover during the considered monitoring period, the project has operated with no significant number of operational stops, the only relevant events/situations been reported were:

- Disconnection of LINE I-2240 at S.E. Chiclayo Oeste;
- Voltage loss in phase R;
- Distributor rod breakage;
- External fault, opening of line L-2192;
- Programmed maintenance events;

At the end, a total of around 311 accumulated hours for generator 1 and around 373 accumulated hours for generator 2 of stoppage events occurred during the considered monitoring period as assessed by Applus+ verification team in in both primary monitoring data by COES ^{/16/} and in the emission reduction calculation spreadsheets ^{/20/}. The project's period not under regular operation represents less than 1.4% when comparing to the total day counting of the monitoring period 2,192 days representing 52,608 total hours.

Electricity generated as part of the operation of the VCS project activity is transmitted to the National Electricity Grid of Peru through a power transformer and the power substation "Espina Colorada", there are no changes on the key equipment and technology considered at the time of validation of the VCS project activity.

No additional special event which would affect the monitoring of the VCS project activity during the time the VCS project activity was under regular operation within the considered monitoring period was observed or noted by the Applus+ Certification's verification team.

The purpose of the project is to utilize run-of-river power for electricity generation. It includes electricity generation infrastructure encompassing 2 set of turbine-generator with a revised installed capacity of 9.996 MW each until the end of the considered monitoring period.

The assessment team confirmed that there is no proposed or actual change to the project design which affects the additionality of the VCS project activity nor the applicability of the methodology ACM0002 (version 12.3.0) ^{/6/} during this monitoring period.

All required equipment and procedures are available and implemented in an appropriate manner.

The VCS project activity was confirmed as being operational during the considered monitoring period. The non-existence of any material discrepancies between project implementation and the project description (besides the reported above) was confirmed by the Applus+ Certification's verification team.

As assessed in Section 1.9 of the Monitoring Report ^{/1/}, the Applus+ Certification's verification team was able to confirm that the VCS project activity is currently registered under the CDM (with no issuance been requested) and was not previously rejected under any other GHG programs since validation or previous verification. It is also sufficiently confirmed that the VCS project activity has not previously received or sought any other form of environmental credit or has become eligible to do so since validation or previous verification. It is also confirmed that GHG emission reductions generated by the VCS project activity were not and have become included in an emissions trading program or any other mechanism that includes GHG allowance trading.

As outlined in the Validation Report "Las Pizarras Project" (version 01, dated 04/09/2014) ^{/3/}; it was previously assumed and confirmed that the VCS project activity contributes towards sustainable development.

As assessed in Sections 3.2 and 3.3, there are no methodology deviations or project description deviations which affect the applicability of the methodology nor the monitoring plan applicable for the VCS project activity, only a correction that does not affect the applicability of the methodology nor the monitoring plan.

In summary, the Applus+ Certification's verification team was able to confirm that the VCS project activity has been implemented and has been under operation until the end of the considered monitoring period, despite of the above-mentioned changes, as described in its VCS PD ^{/2/}.

Moreover, as assessed by Applus+ Certification's verification team, the audit history table as presented in the latest version of the Monitoring Report is deemed as correct and accurate as it comprises the validation and the 1st verification previously performed until the current monitoring period.

4.2 Safeguards

4.2.1 No Net Harm

As per the information provided in the registered PD ^{/2/} (version 2.0), the registered CDM PDD (version 4) ^{/2/} and the proposed Monitoring Report ^{/1/}, it is confirmed that the project activity (according to the Law to Assure the Efficient Development of Electric Generation (Law No. 28832 ^{/17/}) does not require a completion of an Environmental Impact Assessment (EIA) or its approval since as per the national laws/regulations, no relevant environmental impacts are associated with the VCS project activity operation.

Also, no potential environment or social economic negative matter was found during the performed interviews. The project is a renewable energy project and thus it is presumable that it will create no net harm in air or water quality on its implementation site.

Hence, it is confirmed by the Applus+ Certification team the information that is provided in the Monitoring Report ^{/1/} is correct as follows:

“The environmental impacts identified, before the Project construction, during the workshops held in 2011 by the National Environmental Fund (FONAM) and Río Doble, were not considered to be significant. Most of them were expected in the construction phase and were considered temporary. Appropriate mitigation measures were undertaken to manage those minimal impacts. On the other hand, during the operation phase, most impacts were expected to be positive, mainly because of the Project contribution to improved social and economic conditions for the local inhabitants”.

4.2.2 Local Stakeholder Consultation

The following related to local stakeholder consultation is confirmed by the Applus+ Certification's verification team as being outlined in the registered VCS PD (version 2.0, dated 08/08/2014) ^{/2/}:

“Prior to the start of the project activity, and as part of the Peruvian Designated National Authority's requirements for the Letter of Approval for the Project's CDM process, the National Environmental Fund (FONAM) was mandated to undertake a local consultation process with the objective of matching the interests of the Project sponsor with those of the local community. Hence, Río Doble and FONAM held two workshops to explain the objectives, scope and commitments of the Project with respect to the local stakeholders' livelihoods and with the environment.

To establish the Project's zone of influence FONAM set a radius of 6 km around the Project (zone of influence), identified the main actors or representatives of the communities, and proceeded to interview the local authorities, as well as survey the local population on their living conditions, their knowledge on environmental issues (local and global), and their knowledge on the Project.

To prepare for the information workshops, an informative brochure about the Project was developed by FONAM, as well as some flipcharts about global environmental issues and the Project activity. The authorities and representatives of the communities were then sent written invitations to the workshop, and among the other diffusion measures undertaken to invite the population to the final workshop were flyers that were handed out at different hours, a radio announcement, and posters.

Two information workshops were held, one on 08/06/2011 and the other one on 10/06/2011, with a total participation of 41 members of the Santa Cruz and Catache districts, including local authorities and schoolteachers. During these meetings, FONAM shared information on climate change, the greenhouse gas effect, the Clean Development Mechanism, and the environmental and social benefits of the Project, as well as an explanation of the Project in detail. They then listened to the concerns of the local inhabitants. All the information gathered from both meetings was compiled and detailed in a written report, and there are lists with the names and signatures of the participants.

A final information workshop was held on 10/06/2011, with the participation of 59 members of the local community, and during this meeting representatives of Río Doble and the Executive Director of FONAM were present to address the main concerns of the local populations and present the main elements of the social investment plan of the Project."

Details about the previously conducted Local Stakeholder Consultation are sufficiently provided in the registered PD ^{/02/} version 2.0 dated 08/08/2014 for the project activity with related assessment details being also sufficiently provided in the Validation Report ^{/03/}. The same has been checked by the Applus+ Certification team and found acceptable.

No additional local stakeholder consultation was held as part of the performed verification assessment for the 1st periodic verification assessment for the VCS project activity (monitoring period from 01/10/2015 to 30/09/2021). This is in conformance with applicable VCS rules.

As also confirmed by the Applus+ Certification's verification team, the Monitoring Report includes in its Section 2.2 sufficient details about the local stakeholder consultation previously conducted as part of the development of the Environmental Impact Assessment (EIA) for the project activity. It is the opinion of the Applus+ Certification's verification team that related details included in Section 2.2 of the Monitoring Report ^{/4/} includes inter alia sufficient information about procedures and methods used for documenting of outcomes of performed local stakeholder consultation as well as details for the applied mechanism for on-going communication with local stakeholders.

4.3 AFOLU-Specific Safeguards

Not applicable. The VCS project activity is a non-AFOLU project.

4.4 Accuracy of GHG Emission Reduction and Removal Calculations

As per the applied monitoring procedure and in accordance with the requirements of the CDM baseline and monitoring methodology ACM0002 (version 12.3.0) ^{/6/} and related provisions of the registered VCS PD ^{/2/}, GHG emission reductions are calculated based on measurement records and selected values of the ex-post monitored parameters (of which monitoring details are presented in the tables below) and also correctly considering values for ex-ante determined parameters.

Assessment of ex-ante determined parameters:

Values for the following ex-ante selected parameters are correctly reported in the Monitoring Report ^{/4/} and are considered in the context of ex ante estimation of emission reduction achieved by the project participant within the 10-year crediting period and/or GHG calculations for the considered monitoring period:

Ex-ante determined parameter	Applied value	
CO ₂ emission factor of fossil fuel type i used year y (EF _{CO2,i,y} and EF _{CO2,m,i,y})	EF (tCO ₂ /GJ)	
	Diesel Oil	0.07260
	Residual Fuel Oil	0.07550
	Natural Gas	0.05430
	Coal	0.08730
CO ₂ emission factor of power unit m in year y (EF _{EL,m,y})	See section 3.4 of the registered VCS PD ⁴ ^{/2/}	
Build margin CO ₂ emission factor for the project electricity system in year y (EF _{grid,BM,y})	0.56934 tCO ₂ /MWh	

⁴ COES Annual Statistics reports. Folder No. 5 or 6. Thermoelectric production and fuel consumption: Table No 5.8 for years 2018-2021 or 6.8. CV for years 2015-2017: <https://www.coes.org.pe/Portal/Publicaciones/Estadisticas/>

2006 IPCC Guidelines on National GHG Inventories. IPCC default values at the lower limit of the uncertainty at a 95% confidence interval as provided in table 1.4 of Chapter 1 of Vol. 2 (Energy): https://www.ipcc-nggip.iges.or.jp/public/2006gl/pdf/2_Volume2/V2_1_Ch1_Introduction.pdf

It is noteworthy that the above-mentioned ex-ante determined values were applied in the context of the ex-ante emission factor calculation as per the registered PD ^{/2/}, thus the permanent monitoring of such parameters is not applicable for the calculation of emission reductions achieved during the current monitoring period.

It is important to note that the deviation occurred regarding the ex-ante parameters: CO₂ emission factor of fossil fuel type *i* used year *y* (EF_{CO2,i,y} and EF_{CO2,m,i,y}) and Build margin CO₂ emission factor for the project electricity system in year *y* (EF_{grid,BM,y}) are correctly considered as corrections which do not affect the approved monitoring plan of both the registered CDM PDD and VCS PD ^{/2/}, as both parameters were correctly applied during the considered monitoring period as per the “Tool to calculate the emission factor for an electricity system” (version 02.2.0) ^{/19/}.

Assessment for the previously occurred selection of values for the above-summarized ex-ante determined parameters are included in the Validation Report ^{/3/} for the VCS project activity.

Assessment of parameters monitored ex-post:

The Applus+ Certification’s verification team has assessed whether the monitoring parameter of which monitoring ex-post is required as per the monitoring plan of the CDM PDD ^{/2/} was correctly monitored during the considered monitoring period.

As confirmed by the Applus+ Certification’s verification team, monitoring activities for the VCS project activity were performed for the considered monitoring period under full conformance with related requirements as established in the monitoring plan of the registered CDM PDD ^{/2/} for the project activity ^{/2/}. Assessment details for monitoring the parameter monitored ex-post for the considered monitoring period are summarized below in the following table:

*Assessment details for the monitoring parameter “Electricity displaced by the project activity in hour *h* of year *y*” (EG_{PJ,h} and EG_{PJ,y}):*

Data / Parameter: (as per the monitoring plan of the VCS PD):	Electricity displaced by the project activity in hour <i>h</i> of year <i>y</i> (EG _{PJ,h} and EG _{PJ,y})
Measuring, recording and reporting frequencies:	During the considered monitoring period, accumulated values of continuously measurements of the monitoring parameter EG _{PJ,h} and EG _{PJ,y} were aggregated and recorded/reported hourly by entity COES with related records being made available and utilized by the project proponents as part of the application of the monitoring plan of the VCS project activity. COES is the

	technical and economical managing and operating entity for the National Electricity Grid of Peru. As confirmed by the Applus+ Certification's verification team, based on measurements performed by installed monitoring instruments (electricity meters), COES generates a report with hourly values for generated electricity which delivered to the grid daily with records being record in a data platform from which historical records can be retrieved online. Monthly reports with accumulated measurement values for electricity generated by the VCS project activity are generated by using COES application data ^{/16/}. All net electricity generated by the VCS project activity is exported. Monthly sales receipts of generated electricity ^{/11/} were made available and were assessed by the Applus+ Certification's verification team. As confirmed by the Applus+ Certification's verification team, the following checking procedure (which is outlined in the VCS PD ^{/2/}) has been systematically applied during the considered monitoring period: <i>"The monthly measurement results recorded are used to cross check with reports of active energy transfers provided by COES and invoices to ensure consistency. Conservative values have been used for calculation of emission reductions".</i>
Are measuring, recording and reporting frequencies in accordance with the monitoring plan and applied baseline and monitoring methodology? (Yes / No)	As per both the registered CDM PDD ^{/2/} and the registered VCS PD ^{/2/} continuous measurements of EG_{PJ,h} and EG_{PJ,y} are to be recorded and reported under at least every month frequency. The applied CDM baseline and monitoring methodology ACM0002 (version 12.3.0) ^{/6/} does not clearly indicate recording and reporting frequencies for continuous measurements for the parameter EG_{PJ,h} and EG_{PJ,y}. Thus, the adopted measuring, recording and reporting frequencies are assumed as in accordance with the monitoring plan of the registered CDM PDD ^{/2/} and where applicable the VCS PD ^{/2/} as well as with applicable guidance of the CDM baseline and monitoring methodology ACM0002 (version 12.3.0) ^{/6/}.

Type of monitoring equipment/instrument:	Net electricity generated by the VCS project activity during the considered monitoring period was measured by electricity meters (main meter and backup unit) which are installed, maintained by COE, and calibrated by Peruvian Enterprise Service SAC ⁵ . The specifications of the installed electricity meters are as follows:	
	Specifications of the main electricity meter M1	
	Manufacturer	Schneider Electric
	Model	ION 8650
	Serial Numbers	MW-1211A328-01
	Accuracy	±0.2%
	Source: /15/	
	Specifications of the backup electricity meter M2	
	Manufacturer	Schneider Electric
	Model	ION 8650
	Serial Numbers	MW-1211A330-01
	Accuracy	±0.2%
	Source: /15/	
	Specifications of the backup electricity meter M3	
	Manufacturer	Schneider Electric

⁵ Values of reported and used for emission reductions calculation were confirmed as net electricity generated by Applus+ Certification verification team after the assessment of primary records issued by COES ^{/16/} for both gross electricity generated and electricity consumption by the project activity. By performing the crosscheck: gross electricity generated minus electricity consumed it is possible to confirm that this result of net electricity is the value used for emission reductions calculation.

	Model	ION 8650
	Serial Numbers	MW-1205A219-01
	Accuracy	±0.5%
	Source: /15/	
	Year	EG _{facility} (MWh)
	2015 (from 01/10/2015 to 31/12/2015)	16,861.14
	2016	77,725.96
	2017	108,849.27
	2018	104,248.55
	2019	105,614.60
Is the accuracy of the monitoring equipment/instrument as stated in the VCS PD? If the VCS PD does not specify the accuracy of the monitoring equipment/instrument, does the utilization of the monitoring equipment/instrument represents good monitoring practice?	2020	92,894.30
	2021 (from 01/01/2021 to 30/09/2021)	91,752.92
	The registered VCS PD /2/ and the CDM baseline and monitoring methodology ACM0002 (version 12.3.0) /6/ do not specify any accuracy requirement for the electricity meter installed. The accuracy range for the installed instruments is confirmed as being ±0.2%, through assessment of its specification sheets /15/.	
	Based on its sectoral expertise and experience with other similar project-based initiative under VCS and other GHG programs (such as the CDM) (initiatives promoting electricity generation using renewable sources), it is the opinion of Applus+ Certification that the use of the installed instrument represents good practice for monitoring generation of electricity and is under sufficient conformance with the monitoring plan as per the	

	registered CDM PDD and where applicable the VCS PD ^{/2/} for the project activity.
If applicable, has the reported monitoring data been cross-checked with other available data or source?	Yes. By comparing reported values ^{/16/} against values indicated in monthly electricity commercialization receipts ^{/11/} valid for the project's electricity generation infrastructure during the considered monitoring period, the Applus+ Certification's verification team was able to confirm the correctness of monthly reported values for $EG_{PJ,h}$ and $EG_{PJ,y}$ which are considered in the determination of baseline emissions for the VCS project activity.
How were the values in the Monitoring Report (and/or supporting documents, i.e emission reduction calculation spreadsheet) verified and/or compared?	The Applus+ Certification's verification team has confirmed that accumulated monthly values for the monitoring parameter $EG_{PJ,h}$ and $EG_{PJ,y}$ as reported in the emission reduction calculation spreadsheet and Monitoring Report ^{/1/} are in accordance with both primary monitoring records for electricity generation from COES (which are reported every hour) ^{/16/} and with monthly electricity commercialization receipts ^{/11/} valid for the project's electricity generation infrastructure during the considered monitoring period.
Does the applied monitoring data management process (from monitoring equipment/instrument to emission reduction calculation) ensure correct recording, transferring and reporting of data to be used for the emission reductions calculations? Are necessary/applicable QA/QC processes in place?	Details for monitoring management and quality assurance related aspects for the VCS project activity are also included in the end of this Section.

Assessment details for the monitoring parameter “CO₂ emission factor of the grid electricity in year y” ($EF_{CO_2,grid,y} = EF_{grid,CM,y}$):

Data / Parameter: (as per the monitoring plan of the VCS PD):	CO ₂ emission factor of the grid electricity in year y ($EF_{CO_2,grid,y} = EF_{grid,CM,y}$)
Measuring, recording and reporting frequencies:	During the considered monitoring period, values of the monitoring parameter $EF_{CO_2,grid,y} = EF_{grid,CM,y}$ were aggregated and utilized by the project proponents as part of the application of the monitoring plan of the VCS project activity. As mentioned in the latest version of the Monitoring Report: $EF_{grid,CM,y} = EF_{grid,OM,y} * WOM + EF_{grid,BM,y} * WBM$ As confirmed by Applus+ Certification’s verification team by checking the emission reductions spreadsheet $EF_{grid,OM,y}$ is monitored in an annual basis in accordance with the “Tool to calculate the emission factor for an electricity system” (Version 02.2.0) /19/ .
Are measuring, recording and reporting frequencies in accordance with the monitoring plan and applied baseline and monitoring methodology? (Yes / No)	As per the registered CDM PDD /2/ and where applicable the VCS PD/2/ $EF_{grid,CM,y}$ is to be monitored in an annual basis in accordance with the “Tool to calculate the emission factor for an electricity system” (Version 02.2.0) /19/. Thus, the adopted measuring, recording and reporting frequencies are assumed as in accordance with the monitoring plan of the registered CDM PDD and where applicable the VCS PD /2/ as well as with applicable guidance of the “Tool to calculate the emission factor for an electricity system” (Version 02.2.0) /19/.
Type of monitoring equipment/instrument:	Not applicable.
Is the accuracy of the monitoring equipment/instrument as stated in the VCS PD? If	Not applicable.

the VCS PD does not specify the accuracy of the monitoring equipment/instrument, does the utilization of the monitoring equipment/instrument represents good monitoring practice?	
If applicable, has the reported monitoring data been cross-checked with other available data or source?	Yes. By comparing reported values ^{/16/} against values indicated in COES database ^{/24/} .
How were the values in the Monitoring Report (and/or supporting documents, i.e emission reduction calculation spreadsheet) verified and/or compared?	By comparing reported values ^{/16/} against values indicated in COES database ^{/24/} .
Does the applied monitoring data management process (from monitoring equipment/instrument to emission reduction calculation) ensure correct recording, transferring and reporting of data to be used for the emission reductions calculations? Are necessary/applicable QA/QC processes in place?	Details for monitoring management and quality assurance related aspects for the VCS project activity are also included in the Section <i>“Assessment of determination of baseline emissions”</i> .

Assessment details for the monitoring parameter “Net electricity generated and delivered to the grid by power plant / unit m or n in year y or hour h . m : Power units included in the build margin. n : Grid power units in the top of the dispatch.” ($EG_{m,y}$ and $EG_{n,y}$):

Data / Parameter: (as per the monitoring plan of the VCS PD):	Net electricity generated and delivered to the grid by power plant / unit m or n in year y or hour h. m: Power units included in the build margin. n: Grid power units in the top of the dispatch. ($EG_{m,y}$ and $EG_{n,y}$)
Measuring, recording and reporting frequencies:	During the considered monitoring period, values of the monitoring parameter $EG_{m,y}$ and $EG_{n,y}$ were aggregated and utilized by the project proponents as part of the application of the monitoring plan of the VCS project activity. As mentioned in the latest version of the Monitoring Report data is measured based on information provided by COES and recorded every 15 minutes. Moreover, as per the Monitoring Report ^{/1/}: “Continuous measurement and at least monthly recording. Dispatch data OM: Hourly. BM: Fixed for the first crediting period”.
Are measuring, recording and reporting frequencies in accordance with the monitoring plan and applied baseline and monitoring methodology? (Yes / No)	As per the registered CDM PDD ^{/2/} and where applicable the VCS $PDEG_{m,y}$ and $EG_{n,y}$ is to be measured and recorded every 15 minutes and at least monthly recording with Dispatch data OM been hourly monitored along with dispatch data BM fixed for the first crediting period. In accordance with ACM001 (version 12.3.0) ^{/6/} and the “Tool to calculate the emission factor for an electricity system” (version 02.2.0) ^{/19/}: “Dispatch data OM: Hourly. BM: For the first crediting period, either once ex ante or annually ex post”. Thus, the adopted measuring, recording and reporting frequencies are assumed as in accordance with the monitoring plan of the registered CDM PDD and where applicable the VCS PD ^{/2/} as well as with applicable guidance of the CDM baseline and monitoring methodology ACM0002 (version 12.3.0) ^{/6/} and the “Tool to calculate the emission factor for an electricity system” (Version 02.2.0) ^{/19/}.

Type of monitoring equipment/instrument:	Not applicable.
Is the accuracy of the monitoring equipment/instrument as stated in the VCS PD? If the VCS PD does not specify the accuracy of the monitoring equipment/instrument, does the utilization of the monitoring equipment/instrument represents good monitoring practice?	Not applicable.
If applicable, has the reported monitoring data been cross-checked with other available data or source?	Yes. By comparing reported values ^{/16/} against values indicated in COES database ^{/24/} ⁶ .
How were the values in the Monitoring Report (and/or supporting documents, i.e emission reduction calculation spreadsheet) verified and/or compared?	By comparing reported values ^{/16/} against values indicated in COES database ^{/24/} .
Does the applied monitoring data management process (from monitoring equipment/instrument to emission reduction	Details for monitoring management and quality assurance related aspects for the VCS project activity are also included in the end of this Section.

⁶ COES Generation Meters records. Monthly generation data every 15 minutes of Active Power (MW) for the years 2015-2021: <https://www.coes.org.pe/Portal/mediciones/medidoresgeneracion>

calculation) ensure correct recording, transferring and reporting of data to be used for the emission reductions calculations? Are necessary/applicable QA/QC processes in place?	
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Assessment details for the monitoring parameter “Average net energy conversion efficiency of power unit m in year y ” ($\eta_{m,y}$):

Data / Parameter: (as per the monitoring plan of the VCS PD):	Average net energy conversion efficiency of power unit m in year y ($\eta_{m,y}$)
Measuring, recording and reporting frequencies:	During the considered monitoring period, values of the monitoring parameter $\eta_{m,y}$ were aggregated annually and utilized by the project proponents as part of the application of the monitoring plan of the VCS project activity. As mentioned in the latest version of the Monitoring Report: “Every year this data will be checked with the latest available Annual Statistics report of the COES”.
Are measuring, recording and reporting frequencies in accordance with the monitoring plan and applied baseline and monitoring methodology? (Yes / No)	As per both the registered CDM PDD ^{/2/} and the registered VCS PD ^{/2/} $\eta_{m,y}$ is to be monitored on an annual basis in accordance with ACM001 (version 12.3.0). Thus, the adopted measuring, recording and reporting frequencies are assumed as in accordance with the monitoring plan of the registered CDM PDD and where applicable the VCS PD ^{/2/} as well as with applicable guidance of the CDM baseline and monitoring methodology ACM0002 (version 12.3.0) ^{/6/}.
Type of monitoring equipment/instrument:	Not applicable.
Is the accuracy of the monitoring equipment/instrument as	Not applicable.

stated in the VCS PD? If the VCS PD does not specify the accuracy of the monitoring equipment/instrument, does the utilization of the monitoring equipment/instrument represents good monitoring practice?	
If applicable, has the reported monitoring data been cross-checked with other available data or source?	Yes. By comparing reported values ^{/16/} against values indicated in COES database ^{/24/} .
How were the values in the Monitoring Report (and/or supporting documents, i.e emission reduction calculation spreadsheet) verified and/or compared?	By comparing reported values ^{/16/} against values indicated in COES database ^{/24/} .
Does the applied monitoring data management process (from monitoring equipment/instrument to emission reduction calculation) ensure correct recording, transferring and reporting of data to be used for the emission reductions calculations? Are necessary/applicable QA/QC processes in place?	Details for monitoring management and quality assurance related aspects for the VCS project activity are also included in the end of this Section.

Assessment of meeting of calibration requirements of applied monitoring instruments/equipment:

The Applus+ Certification's verification team has assessed whether all monitoring instruments/equipment installed at the project site have operated during the monitoring period from 01/10/2015 to 30/09/2021 under full compliance with calibration requirements as per both related provisions from the registered VCS PD ^{/2/} and recommendations/guidance from the instrument/equipment manufacturers. The following tables include assessment details for calibration events performed on the monitoring instruments/equipment used for performance of measurements monitoring the ex-post determined parameters during the considered monitoring period:

Assessment of performed calibration events for equipment/instruments used for monitoring the parameter "Electricity displaced by the project activity in hour h of year y" ($EG_{PJ,h}$ and $EG_{PJ,y}$):

Data / Parameter: (as per the monitoring plan of the VCS PD):	Electricity displaced by the project activity in hour h of year y ($EG_{PJ,h}$ and $EG_{PJ,y}$)
Calibration frequency /interval for the monitoring equipment/instrument:	According to both the registered CDM PDD ^{/2/} and the registered VCS PD ^{/2/} the installed electricity meters are to be calibrated every three years. As confirmed by the Applus+ Certification's verification team through assessment of the specification sheet for the installed electricity meters, the selected calibration frequency is as per the recommendations of the instrument manufacturer. <i>Calibration events of the main installed electricity meter M1 S/N MW- 1211A328-01:</i> - Calibration date: 09/10/2015 ^{/12/} Calibration event performed by: Peruvian Enterprise Service SAC - Calibration date: 03/12/2016 ^{/12/} Calibration event performed by: Peruvian Enterprise Service SAC - Calibration date: 03/12/2017 ^{/12/} Calibration event performed by: Peruvian Enterprise Service SAC

	- Calibration date: 01/12/2018 ^{/12/} Calibration event performed by: Peruvian Enterprise Service SAC - Calibration date: 20/01/2020 ^{/12/} Calibration event performed by: Peruvian Enterprise Service SAC - Calibration date: 04/01/2021 ^{/12/} Calibration event performed by: Peruvian Enterprise Service SAC <i>Calibration events of the backup installed electricity meter M2 S/N MW-1211A330-01:</i> - Calibration date: 09/10/2015 ^{/10/} Calibration event performed by: Peruvian Enterprise Service SAC - Calibration date: 03/12/2016 ^{/10/} Calibration event performed by: Peruvian Enterprise Service SAC - Calibration date: 03/12/2017 ^{/10/} Calibration event performed by: Peruvian Enterprise Service SAC - Calibration date: 01/12/2018 ^{/10/} Calibration event performed by: Peruvian Enterprise Service SAC - Calibration date: 20/01/2020 ^{/10/} Calibration event performed by: Peruvian Enterprise Service SAC - Calibration date: 14/01/2021 ^{/10/} Calibration event performed by: Peruvian Enterprise Service SAC <i>Calibration events of the backup installed electricity meter M3 S/N MW-1205A219-01:</i> - Calibration date: 09/10/2015 ^{/7/}
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	Calibration event performed by: Peruvian Enterprise Service SAC - Calibration date: 03/12/2016 ^{/7/} Calibration event performed by: Peruvian Enterprise Service SAC - Calibration date: 03/12/2017 ^{/7/} Calibration event performed by: Peruvian Enterprise Service SAC - Calibration date: 01/12/2018 ^{/7/} Calibration event performed by: Peruvian Enterprise Service SAC - Calibration date: 20/01/2020 ^{/7/} Calibration event performed by: Peruvian Enterprise Service SAC - Calibration date: 14/01/2021 ^{/7/} Calibration event performed by: Peruvian Enterprise Service SAC
Is the calibration interval in line with the monitoring plan of the VCS PD? If the VCS PD does not specify the frequency of calibration, does the selected frequency represent good monitoring practice?	The applied CDM baseline and monitoring methodology ACM0002 (version 12.3.0) ^{/6/} does not explicitly specify any calibration frequency requirements for the installed electricity meters. The registered VCS PD ^{/2/} states the following regarding calibration of monitoring instrument for the monitoring parameter EG_{PJ,h} and EG_{PJ,y}: <i>“Measurement equipment should be certified to national or IEC standards and calibrated according to the national standards and reference points or IEC standards and recalibrated at appropriate intervals according to manufacturer specifications, but at least once in three years”</i> It is important to note that the installed electricity meters are approved/certified by the entity COES. COES is the technical and economical managing and operating entity for the National Electricity Grid of Peru. Calibration frequency as per the registered VCS PD ^{/2/} of every 3 years for the electricity meters is confirmed to be in accordance

	with related requirements/ recommendations as established by the meters manufacturer.
Did the performed calibration(s) confirm proper functioning of monitoring equipment/instrument? (Yes / No):	Yes. The performed calibration events in both the main and backup electricity meters confirm appropriate functioning of these electricity meters (at the time the calibration events were performed).
Is(are) the performed calibration(s) valid for the whole reporting period?	Yes. Applus+ Certification was able to confirm the validity of the performed calibration event for the installed electricity meter as follows: <i>Calibration events of the main installed electricity meter M1 S/N MW-121A328-01:</i> - Calibration event performed in 09/10/2015, valid until 08/10/2018 (3 years) ^{/12/} - Calibration event performed in 03/12/2016, valid until 02/12/2019 (3 years) ^{/12/} - Calibration event performed in 03/12/2017, valid until 02/12/2020 (3 years) ^{/12/} - Calibration event performed in 01/12/2018, valid until 30/11/2021 (3 years) ^{/12/} - Calibration event performed in 20/01/2020, valid until 19/01/2023 (3 years) ^{/12/} - Calibration event performed in 14/01/2021, valid until 13/01/2024 (3 years) ^{/12/} <i>Calibration events of the backup installed electricity meter M2 S/N MW-1211A330-01:</i> - Calibration event performed in 09/10/2015, valid until 08/10/2018 (3 years) ^{/10/} - Calibration event performed in 03/12/2016, valid until 02/12/2019 (3 years) ^{/10/} - Calibration event performed in 03/12/2017, valid until 02/12/2020 (3 years) ^{/10/} - Calibration event performed in 01/12/2018, valid until 30/11/2021 (3 years) ^{/10/}

	- Calibration event performed in 20/01/2020, valid until 19/01/2023 (3 years) ^{/10/} - Calibration event performed in 14/01/2021, valid until 13/01/2024 (3 years) ^{/10/} <i>Calibration events of the backup installed electricity meter M3 S/N MW-1205A219-01:</i> - Calibration event performed in 09/10/2015, valid until 08/10/2018 (3 years) ^{/7/} - Calibration event performed in 03/12/2016, valid until 02/12/2019 (3 years) ^{/7/} - Calibration event performed in 03/12/2017, valid until 02/12/2020 (3 years) ^{/7/} - Calibration event performed in 01/12/2018, valid until 30/11/2021 (3 years) ^{/7/} - Calibration event performed in 20/01/2020, valid until 19/01/2023 (3 years) ^{/7/} - Calibration event performed in 14/01/2021, valid until 13/01/2024 (3 years) ^{/7/}
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As a conclusion, the Applus+ Certification's verification team was able to confirm that calibration events performed for monitoring instruments/equipment of the VCS project activity were conducted in accordance with the monitoring plan from the CDM PDD and where applicable the VCS PD ^{/2/}, the applied CDM baseline and monitoring methodology during the considered monitoring period. Documented evidence for performed calibration events allowed the Applus+ Certification's verification team to confirm that applied monitoring instruments/equipped operated under appropriate manner during the considered monitoring period.

Assessment of GHG calculations:

An emission reduction calculation spreadsheet correctly and sufficiently presents the determination of achieved baseline emissions due to the displacement of the equivalent amount of electricity generated by the VCS project activity (which would otherwise be generated by existing grid-connected power plants, including fossil-fuel fired power plants (and addition of new power generation units) within the National Electricity Grid of Peru) vis-à-vis applicable GHG calculation approach as per the registered VCS PD ^{/2/}.

Project and leakage emissions by the VCS project activity are correctly indicated in the Monitoring Report as being both equal to zero. This is under conformance with both the registered VCS PD and the applied CDM baseline and monitoring methodology ACM0002: “Consolidated baseline methodology for grid connected electricity generation from renewable sources” (version 12.3.0) /6/. The determination of achieved emission reductions by the VCS project activity during the considered monitoring period is therefore confirmed by the Applus+ Certification’s verification team as being correctly defined and calculated as equal to achieved baseline emissions.

1. Assessment of determination of baseline emissions: The Applus+ Certification’s verification team assessed whether the methods and formulae used to determine baseline emissions for the considered monitoring period are correct and appropriate. The performed assessment encompassed checking whether applied methods and formulae as described in the monitoring plan of the registered CDM PDD / VCS PD /2/ are correctly applied, including confirmation whether the Monitoring Report /1/ includes sufficient details about all parameters and monitored data at the intervals required by the applied CDM baseline and monitoring methodology + applied methodological tool as per the registered VCS PD /2/. The correctness of application of emission factor and default values (ex-ante determined/fixed parameters) as per the registered VCS PD /2/ was also verified.

Through assessment of the Monitoring Report /1/, the Applus+ Certification’s verification team was able to verify that baseline emissions (BE_y) for the considered monitoring period are correctly calculated as follows:

$$BE_y = EG_{PJ,y} * EF_{grid,CM,y}$$

Where:

EG_{PJ,y} Quantity of net electricity generation that is produced and fed into the grid as a result of the implementation of the VCS project activity in year y. Monthly accumulated records of net electricity generated by the VCS project activity during the considered monitoring period are confirmed by the Applus+ Certification’s verification team as being correctly reported in the Monitoring Report /1/ and considered in the determination of baseline emissions as follows:

Year	Amount of electricity generated (MWh/year)
2015 (from 01/10/2015 to 31/12/2015)	16,861.14
2016	77,725.96
2017	108,849.27

2018	104,248.55
2019	105,614.60
2020	92,894.30
2021 (from 01/01/2021 to 30/09/2021)	91,752.92

Further monitoring details for $EG_{PJ,y}$ are summarized above. These values were crosschecked with monthly electricity commercialization receipts ^{/11/}.

$EF_{grid,CM,y}$

Combined margin CO₂ emission factor for grid connected power generation in year y. $EF_{grid,CM,y}$ is correctly calculated ex-post for each year encompassed by the considered monitoring period by applying applicable guidance of the CDM methodological tool “Tool to calculate the emission factor for an electricity system” (version 02.2.0)^{/19/} as follows:

$$EF_{grid,CM,y} = EF_{grid,BM,y} * W_{BM} + EF_{grid,OM,y} * W_{OM}$$

Where: $EF_{grid,BM,y}$ Build margin CO₂ emission factor for the project electricity system in year y. Annual value for $EF_{grid,BM,y}$ are determined ex-ante according to the registered CDM PDD ^{/2/} / VCS PD ^{/2/} as 0.56934 tCO₂/MWh a (value applicable for year 2010 as per official data from COES ^{/24/} . W_{BM} Weighting of build margin emission factor. As per the registered CDM PDD / VCS PD ^{/2/} W_{BM} is ex ante determined as 0.5.

W_{OM} Weighting of operating margin emission factor. As per the registered CDM PDD / VCS PD ^{/2/} W_{OM} is ex-ante determined as 0.5.

$EF_{grid,OM,y}$ Operating margin CO₂ emission factor in year y. Annual values for $EF_{grid,OM,y}$ are calculated ex-post as per applicable guidance of the CDM methodological tool “Tool to calculate the emission factor for an electricity system” (version 02.2.0) (applying the Dispatch data analysis OM calculation method). Annual values applicable for year 2015 to 2021 are correctly determined based on data from grid-connected electricity generation units that are dispatched at the margin during each hour h (also based on official data from COES ^{/24/}).

Under conformance with the registered CDM PDD / VCS PD, $EF_{grid,OM,y}$ is equivalent to $EF_{grid,OM-DD,y}$, which is correctly determined as follows:

$$EF_{grid,OM-DD,y} = \frac{\sum_h EG_{PJ,h} \times EF_{EL,DD,h}}{EG_{PJ,y}}$$

Where:

$EG_{PJ,h}$ Electricity displaced by the project activity in hour h in year y (in MWh). This information is based on direct measurements performed by the installed electricity meters and was checked in spreadsheets “OM 20XX_MACROS_DEF”.

$EF_{EL,DD,h}$ CO₂ emission factor of power units in the top of the dispatch order in hour h in year y (in tCO₂/MWh). This information is calculated based on top 10% of total electricity dispatched in hour h , it was checked in spreadsheet “OM 20XX_MACROS_DEF”/20/. The following formulae is applied:

$$EF_{EEL,DD,h} = \frac{\sum EG_{n,h} * EF_{EL,n,y}}{\sum EG_{n,h}}$$

Where:

$EG_{n,h}$ Net quantity of electricity generated and delivered to the grid by power unit n in hour h (in MWh). This information is based on information made available by COES. Hourly data, it was checked in spreadsheets “OM 20XX_MACROS_DEF” /20/.

$EF_{EL,n,y}$ CO₂ emission factor for grid power unit n in year y (in tCO₂/MWh). This information was checked in spreadsheets “OM 20XX_MACROS_DEF” /20/. By following Option A2, eq. 02 from the “Tool to calculate the emission factor for an electricity system” (version 02.2.0), $EF_{EL,n,y}$ is calculated as $EF_{EL,m,y}$ as follows:

$$EF_{EL,n,y} = \frac{EF_{CO2,n,i,y} * 3.6}{\eta_{n,y}}$$

Where:

$EF_{CO_2,n,i,y}$ Average CO_2 emission factor of fuel type i used in power unit n in year y (tCO_2/GJ). This information is based on information made available by COES. It was checked in spreadsheets “OM 20XX_MACROS_DEF” /20/

$\eta_{n,y}$ Average net energy conversion efficiency of power unit n in year y (ratio). This information is based on information made available by COES. It was checked in spreadsheets “OM 20XX_MACROS_DEF” /20/

n All power units serving the grid in year y except low-cost/must-run power units.

y : Applicable year during monitoring (ex-post option).

Annual calculated values for $EF_{grid,OM-DD,y}$ are correctly reported as follows in the Monitoring Report: :

Year	$EF_{grid,OM-DD,y}$
2015	0.62405 tCO_2/MWh
2016	0.60648 tCO_2/MWh
2017	0.58507 tCO_2/MWh
2018	0.53601 tCO_2/MWh
2019	0.53554 tCO_2/MWh
2020	0.46830 tCO_2/MWh

2021	0.54236 tCO ₂ /MWh
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Thus, after applying these values for the above mentioned both *ex-post* and *ex-ante* parameters related to $EF_{grid,CM,y}$, the values are presented as: $EF_{grid,CM,2015} = 0.59670$ tCO₂/MWh $EF_{grid,CM,2016} = 0.58791$ tCO₂/MWh $EF_{grid,CM,2017} = 0.57720$ tCO₂/MWh $EF_{grid,CM,2018} = 0.55267$ tCO₂/MWh $EF_{grid,CM,2019} = 0.55244$ tCO₂/MWh $EF_{grid,CM,2020} = 0.51882$ tCO₂/MWh $EF_{grid,CM,2021} = 0.55585$ tCO₂/MWh

All related calculations are reported in the emission factor calculation spreadsheet titled “OM 20XX_MACROS_DEF” /20/

The calculated value for baseline emissions for the considered monitoring period from 01/10/2015 to 30/09/2021 is correctly determined as 333,741 tCO₂e.

2. Assessment of determination of project emissions:

The Project Emissions are considered as zero (i.e. $PE_y = 0$) as the project is a hydropower plant, hence complies with the provisions in the applied methodology /06/. Thus $PE_y = 0$.

3. Assessment of achieved emission reductions:

In summary, the Applus+ Certification’s verification team was able to confirm that calculations of baseline emissions and project emissions were correctly performed as per the formulae and methods stated in the registered VCS PD /2/ and under conformance with applicable requirements of the applied CDM baseline and monitoring methodology ACM0002 (version 12.3.0) /6/.

As also confirmed by the Applus+ Certification’s verification team, reported achieved emission reductions for monitoring period from 01/10/2015 to 30/09/2021 are correctly calculated and reported as the difference between determined accumulated values for baseline emissions and project and leakage emissions (null) for the period and are equal to 333,741 tCO₂e.

Reported achieved emission reductions are confirmed as being correctly determined under conformance with all applicable related measurement, reporting and calculation requirements as per the monitoring plan of the registered CDM PDD / VCS PD /2/, applied CDM monitoring and baseline methodology ACM0002 (version 12.3.0) /6/ and applicable CDM methodological tool.

Assessment of related monitoring management and quality assurance procedures for the VCS project activity:

The Applus+ Certification's verification team was able to confirm that robust quality control and quality assurance (QA/QC) procedures are implemented by the project proponent and project operator for preventing or identifying and correct eventual errors or omissions in reported values for the monitoring parameters..

As verified by the Applus+ Certification's verification team, competent and sufficiently trained staff are recruited for operating the VCS project activity and handling related monitoring data. Such employees are found with knowledge not only about the operation of the VCS project activity, but also with sufficient knowledge and competence to ensure the application of all related QA/QC procedures for data recording and storage.

As also assessed by the Applus+ Certification's verification team, the VCS project activity has been operated by sufficiently trained staff by correctly following guidance and instructions of internal documented working procedures.

As confirmed by the Applus+ Certification's verification team, the applied procedures for data collection, data reporting, performance of calibration events and other aspects related to the applied procedures for determining the emission reductions are systematically implemented and have been appropriately followed by the project proponents. While watching (and later further assessing/reviewing (re-watching)) the produced set of live videos (movies) and pictures, the Applus+ Certification's verification team was also able to verify that the operational structure of the VCS project activity is also in line with the information made available in the registered VCS PD ^{/2/} and in the Monitoring Report ^{/1/}.

In summary, Applus+ Certification was also able to verify that detailed management and operational work procedures are in place and confirmed that an operational structure for the VCS project activity is established with responsibilities clearly identified. Moreover, trained staff are employed to ensure data quality.

4.5 Quality of Evidence to Determine GHG Emission Reductions and Removals

Monitoring related activities for the VCS project activity were confirmed by the Applus+ Certification's verification team as being carried out under sufficient conformance with the monitoring plan as per the registered CDM PDD and where applicable the VCS PD ^{/2/} for the project activity (version 2.0, dated 08/08/2014).

As a result of performed verification assessment for the considered monitoring period, Applus+ Certification's verification team was able to confirm that relevant details for all parameters required for the ex-post determination of emission reductions are sufficiently included in the Monitoring Report ^{/1/} and emission reduction calculation spreadsheet ^{/2/} with all figures, assumptions and calculations being consistent and under conformance with applicable requirements and/or guidance of the applied CDM baseline and monitoring methodology ACM0002 (version 12.3.0) ^{/6/} and the monitoring plan contained in the registered CDM PDD and where applicable the VCS PD.

After verifying the reported figures with the raw data sources, it's confirmed that the values of the parameters from the raw data sources are consistent with those quoted in the ER Calculation Spreadsheet and the MR Report. The verification process for the same has been clearly described above in section 4.4 of the report.

4.6 Non-Permanence Risk Analysis

Not applicable as this is a renewable project type.

5 VERIFICATION OPINION

LGA Technological Center, S.A. (referred to as “Applus+ Certification” or the VVB) has been contracted by Empresa Eléctrica Río Doble S.A. (referred to as the Client) to perform the 2nd periodic Verification of GHG Emission Reductions for the project activity: “Las Pizarras Project”, VCS project ID #1348 (referred to as the project activity or PA).

The monitoring period included in the Monitoring Report ^{/1/} for which this verification applies is: 01/10/2015 to 30/09/2021.

The management of Empresa Eléctrica Río Doble S.A. is responsible for the preparation of the GHG emissions data and the reported GHG emissions reductions on the basis set out within the project’s Monitoring Plan in the registered CDM PDD and where applicable the VCS PD ^{/02/}.

Operation project staff of the project proponents Empresa Eléctrica Río Doble S.A. and also the environmental consultancy NTT DATA EUROPE & LATAM GREEN ENGINEERING are responsible for the previously occurred implementation of the VCS project activity and monitoring related activities since its starting of operations, including measurement, recording and reporting of monitoring data and determination of GHG emission reductions achieved by the VCS project activity within the considered monitoring period on the basis applicable monitoring procedures and requirements which are established in the project’s monitoring plan as per the registered CDM PDD and where applicable the VCS PD.

The verification assessment performed by Applus+ Certification is based on the approach defined as per applicable guidance and requirements of VCS rules and/or relevant UNFCCC requirements (whenever applicable). The performed verification assessment applied a risk-based approach, drawing on an understanding of the risks associated with reporting GHG emissions data and the controls in place to mitigate these. As part of the performed verification assessment, Applus+ Certification was able to confirm the following:

- The VCS project activity is implemented and has operated during the considered monitoring period under conformance with its previously defined design and with monitoring related activities/tasks being performed under sufficient compliance with monitoring requirements defined in the monitoring plan as per registered CDM PDD and where applicable the VCS PD for the project activity ^{/2/}.
- The monitoring plan for the VCS project activity as previously defined in the registered CDM PDD and where applicable the VCS PD was designed and has been operated under full conformance with the applied CDM Baseline and monitoring methodology ACM0002 “Consolidated baseline methodology for grid-connected electricity generation from renewable sources” (version 12.3.0) ^{/6/}.
- The Monitoring Report ^{/1/} and other supporting documents provided are confirmed as being sufficiently complete, verifiable and with texts, assumptions, descriptions and calculation under full conformance with the applicable VCS requirements.

- Monitoring instruments required for measurements which are instrumental for the determination of ex-post GHG emission reductions achieved by the VCS project activity during the considered monitoring period were confirmed to be under correct and reliable operation with related maintenance and calibration being appropriately and timely performed.
- GHG emission reductions achieved by the VCS project activity during the considered monitoring period are confirmed as being calculated without material misstatements.
- The GHG verification assessment performed by Applus+ Certification is based on the approach defined as per applicable guidance and requirements of ISO 14064-3:2019 (whenever applicable). The performed verification assessment applied a risk-based approach, drawing on an understanding of the risks associated with reporting GHG emissions data and the controls in place to mitigate these.

In summary, Applus+ Certification was able to confirm that information included in the Monitoring Report ^{/1/} is deemed complete and correct and that the emission reductions achieved by the VCS project activity during the monitoring period from 01/10/2015 to 30/09/2021 are correctly determined and fairly stated and were calculated without material misstatements. Applus+ Certification hereby confirms and certifies that GHG emission reductions achieved by the VCS project activity “Las Pizarras Project” during the monitoring period from 01/10/2015 to 30/09/2021 as reported in the latest version of the Monitoring Report (version 7.0, dated 16/02/2024) ^{/1/} represents the figures summarized below.

Verification period: From 01/10/2015 to 30/09/2021

Verified GHG emission reductions and removals in the above verification period, broken down by calendar year:

For non-AFOLU projects, use the following table:

Year	Baseline emissions or removals (tCO ₂ e)	Project emissions or removals (tCO ₂ e)	Leakage emissions (tCO ₂ e)	Net GHG emission reductions or removals (tCO ₂ e)
2015 ⁷	10,060.96	0	0	10,060.96
2016	45,695.87	0	0	45,695.87
2017	62,827.80	0	0	62,827.80
2018	57,615.05	0	0	57,615.05

⁷ From 01/10/2015 to 31/12/2015.

2019	58,345.73	0	0	58,345.73
2020	48,195.42	0	0	48,195.42
2021 ⁸	51,000.86	0	0	51,000.86
Total	333,741	0	0	333,741

Year	Ex-ante emissions reductions /removals	Achieved emissions reductions /removals	Percent difference	Justification for the difference
2015 (from 01/10/2015)	17,173	10,060.96	-41.41%	Please see below
2016	68,132	45,695.87	-32.93	Please see below
2017	68,132	62,827.80	-7.78%	Please see below
2018	68,132	57,615.05	-15.43%	Please see below
2019	68,132	58,345.73	-14.36%	Please see below
2020	68,132	48,195.42	-29.26%	Please see below
2021 (to 30/09/2021)	50,959	51,000.86	+0.08%	Please see below
Total	408,792	333,741	-18.35%	Please see below

⁸ From 01/01/2021 to 30/09/2021.

As assessed and verified by Applus+ verification team during the remote site visit (08/03/2023), the project's electricity generation depends directly on the meteorological and the hydrographic basin conditions. Thus, that is the justification for the verified decrease on emission reductions when comparing the ex-ante estimations with the verified values of different months during the considered monitoring period.

Moreover, the hydrology of the Chancay river is a curve that shows a flow growth between the months of November - April (rainy season in the area) and a decrease between the months of May - October (dry season), naturally there have been some monthly periods with behaviors different from the usual ones, mainly due to phenomena such as El Niño, and other climatic peaks.

Graphics from the official entity Servicio Nacional de Meteorología e Hidrología del Perú (SENAMHI) were provided as evidence of conditions in the following Link: <https://www.senamhi.gob.pe/?p=monitoreo-hidrologico> . The graphics are regarding a hydrological station located above our position, called Puente Amban.

APPENDIX 1: REFERENCE LIST

1	Empresa Eléctrica Río Doble S.A.: Monitoring report for the VCS project activity “Las Pizarras Project” / monitoring period from 01/10/2015 to 30/09/2021, version 1.0, dated 28/07/2022 (including emission reduction calculation spreadsheet) Monitoring report for the VCS project activity “Las Pizarras Project” / monitoring period from 01/10/2015 to 30/09/2021, version 7.0, dated 16/02/2024 (including emission reduction calculation spreadsheet)
2	Empresa Eléctrica Río Doble S.A.: Registered VCS PD the VCS project activity “Las Pizarras Project” (version 2.0, dated 08/08/2014) Empresa Eléctrica Río Doble S.A.: Registered CDM PDD the previously registered CDM project activity “Las Pizarras Project” (version 4, dated 16/07/2012)
3	AENOR Asociación Española de Normalización y Certificación: “Verification report for the VCS project activity “Las Pizarras Project”, monitoring period from 30/04/2013 to 30/09/2015” (version 02, dated 04/03/2016); AENOR Asociación Española de Normalización y Certificación: “Validation report for the VCS project activity “Las Pizarras Project” (version 01, dated 04/09/2014); Swiss Association for Quality and Management Systems (SQS): “Validation report for the CDM project activity “Las Pizarras Project” (No. P31719.33, dated 19/10/2012);
4	VCS/VERRA: Validation and verification manual (version 3.2) dated 19/10/2016. https://verra.org/wp-content/uploads/2018/03/VCS_Validation_Verification_Manual_v3.2.pdf
5	VCS/VERRA:

	VCS standard version 4.4 (dated 17/01/2023).
6	UNFCCC / CDM: Baseline and monitoring methodology ACM0002 “Consolidated baseline methodology for grid-connected electricity generation from renewable sources”; Version 12.3.0. Available online: https://cdm.unfccc.int/methodologies/DB/HF3LP6041YY0JIP1DK6ZRJO9RSCX3S
7	Peruvian Enterprise Service SAC: Calibration event performed on backup electricity meter M3 S/N MW-1205A219-01. Dated: 09/10/2015 Peruvian Enterprise Service SAC: Calibration event performed on backup electricity meter M3 S/N MW-1205A219-01. Dated: 03/12/2016 Peruvian Enterprise Service SAC: Calibration event performed on backup electricity meter M3 S/N MW-1205A219-01. Dated: 03/12/2017 Peruvian Enterprise Service SAC: Calibration event performed on backup electricity meter M3 S/N MW-1205A219-01. Dated: 01/12/2018 Peruvian Enterprise Service SAC: Calibration event performed on backup electricity meter M3 S/N MW-1205A219-01. Dated: 20/01/2020 Peruvian Enterprise Service SAC: Calibration event performed on backup electricity meter M3 S/N MW-1205A219-01. Dated: 14/01/2021
8	International Organization for Standardization (ISO) Standard ISO 14064-3:2019
9	Empresa Eléctrica Río Doble S.A.:

	Set of sequential live videos (movies) + photographs (pictures) of the VCS project activity “Las Pizarras Project” produced/generated on 08/03/2023
10	Peruvian Enterprise Service SAC: Calibration event performed on backup electricity meter M2 S/N MW-1211A330-01. Dated: 09/10/2015 Peruvian Enterprise Service SAC: Calibration event performed on backup electricity meter M2 S/N MW-1211A330-01. Dated: 03/12/2016 Peruvian Enterprise Service SAC: Calibration event performed on backup electricity meter M2 S/N MW-1211A330-01. Dated: 03/12/2017 Peruvian Enterprise Service SAC: Calibration event performed on backup electricity meter M2 S/N MW-1211A330-01. Dated: 01/12/2018 Peruvian Enterprise Service SAC: Calibration event performed on backup electricity meter M2 S/N MW-1211A330-01. Dated: 20/01/2020 Peruvian Enterprise Service SAC: Calibration event performed on backup electricity meter M2 S/N MW-1211A330-01. Dated: 14/01/2021
11	Empresa Eléctrica Río Doble S.A.: Monthly electricity commercialization receipts (period from 01/10/2015 to 30/09/2021) for the electricity generation infrastructure implemented as part of the VCS project activity “Las Pizarras Project”
12	Peruvian Enterprise Service SAC: Calibration event performed on main electricity meter M1 S/N MW-1211A328-01. Dated: 09/10/2015 Peruvian Enterprise Service SAC: Calibration event performed on main electricity meter M1 S/N MW-1211A328-01. Dated: 03/12/2016

	Peruvian Enterprise Service SAC: Calibration event performed on main electricity meter M1 S/N MW-1211A328-01. Dated: 03/12/2017 Peruvian Enterprise Service SAC: Calibration event performed on main electricity meter M1 S/N MW-1211A328-01. Dated: 01/12/2018 Peruvian Enterprise Service SAC: Calibration event performed on main electricity meter M1 S/N MW-1211A328-01. Dated: 20/01/2020 Peruvian Enterprise Service SAC: Calibration event performed on main electricity meter M1 S/N MW-1211A328-01. Dated: 14/01/2021
13	AENOR Asociación Española de Normalización y Certificación: 1st Verification Report of Las Pizarras Project for the verification period from 30/04/2013 to 30/09/2015. Version 02, dated 04/03/2016 Available online: https://registry.verra.org/app/projectDetail/VCS/1348
14	Municipality of Santa Cruz-Cajamarca License of construction n. 1827
15	Schneider Electric: ION 8650 Technical Data Sheet of the main electricity meter. Available online: https://www.se.com/br/pt/product-range/61053-ion8650/
16	COES: Primary monitoring records for electricity generation and electricity consumption (period from 01/10/2015 to 30/09/2021) for the electricity generation infrastructure implemented as part of the VCS project activity “Las Pizarras Project”
17	Peruvian Electric Concessions Law (Law No. 25844), Available online:

	https://cdn.www.gob.pe/uploads/document/file/889384/LEY-28832.pdf?v=1593189082
18	UNFCCC/CDM: “Guideline – Application of materiality in verifications”, version 02.0. https://cdm.unfccc.int/filestorage/e/x/t/extfile-20150225171039012-iss_guid08.pdf/iss_guid08.pdf?t=Nnd8cjhpNm1nfDCyUV7i5kNG_5KRiOiEzL_k
19	UNFCCC/CDM: Methodological tool “Tool to calculate the emission factor for an electricity system” (Version 02.2.0). Available online: https://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-07-v1.1.pdf/history_view?gclid=Cj0KCQjw94WZBhDtARIsAKxWG-99NTmogI2xQD60A1avU8ecrTFq5ibefzQwm0F6JaUJHKScB2VsbFEaAingEALw_wcB
20	Empresa Eléctrica Río Doble S.A.: Emission factor calculation spreadsheets: “OM 2015_MACROS_DEF” “OM 2016_MACROS_DEF” “OM 2017_MACROS_DEF” “OM 2018_MACROS_DEF” “OM 2019_MACROS_DEF” “OM 2020_MACROS_DEF” “OM 2021_MACROS_DEF”
21	UNFCCC/CDM: CDM Validation and Verification Standard for project activities (version 03.0) Available online: https://cdm.unfccc.int/Reference/Standards/index.html
22	VCS/VERRA: VCS Project Description Template version 4.2 (dated 21/12/2022).
23	Applus+ Certification:

	VCS – Verification Work Plan: Las Pizarras Project dated 07/03/2023
24	COES: Information data for emission factor calculation Available online: https://www.coes.org.pe/Portal/publicaciones/estadisticas <u>COES:</u> <u>2006 IPCC Guidelines on National GHG Inventories</u> COES: Generation meters 2016 Available online: https://www.coes.org.pe/Portal/mediciones/medidoresgeneracion
25	Applus+ Certification: Verification plan for the 2nd Monitoring period of VCS project activity Las Pizarras Project dated 07/03/2023.

APPENDIX 2: LIST OF RAISED CORRECTIVE ACTION REQUESTS (CAR), CLARIFICATION REQUESTS (CL) AND FORWARD ACTION REQUESTS (FAR)

The descriptions of Correction Action Requests (CARs), Clarification Requests (CLs) and Forward Action Requests (FARs), if any, issued by the Applus+ Certification's verification team as part of the performed verification assessment are summarized in the tables below, which also includes the summary of the actions and responses from the project proponents for successfully addressing and closing the raised findings.

CAR ID	01	Date: 08/03/2023
Description of CAR		
The Monitoring Report is not fully completed under conformance with Monitoring Report template version 4.2.		
Project proponent response		Date: 23/03/2023
As a response to the raised CAR, the Monitoring Report has been updated according to the last version of the Monitoring Report Template (version 4.2 applicable since 21st December 2022).		
DOE assessment		Date: 24/04/2023
As confirmed by the Applus+ Certification's verification team, related amendments/corrections made in the revised version of the Monitoring Report sufficiently address the raised CAR. This CAR is thus closed.		

CAR ID	02	Date: 08/03/2023
Description of CAR		

Date format as presented in the Monitoring Report cover is not under conformance with MR template version 4.2.	
Project proponent response	Date: 23/03/2023
As a response to the raised CAR, the format of the Monitoring Report has been updated according to the last version of the Monitoring Report Template (version 4.2 applicable since 21st December 2022).	
DOE assessment	Date: 24/04/2023
As confirmed by the Applus+ Certification's verification team, related amendments/corrections made in the revised version of the Monitoring Report sufficiently address the raised CAR. This CAR is thus closed.	

CAR ID	03	Date: 08/03/2023
Description of CAR		
Electricity generation records as reported in spreadsheets "OM XXXX_MACROS_DEF" do not indicate any null (zero) value for reported project operation interruption periods (which are reported in table 4 of the Monitoring Report). Furthermore, it is not clear how values for electricity generated are selected from "OM XXXX_MACROS_DEF" spreadsheets for being considered in emission reduction calculations.		
Project proponent response		Date: 23/03/2023
As a response to the raised CAR, details for calibration event(s) performed in year 2014 (or a previous calibration event(s)) valid/applicable for electricity meters M1, M2 and M3 are not reported in the Monitoring Report. Moreover, it is not demonstrated that all periods encompassed by the considered monitoring period meet every 3-year calibration frequency for installed electricity meters.		
DOE assessment		Date: 25/04/2023
As confirmed by the Applus+ Certification's verification team, related amendments/corrections made in the revised version of the Monitoring Report sufficiently address the raised CAR. This CAR is thus closed.		

CAR ID	04	Date: 08/03/2023
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Description of CAR	
The parameter $EF_{CO2,i,y}$ and $EF_{CO2,m,i,y}$ are wrongly listed as ex-ante and monitored parameter, thus not under conformance with ACM0002 version 12.3.0.	
Project proponent response	Date: 23/03/2023
As a response to the raised CAR, according to the PD, parameter $EF_{CO2,i,y}$ and $EF_{CO2,m,i,y}$ was registered in both sections. In both cases, possible updates of the IPCC emission factor values were considered. Anyway, there are two fuel emission factors that were not included at the time of registration: Other Primary Solid Biomass = 84,700 ton/GJ and Landfill Gas = 46,200 ton/GJ. These two new fuel values have been added to the parameter in section 4.1, and it has been removed the mention of this parameter in section 4.2 of the monitoring report. These changes have been included as Project Description Deviation in Section 3.2.2 of the Monitoring Report.	
DOE assessment	Date: 24/04/2023
As confirmed by the Applus+ Certification's verification team, related amendments/corrections made in the revised version of the Monitoring Report sufficiently address the raised CAR. This CAR is thus closed.	

CAR ID	05	Date: 08/03/2023
Description of CAR		
Data source of data used for the determination of $EG_{m,y}$ and $EG_{n,y}$ is not reported in Section 4.2 of the Monitoring Report nor in the OM calculation spreadsheets.		
Project proponent response		Date: 23/03/2023
As a response to the raised CAR, Data source for the determination of $EG_{m,y}$ and $EG_{n,y}$ has been added in section 4.2 and in OM calculation spreadsheets: https://www.coes.org.pe/Portal/mediciones/medidoresgeneracion		
DOE assessment		Date: 24/04/2023
As confirmed by the Applus+ Certification's verification team, related amendments/corrections made in the revised version of the Monitoring Report sufficiently address the raised CAR. This CAR is thus closed.		

CAR ID	06	Date: 08/03/2023
Description of CAR		
Section 4.1 does not include data source for applied values for parameter $EF_{EL,m,y}$.		
Project proponent response		Date: 23/03/2023
As a response to the raised CAR, data source for the determination of $EF_{EL,m,y}$ has been added in section 4.1 and in OM calculation spreadsheets for $EF_{CO2,m,y,l}$ and $n_{m,y}$ parameters.		
DOE assessment		Date: 24/04/2023
As confirmed by the Applus+ Certification's verification team, related amendments/corrections made in the revised version of the Monitoring Report sufficiently address the raised CAR. This CAR is thus closed.		

CAR ID	07	Date: 08/03/2023
Description of CAR		
The emission reduction spreadsheet includes an incorrect sum of ex-ante estimations of ER and BE in tab/sheet "Emission reductions".		
Project proponent response		Date: 23/03/2023
As a response to the raised CAR, the incorrect sum of ex-ante estimation of ER and BE in "Emission reductions" spreadsheet has been corrected. The value for ex-ante estimation for the monitoring period is 408.792 tCO _{2e} .		
DOE assessment		Date: 24/04/2023
As confirmed by the Applus+ Certification's verification team, related amendments/corrections made in the revised version of the Monitoring Report sufficiently address the raised CAR. This CAR is thus closed.		

CAR ID	08	Date: 08/03/2023
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Description of CAR	
The starting date of the project as indicated in Section 1.1 is not in accordance with the information presented in Table 1. Moreover, in the same Section the total installed capacity of the project activity is wrongly described.	
Project proponent response	Date: 23/03/2023
As a response to the raised CAR, the starting date of the project recorded in Table 1 had an inconsistency. In document “Acta de Recepción” provided as evidence, it confirms that the starting date of the construction works of the power plant was on 14 th April 2011. This date has been corrected in Table 1. Moreover, the total installed capacity was corrected in the Monitoring Report.	
DOE assessment	Date: 24/04/2023
As confirmed by the Applus+ Certification’s verification team, related amendments/corrections made in the revised version of the Monitoring Report sufficiently address the raised CAR. This CAR is thus closed.	

CAR ID	09	Date: 08/03/2023
Description of CAR		
Monitoring details as presented in Table 3 are incomplete. Dates and evidence are missing.		
Project proponent response		Date: 23/03/2023
As a response to the raised CAR, no incomplete monitoring details have been identified according to monitoring report template version 4.2. Evidence provided on 21/04/2023.		
DOE assessment		Date: 24/04/2023
As confirmed by the Applus+ Certification’s verification team, related amendments/corrections made in the revised version of the Monitoring Report sufficiently address the raised CAR. This CAR is thus closed.		

CAR ID	10	Date: 08/03/2023
Description of CAR		

No explanation/justification for occurred significant decrease in reported values for net electricity generation along specific months during the whole monitoring period are included in the Monitoring Report.	
Project proponent response	Date: 27/04/2023
As a response to the raised CAR, explanation clarifying the significant decrease for net electricity generation values along some months during the monitoring period has been added at the end of section 5.1 of the Monitoring Report.	
DOE assessment	Date: 25/07/2023
As confirmed by the Applus+ Certification's verification team, related amendments/corrections made in the revised version of the Monitoring Report sufficiently address the raised CAR. This CAR is thus closed.	

CAR ID	11	Date: 20/03/2023
Description of CAR		
Reported values of electricity generation for June/2017 and September/2017 as per the emission reductions spreadsheet are not in accordance with the values verified in raw data spreadsheets “201706 ION Pos 103 Pizarras” and “201709 ION Pos 103 Pizarras”.		
Project proponent response		Date: 27/03/2023
As a response to the raised CAR, an inconsistency has been identified in “201706 ION Pos 103 Pizarras” and “201709 ION Pos 103 Pizarras” spreadsheet. The names of the spreadsheets were not in accordance with the information recorded in the document. The electricity generation (MWh) in both excels are correct. The name of the Spreadsheet has been corrected according to the date on which the generation was registered. “201706 ION Pos 103 Pizarras_v2” and “201709 ION Pos 103 Pizarras_v2” provided as evidence.		
DOE assessment		Date: 24/04/2023
As confirmed by the Applus+ Certification’s verification team, related amendments/corrections made in the revised version of the Monitoring Report sufficiently address the raised CAR. This CAR is thus closed.		

CAR ID	12	Date: 08/03/2023
Description of CAR		
No explanation/justification for the reported values of electricity generation being multiplied by 0.9982738 or 0.9986117 (as verified in raw data spreadsheets “20XXXX ION Pos 103 Pizarra”) is provided in the Monitoring Report.		
Project proponent response		Date: 27/04/2023
As a response to the raised CAR, explanation has been added in section 5.1 of the Monitoring Report.		
DOE assessment		Date: 25/07/2023
As confirmed by the Applus+ Certification’s verification team, related amendments/corrections made in the revised version of the Monitoring Report sufficiently address the raised CAR. This CAR is thus closed.		

CAR ID	13	Date: 08/06/2023
Description of CAR		
Section 4.1 of the Monitoring Report does not confirm the parameter $EF_{grid,BM}$ as being determined ex-ante (as outlined in the CDM PDD for the project activity and other Sections of the Monitoring Report).		
Project proponent response		Date: 25/07/2023
As a response to the raised CAR, $EF_{grid,BM}$ is not correctly listed in Section 4.1 and all related information about this project description deviation is correctly mentioned in Section 3.2.2.		
DOE assessment		Date: 30/07/2023
As confirmed by the Applus+ Certification’s verification team, related amendments/corrections made in the revised version of the Monitoring Report sufficiently address the raised CAR. This CAR is thus closed.		

CAR ID	14	Date: 08/06/2023
Description of CAR		

The stepwise approach for the determination of the set of annual values for operational margin emission factor for the electricity grid the project activity is connected to ($EF_{grid,OM-DD}$) by applying dispatch data analysis OM method and as presented in set of yearly emission factor calculation spreadsheets termed “OM XXXX_MACRO_S_DEF_v2” are not fully performed under conformance with guidance from the CDM methodological tool “Tool to calculate the emission factor for an electricity system” (version 02.2.0) in the particular context of the following requirement of the tool:

“At each hour h , stack each grid power units electricity generation using the merit order. The group of grid power units n in the dispatch margin includes the units in the top $x\%$ of total electricity dispatched in the hour h , where $x\%$ is equal to the greater of either:

(a) 10%; or

(b) The quantity of electricity displaced by the project activity during hour h divided by the total electricity generation by grid power plants during that hour h ”.

Furthermore, yearly values for $EF_{grid,OM-DD}$ are incorrectly determined as the average of accumulated monthly values for (instead accumulated annual values).

Project proponent response

Date: 25/07/2023

As a response to the raised CAR, $EF_{grid,OM}$ is correctly calculated and the OM calculation is correctly demonstrated.

DOE assessment

Date: 30/07/2023

As confirmed by the Applus+ Certification’s verification team, related amendments/corrections made in the revised version of the Monitoring Report sufficiently address the raised CAR. This CAR is thus closed.

CAR ID

15

Date: 19/01/2024

Description of CAR

Details about the monitoring parameter “Average net energy conversion efficiency of power unit m in year .” ($\eta_{m,y}$) are not included in Section 4.2 of the Monitoring Report.

Project proponent response

Date: 29/01/2024

As a response to the raised CAR, details about the monitoring parameter “Average net energy conversion efficiency of power unit m in year .” ($\eta_{m,y}$) are not included in Section 4.2 of the Monitoring Report.

DOE assessment	Date: 13/02/2024
As confirmed by the Applus+ Certification's verification team, related amendments/corrections made in the revised version of the Monitoring Report sufficiently address the raised CAR. This CAR is thus closed.	

CAR ID	16	Date: 19/01/2024
Description of CAR		
It is not transparently and sufficiently indicated in the Monitoring Report that recorded every-15-minute values for $EG_{PJ,h}$ are used to calculate the accumulated annual electricity generation ($EG_{PJ,y}$).		
Project proponent response		Date: 29/01/2024
As a response to the raised CAR, a relate disclaimer was added in Section 4.2 of the Monitoring Report.		
DOE assessment		Date: 13/02/2024
As confirmed by the Applus+ Certification's verification team, related amendments/corrections made in the revised version of the Monitoring Report sufficiently address the raised CAR. This CAR is thus closed.		

CAR ID	17	Date: 19/01/2024
Description of CAR		
The consideration of the referred 0.998 electricity loss compensation factor in reported values for electricity generation is not sufficiently confirmed in the Monitoring Report. for both recorded every-15-minute values for monitoring parameter $EG_{PJ,h}$ and reported annual values for monitoring parameter $EG_{PJ,y}$.		
Project proponent response		Date: 29/01/2024
As a response to the raised CAR, a relate disclaimer was added in Section 5.1 of the Monitoring Report.		
DOE assessment		Date: 13/02/2024

As confirmed by the Applus+ Certification's verification team, related amendments/corrections made in the revised version of the Monitoring Report sufficiently address the raised CAR. This CAR is thus closed.