



GS VERIFICATION AND CERTIFICATION REPORT

– 3RD PERIODIC –

GIGAWATT GLOBAL COOPERATIEF U.A

GIGAWATT GLOBAL PROGRAMME OF
ACTIVITIES; PoA ID: GS 3587

PoA GS REF. NO.: VERIFICATION No.:3

Report No: 21/019

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	8003030903-21/019	2.0	15/07/2021	22/12/2021
Programme of Activities:	PoA Title:	GS Registration date:	GS No.:	
	Gigawatt Global Programme of Activities; PoA ID: GS 3587	12/09/2016	3587	
	Verification No.:	3rd periodic verification		
	PoA Scale	☐ Large Scale ☒ Small Scale		
	Duration of the PoA:	From:	To:	
	28 years	15/01/2014	14/01/2042	
	VPA #1 title:	Inclusion date	GS No.:	
	ASYV 8.5 MW Solar PV Project (CPA-001) (GS3606)	12/09/2016	3606	
	Crediting period:	From:	To:	
	☒ Renewable (7y) ☐ Fixed (10y)	23/10/2015	22/10/2022	
Project Participant(s):	Client:	Coordinating/Managing Entity		
	Gigawatt Global Cooperatief U.A	Gigawatt Global Cooperatief U.A		
	Non-Annex 1 country:	Annex 1 country:		
	Rwanda	The Netherlands		
	PP from non-Annex 1 country:	PP from Annex 1 country:		
	Gigawatt Global Cooperatief U.A	Gigawatt Global Cooperatief U.A		
VPA No.	Monitoring period (MP):		Applied methodology/ies	
1	From:	To:	No. of days:	Title:
	01/09/2018	31/12/2020	853	AMSLD: Grid connected renewable electricity generation
	Version No.:		Scope(s) / TA(s)	
	18.0		1/1.2	
Monitoring Report #1:		Monitoring Report #2:		
Draft version:	Final version:	VPA Batch	Draft version:	Final version:
13/04/2021, v 1.0	08/11/2021, v 4.0	1	N/A	N/A
Verification team / Technical Review and Final Approval:	Verification Team:	Technical review:	Final approval:	
	Lubana, David – TL/TE	Rami, Kunal	Kunal Rami	
Key dates of verification:	Publication of Work Plan:	PFR issued:	On-site¹ (from):	On-site (to):
	N/A	15/04/2021	15/04/2021	15/04/2021
Summary of Verification opinion	Gigawatt Global Cooperatief U.A has commissioned the TÜV NORD JI/CDM Certification Program to carry out the 3rd periodic verification of the VPA titled: "Gigawatt Global Programme of Activities; PoA ID: GS 3587 " and related PoA ID GS3587, with regard to the relevant requirements for CDM-GS project activities. As a result of this verification, the verifier confirms that: ☒ all operations of the project are implemented and installed as planned and described in the validated project design document, ☒ the monitoring plan is in accordance with the applied approved GS methodology, ☒ the installed equipment essential for measuring parameters required for calculating emission reductions are calibrated appropriately, ☒ the monitoring system is in place and functional. The project has generated GHG emission reductions, and			

¹ Other Means of Verification were availed



	☒ the GHG emission reductions are calculated without material misstatements in a conservative and appropriate manner. ☒ the project has contributed to sustainable development. TÜV NORD JI/CDM CP herewith confirms that the project has achieved emission reductions in the above-mentioned reporting period as listed below (verified amount).		
Emission reductions: [tCO ₂ e]	Total verified amount	As per draft MR #1:	As per VPA-DD:
	20,035	20,035	23,451
	20,035	As per draft MR #2	
		20,035	
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Abbreviations:

CA	Corrective Action / Clarification Action
CAR	Corrective Action Request
CDM	Clean Development Mechanism
CER	Certified Emission Reduction
CO₂	Carbon dioxide
CO_{2eq}	Carbon dioxide equivalent
CL	Clarification Request
VPA-DD	Component Project Activity Design Document
DVerR	Draft Verification Report
ER	Emission Reduction
FAR	Forward Action Request
GHG	Greenhouse gas(es)
MP	Monitoring Plan
MR	Monitoring Report
PA	Project Activity
PoA-DD	Programme of Activities Design Document
PP	Project Participant
QA/QC	Quality Assurance / Quality Control
UNFCCC	United Nations Framework Convention on Climate Change
VVS	Validation and Verification Standard

Table of Contents	Page
1.1. Objective	7
1.2. Scope	7
2.1. Technical Project Description of the Programme of Activities	9
2.2. Technical Description of the Component Project Activities	9
2.3. Project Location	9
2.4. Project Verification History	10
3.1. Verification Steps	11
3.2. Contract review	11
3.3. Appointment of team members and technical reviewers	11
3.4. Verification Planning	12
3.5. Desk review	14
3.6. On-site assessment	15
3.7. Draft verification reporting	18
3.8. Resolution of CARs, CLs and FARs	18
3.9. Final reporting	19
3.10. Technical review	19
3.11. Final approval	19
5.1. Involved Parties and Project Participants	33
5.2. Implementation of the project	33
5.3. Project history	33
5.4. Post registration changes	34
5.5. Compliance with the monitoring plan	34
5.6. Compliance with the monitoring methodology	34
5.7. Carbon Monitoring parameters	34
5.8. Monitoring report(s)	36
5.9. Sampling	36
5.10. Implementation of the sampling plan	36
5.11. Sampling approaches during verification	36
5.12. ER Calculation	36
5.13. Quality Management	37
5.14. Actual emission reductions during the first commitment period and the period from 1 January 2013 onwards	37
5.15. Comparison with ex-ante estimated emission reductions	37
5.16. Contribution to Sustainable Development	37
5.17. Overall Aspects of the Verification	43
5.18. Grievances	43



5.19. Hints for next periodic Verification

44

1. INTRODUCTION

Gigawatt Global Cooperatief U.A has commissioned the TÜV NORD JI/CDM Certification Program (CP) to carry out the 3rd periodic verification of the VPA-1 titled:

“ASYV 8.5 MW Solar PV Project (CPA-001) (GS3606)”

Under corresponding Programme of Activities ID GS3587 with regard to the relevant requirements for GS project activities. The verifiers have reviewed the implementation of the monitoring plan(s) (MP) as described in the registered PoA-DD and VPA-DD and GS4GG Transition Annex.

GHG data for this monitoring period was verified in detailed manner applying the set of requirements, audit practices and principles as required under the CDM Validation and Verification Standard^{/VVS/} of the UNFCCC and the applied methodology.

Sustainable Development Indicators for this monitoring period were verified in detailed manner as required under the GS Transition Annex, the GS Validation and Verification Manual^{/GS-VVM/} and GS4GG Requirements.

This report summarizes the findings and conclusions of this 3rd periodic verification of the above-mentioned UNFCCC and GS registered project activity.

1.1. Objective

The objective of the verification is the review and ex-post determination by an independent entity of the GHG emission reductions. It includes the verification of the:

- implementation and operation of the project activity as given in the VPA-DD,
- compliance of the actual monitoring system and procedures with the provisions of the monitoring plan as a part of registered PDD, the GS SDG monitoring matrix and the applied approved monitoring methodology,
- data given in the monitoring report by checking the monitoring records, the emissions reduction calculation and supporting evidence,
- accuracy of the monitoring equipment,
- quality of evidence,
- significance of reporting risks and risks of material misstatements,
- SDG Indicators and corresponding supporting evidences

1.2. Scope

The verification of this project is based on the validated Programme of Activities design document^{/GSPoA-DD/}, the validated Component Project Activity Design Document (VPA-DD), the The transition annex, the monitoring report(s), emission reduction calculation spreadsheet^{/XLS/}, GS4GG Requirements^{/GS4GG TA/}, supporting documents made available to the verifier and information collected through performing interviews and during the remote assessments. Furthermore, publicly available information was considered as far as available and required.

The verification is carried out on the basis of the following requirements, applicable for this Programme of Activities:

- Article 12 of the Kyoto Protocol ^{/KP/},
- guidelines for the implementation of Article 12 of the Kyoto Protocol as presented in the Marrakech Accords under decision 3/CMP.1 ^{/MA/}, and subsequent decisions made by the Executive Board and COP/MOP,
- other relevant rules, including the host country legislation,
- CDM Validation and Verification Standard ^{/VVS/},
- monitoring plan as given in the registered PoA-DD and VPA-DD
- GS last MPII Issuance Review
- Approved GS Methodology ^{/GSM/}
- GS4GG Requirements ^{/GS4GG TA/}

2. GHG PROJECT DESCRIPTION

2.1. Technical Project Description of the Programme of Activities

The stated objective of the PoA is to support the development and implementation of utility scale solar photovoltaic (PV) projects in the Republic of Rwanda, to displace grid-connected, fossil fuel-based electricity generation, by promoting grid-connected renewable energy-based electricity generation.

This VPA is the only one implemented so far and covers the technology and measure specified by the PoA generic CPA-DD.

2.2. Technical Description of the Component Project Activities

The VPA has installed a greenfield solar photovoltaic renewable energy power plant. The CPA uses solar photovoltaic (PV) modules of the BYD 300P6C-36 type, with a single axis tracking system. convert solar irradiation into electrical energy. The CPA has a peak output capacity of 8.5 MWp consisting of 28,360 solar PV modules and covering 16 hectares.² The VPA is expected to have an annual average net electricity generation of 15,275 MWh for the first crediting period.

Table 2-1.1: Technical data of the component project activity

Parameter	Value
PV Module type	Si-Poly
PV Model	BYD 300P6C-36 series
Manufacturer	BYD
Rated Nominal Capacity	300Wp
Umpp	35.97 V
Imp	8.34 A
Umax	1000 V
Max fuse Current rating	15 A
Tolerance	+3%
Number of modules	28,360
Operating Voltage	600-850 V
Array Efficiency (STC)	15.47%
Array Nominal Capacity	8.5 MWp
Array operating characteristics	646 V, 11812 A
Lifetime	25 years

2.3. Project Location

The details of the VPA locations are given in Table 2-2:

Table 2-2: VPA(s) Location

² Feasibility Study for Solar PV power plant in Rwanda (2012)

VPA No.: 1	Project Location
Host Country	Rwanda
Region:	Rwamagana District, Rubona Sector, Karambi cell
Project location address:	Agahozo-Shalom Youth Village (ASYV)
Coordinates	
Latitude	Longitude
- 2.024050°	30.377978°
- 2.027697°	30.379181°
- 2.028694°	30.375042°
- 2.026692°	30.374444°

2.4. Project Verification History

Essential events since the registration of the PoA-DD are presented in the following Table 2-3.

Table 2-3: Status of previous monitoring periods

#	Item	Time	Status
1.	PoA-DD registration	12/09/2016	Completed
2.	Inclusion of VPA-0001	12/09/2016	Completed
3.	1 st Monitoring period	23/10/2015 – 28/02/2017	Issued
4.	2 nd Monitoring period	01/03/2017 to 31/08/2018	Issued
5	3 rd Monitoring period	01/09/2018 to 31/12/2020	-

An overview of all Post Registration Changes is given in the following table.

Table 2-4: Overview Post Registration Changes

#	Changes on PoA-DD/VPA-DD	Applicable from – to / as of	MP	Type of post registration change ¹⁾	Description	Status ²⁾ / Date
	N/A					

- ¹⁾ IVPAiPoA : Inclusion of component project activities in programme of activities
 TDfrMP : Temporary deviation from registered monitoring plan
 TDfMM : Temporary deviation from the monitoring methodology
 CrVPADD : Corrections to the registered VPA-DD
 PCfrMP : Permanent changes from registered Monitoring Plan
 PCfMM : Permanent changes from Monitoring Methodology
 CoPD : Changes to the project design of a registered PoA, or generic or specific VPA

- ²⁾ Approval (by Accreditation Body) or Acceptance (by DOE/ VVB)

3. METHODOLOGY AND VERIFICATION SEQUENCE

3.1. Verification Steps

The verification consisted of the following steps:

- Contract review
- Appointment of team members and technical reviewers
- A desk review of the carbon and SD Monitoring Reports^{/MR/} submitted by the client and additional supporting documents with the use of customized verification protocol^{/CPM/} according to the Validation and Verification Standards^{/VVS/GS-VVM/},
- Verification planning,
- On-Site assessment,
- Background investigation and follow-up interviews with personnel of the project developer and its contractors,
- Draft verification reporting
- Resolution of corrective actions (if any)
- Final verification reporting
- Technical review
- Final approval of the verification.

3.2. Contract review

To assure that

- the project falls within the scopes for which accreditation is held,
- the necessary competences to carry out the verification can be provided,
- Impartiality issues are clear and in line with the CDM accreditation requirements

a contract review was carried out before the contract was signed.

3.3. Appointment of team members and technical reviewers

On the basis of a competence analysis and individual availabilities a verification team, consisting of one team leader was appointed.

The list of involved personnel, the tasks assigned, and the qualification status are summarized in the Table 3-1 below.

Table 3-1: Involved Personnel



	Name	Company	Function ¹⁾	Qualification Status ²⁾	Scheme competence ³⁾	Technical competence ⁴⁾	Verification competence ⁵⁾	Host country Competence	On-site visit ³
☒ Mr. ☐ Ms.	Lubanga, David	-	TL	SA	☒	1.2	☒	☒	☒
☒ Mr. ☐ Ms.	Rami, Kunal	TN CERT GmbH	TR/FA ^{B)}	SA	☒	1.2	☒	☐	☐

¹⁾ TL: Team Leader; TM: Team Member, TR: Technical review; OT: Observer-Team, OR: Observer-TR; FA: Final approval

²⁾ GHG Auditor Status: A: Assessor; LA: Lead Assessor; SA: Senior Assessor; T: Trainee; TE: Technical Expert

³⁾ GHG auditor status (at least Assessor)

⁴⁾ As per S01-MU03 or S01-VA070-A2 (such as 1.1, 1.2, ...)

⁵⁾ In case of verification projects

A) Team Member: GHG auditor (at least Assessor status), Technical Expert (incl. Host Country Expert or Verification Expert), not ETE

B) No team member

All team members contributed to the review of documents, the assessment of the component project activities and to the preparation of this report under the leadership of the team leader.

Technical experts contributed to the assessment of special aspects of the project activity, e.g. technical or host country aspects.

Statements of competence for the above-mentioned team members are enclosed in annex 2 of this report.

All above stated auditors are Gold Standard approved auditors as per <https://www.goldstandard.org/resources/approved-auditors>.

3.4. Verification Planning

In order to ensure a complete, transparent and timely execution of the verification task the team leader has planned the complete sequence of events necessary to arrive at a substantiated final verification opinion.

Various tools have been established in order to ensure an effective verification planning.

Risk analysis and detailed audit testing planning

For the identification of potential reporting risks and the necessary detailed audit testing procedures for residual risk areas table A-1 is used. The structure and content of this table is given in Table 3-2 below.

Table 3-2: Table A-1; Identification of verification risk areas

³ Remote Assessment was performed. Justification is included in this report

Table A-1: GHG calculation procedures and management control testing / Detailed audit testing of residual risk areas and random testing

Identification of potential reporting risk	Identification, assessment and testing of management controls	Areas of residual risks	Additional verification testing performed	Conclusions and Areas Requiring Improvement (including Forward Action Requests)
The following potential risks were identified and divided and structured according to the possible areas of occurrence.	The potential risks of raw data generation have been identified in the course of the monitoring system implementation. The following measures were taken in order to minimize the corresponding risks. The following measures are implemented:	Despite the measures implemented in order to reduce the occurrence probability the following residual risks remain and have to be addressed in the course of every verification.	The additional verification testing performed is described. Testing may include: - Sample cross checking of manual transfers of data - Recalculation - Spreadsheet 'walk throughs' to check links and equations - Inspection of calibration and maintenance records for key equipment - Check sampling analysis results Discussions with process engineers who have detailed knowledge of process uncertainty/error bands.	Having investigated the residual risks, the conclusions should be noted here. Errors and uncertainties are highlighted.

The completed table A-1 is enclosed in Annex 1 (table A-1) to this report.

Project specific periodic verification checklist

In order to ensure transparency and consideration of all relevant assessment criteria, a project specific verification protocol has been developed. The protocol shows, in a transparent manner, criteria and requirements, means and results of the verification. The verification protocol serves the following purposes:

- It organizes, details and clarifies the requirements a CDM/GS project is expected to meet for verification
- It ensures a transparent verification process where the verifying VVB documents how a particular requirement has been proved and the result of the verification.

The basic structure of this project specific verification protocol for the periodic verification is described in Table 3-3.

Table 3-3: Table A-2; Structure of the project specific periodic verification checklist

Table A-2: Periodic verification checklist

Checklist Item	Reference	Verification Team Comments	Draft Conclusion	Final Conclusion
<i>The checklist items in Table A-2 are linked to the various requirements the monitoring of the project should meet. The checklist is organised in various sections as per the requirements of the topic and the individual project activity. It further includes guidance for the verification team.</i>	<i>Gives reference to the information source on which the assessment is based on.</i>	<i>The section is used to elaborate and discuss the checklist item in detail. It includes the assessment of the verification team and how the assessment was carried out. The reporting requirements of the VVS shall be covered in this section.</i>	<i>Assessment based on evidence provided if the criterion is fulfilled (OK), or a CAR, CL or FAR (see below) is raised. The assessment refers to the draft verification stage.</i>	<i>In case of a corrective action or a clarification the final assessment at the final verification stage is given.</i>

The periodic verification checklist (verification protocol) is the backbone of the complete verification starting from the desk review until final assessment. Detailed assessments and findings are discussed within this checklist and not necessarily repeated in the main text of this report.

The completed verification protocol is enclosed in Annex 1 (table A-2) to this report.

3.5. Desk review

During the desk review all documents initially provided by the client and documents relevant for the verification were reviewed. The main documents are listed below:

- the last revision of the PoA-DD and VPA-DD including the monitoring plan^{/GSPoA-DD/VPA1/},
- the last revision of the validation report^{/VAL/},
- documentation of previous verifications^{/VER/}
- the monitoring report(s), including the claimed emission reductions for the project^{/MR/},
- GS issuance review report for previous verification^{/IRR/}
- the emission reduction calculation spreadsheet^{/XLS/}.
- The SD monitoring report
- GS4GG Requirements^{/GS4GG TA/}

Other supporting documents, such as publicly available information on the UNFCCC website and background information were also reviewed.

3.6. On-site assessment

As most essential part of the verification exercise, it is indispensable to carry out an inspection on site in order to verify that the project is implemented in accordance with the applicable criteria and applied methodology and registered PDD. Furthermore, the on-site assessment is necessary to check the monitoring data with respect to accuracy of the calculation of emission reductions. Improvements in specified SDG indicators attributable to the project or programme, and the achievement and implementation of mitigation / compensation measures are other integral parts of the on-site assessment. For applied verification, "Other Means of Verification were availed" main tasks covered during the remote site visit include, but are not limited to:

- an investigation of whether all relevant equipment is installed and functioning as anticipated.
- The operating staff was interviewed and observed in order to check the risks of inappropriate operation and data collection procedures.
- Information processes for generating, aggregating and reporting the selected monitored parameters were reviewed.
- The monitoring processes, routines and documentations were audited to check their proper application.
- The monitoring data for GHG and SDG components and supporting evidences were checked.

During the remote site visit the verification team performed interviews with authorized representatives of the CME to confirm selected information and to resolve issues identified in the document review.

Representatives of Gigawatt Global Cooperatief U.A including the operational staff of the plant were interviewed. The main topics of the interviews are summarized in Table 3-4.

Table 3-4: Interviewed persons and interview topics

Interviewed Persons / Entities	Interview topics
1. Projects & Operations Personnel Scatec Solar Carbon Africa Ltd.	- General aspects of the project - Technical equipment and operation - Changes since validation / previous verification - Monitoring and measurement equipment - Remaining issues from validation / previous verification - Calibrations - Quality management system - Involved personnel and responsibilities - Training and practice of the operational personnel - Implementation of the monitoring plan - Monitoring data management - Data uncertainty and residual risks - GHG emission reduction calculation - Implementation of SD indicators - Contribution to Sustainable Development - Procedural aspects of the verification

Interviewed Persons / Entities	Interview topics
	- Maintenance - Environmental aspects - SD Indicators monitoring - ER calculations - Grievances

The list of interviewees is included in chapter 7.4.

Remote audit assessment:

Due to the COVID-19 pandemic, there was a complete lockdown in the Host Country of Rwanda where intercity movement and movement in the field was not permitted. The Verification Team is following the recommendations and COVID 19: INTERIM MEASURES of the GS Board published on 06/04/2020, which allows GS-VVB's to exempt onsite audit due to COVID-19 Pandemic and related worldwide travel restrictions. As per interim measures vide RULE UPDATE: COVID 19: INTERIM MEASURES published on 06/04/2020 which sets provision to exempt mandatory onsite audit by VVB for the period up to 31 December 2020. The [version 03 of the COVID 19: INTERIM MEASURES, dated 18/12/2020](#) extended the validity till 30/06/2021.

Sr. No	Requirement (RULE UPDATE: COVID 19: INTERIM MEASURES)	Assessment
§ 4	MANDATORY SITE VISITS BY VVBs: The Validation and Verification bodies & SustainCERT may apply following interim measures in cases where on-site inspections cannot reasonably be performed due to COVID-19 and travel restrictions.	Assessment is presented below:
4.1.1 a.	Alternative Measures relating to mandatory on-site visits for VVBs audits include: A VVB may postpone site visits for on-site inspections, taking into account the rules of relevant national and local authorities (local to the VVB offices as well as to locality of the site visits), World Health Organization (WHO) recommendations, policies of the VVB (if any) and other relevant travel restrictions and guidance (for example, a requirement to self-isolation upon return from specific countries).	VVB has applied the remote audit techniques, as the site visit could not be postponed. Moreover, the VVB has conducted remote assessment using other means of verification such as Zoom and emails.
4.1.1 b.	If site visit cannot be postponed due to significant impact of delaying the site visit on VVB and/or project developer due to timeline/commitment as per validation/verification or GS-VERs delivery agreement, VVB may replace mandatory on-site visits with remote audits. The audit may include but not limited to validation, verification, the inclusion of VPAs, design change review etc.	
4.2.1	In case of 4.1.1 a, the VVB shall complete the on-site inspection as normal when the COVID-19 situation eases.	Not applicable.

Sr. No	Requirement (RULE UPDATE: COVID 19: INTERIM MEASURES)	Assessment
4.2.2 i.	In case of 4.1.1 b, the VVB shall: Use validation/verification techniques and advanced communication technology solutions to validate/verify information and compliance with applicable requirements to the extent possible, to ensure the completeness and credibility of the audit;	Please refer the above explanation on the techniques and mode of communication used to appropriately assess the onsite implementation of the project together with credibility of the monitoring result
4.2.2 ii.	Use means such as, but not limited to, tele/video meetings; interviews with relevant stakeholders, local authorities, project participants, persons responsible for data collections, end user and/or beneficiaries of the project; photographic evidence, video recordings; data collection. For microscale project/PoAs/VPAs using drones, satellite image (where possible); relevant documents; and other publicly available information.	
4.2.2 iii.	Transparently disclose in the audit report that - The audit is undertaken remotely and - Describe the alternative means used and justification that they are sufficient for the audit	This verification report has been provided with a transparent disclosure on remote site assessment including explanation on other means utilized/ applied to verify the onsite information.
4.2.2 iv.	Must submit the audit report requesting design certification and/or performance certification within Six (6) months of the declared end date of the Interim Measures.	Refer above explanation
4.3.1	The maximum monitoring period that VVB can verify based on remote audit (paragraph 4.3.1) is two years.	The monitoring period under this issuance request is from 01/09/2018 to 31/12/2020 i.e., 2 years and 4 months. The PD sort a deviation from this rule and the deviation was approved on 19/05/2021^{/DEV/}, under the following two conditions: 1. The start date of the GS monitoring period is not more than three years before the successful completion of an onsite verification (remote site visit in case the physical site visit is not possible) by a VVB. For example, if the site visit is concluded on 30/05/2021, the MP cannot start before 30/05/2018 (inclusive). 2. The CDM EB approves the PoA's request for

Sr. No	Requirement (RULE UPDATE: COVID 19: INTERIM MEASURES)	Assessment
		issuance, consisting of the mentioned VPA, for a Monitoring Period (MP) that either coincides with or encompasses the GS monitoring period. The VVB can confirm that both conditions have been duly fulfilled via FAR 01.

Additionally, UNFCCC also published a circular on exemption of mandatory onsite audit dated 20/03/2020 where agreement to relax mandatory site visit by VVB for period of 03 months which is further extended up to 31 December 2020 and further to 30/06/2021. The justification is contained in the CDM MPIII verification report.

Applied Other Credible means of verification:

The credible other means of verification is applied to cross check on-ground information as described below.

Zoom Call: This tool has allowed connecting multiple stakeholders such as CME, project developer/ consultant, and relevant personnel from the plant. The Verification Team (VT) could virtually verify the implementation of the project against the requirements in the most recent version of VPA-DD and interviews with all the above-mentioned parties using this tool.

Furthermore, the data collected during the above steps are further utilized for assessments which is described in relevant parts of the verification report.

3.7. Draft verification reporting

On the basis of the desk review, the remote-site assessment, follow-up interviews and further background investigation the verification protocol is completed. This protocol together with a general project and procedural description of the verification and a detailed list of the verification findings form the draft verification report. This report is sent to the client for resolution of raised CARs, CLs and FARs.

3.8. Resolution of CARs, CLs and FARs

Nonconformities raised during the verification can either be seen as a non-fulfilment of criteria ensuring the proper implementation of a project or where a risk to deliver high quality emission reductions is identified.

Corrective Action Requests (CARs) are issued, if:

- Non-conformities with the monitoring plan or methodology are found in monitoring and reporting, or if the evidence provided to prove conformity is insufficient;
- Mistakes have been made in applying assumptions, data or calculations of emission reductions which will impair the estimate of emission reductions;

- Issues identified in a FAR during validation or previous verifications requiring actions by the project participants to be verified during verification have not been resolved.

The verification team uses the term Clarification Request (CL), which is issued if:

- information is insufficient or not clear enough to determine whether the applicable CDM requirements have been met.

Forward Action Requests (FAR) indicate essential risks for further periodic verifications. Forward Action Requests are issued, if:

- the monitoring and reporting require attention and / or adjustment for the next verification period.

For a detailed list of all CARs, CLs and FARs raised in the course of the verification pl. refer to chapter 4.

3.9. Final reporting

Upon successful closure of all raised CARs and CLs the final verification report including a positive verification opinion can be issued. In case not all essential issues could finally be resolved, a final report including a negative verification opinion is issued.

The final report summarizes the final assessments w.r.t. all applicable criteria.

3.10. Technical review

Before submission of the final verification report a technical review of the whole verification procedure is carried out. The technical reviewer is a competent GHG auditor being appointed for the scope this project falls under. The technical reviewer is not considered to be part of the verification team and thus not involved in the decision-making process up to the technical review.

As a result of the technical review process the verification opinion and the topic specific assessments as prepared by the verification team leader may be confirmed or revised. Furthermore, reporting improvements might be achieved.

3.11. Final approval

After successful technical review an overall (esp. procedural) assessment of the complete verification will be carried out by a senior assessor located in the accredited premises of TÜV NORD.

After this step the request for issuance can be started.

4. VERIFICATION FINDINGS

In the following paragraphs the findings from the desk review of the monitoring report(s)^{/MR/}, the calculation spreadsheet^{/ER/}, PoA-DD^{/PoA-DD/}, VPA-DD^{/VPA-DD/}, the Validation Report^{/VAL/} and other supporting documents, as well as from the remote site assessment and the interviews are summarized.

The summary of CAR, CL and FAR issued are shown in Table 4.1:

Table 4.1: Summary of CAR, CL and FAR

Verification topic	No. of CAR	No. of CL	No. of FAR
A – Description of project activity	2	0	0
B – Implementation of project activity	0	0	0
C – Description of Monitoring System	0	1	0
D – Carbon Data and Parameters	1	0	0
E - Calculation of Emission Reductions	1	0	0
F – Sustainability Monitoring Parameters	0	1	0
Other (onsite)	0	0	0
SUM	4	2	0

The following tables include all raised CARs, CLs and FARs and the assessments of the same by the verification team. For an in-depth evaluation of all verification items, it should be referred to the verification protocols (see Annex).

Table 4.2 : Remaining FAR from validation and/or previous verification

FAR ID	01	Section no.	-	Date: 15/04/2021
Description of FAR				
GS Issuance Review for MPIL, Besides the staffs employed by the project owner, the DOE is requested to interview 2-3 representative of workers who are employed for mango trees, vetiver, and grass plantation, for module washing, for grass cutting and etc. regarding the employment quality and salary pay during next verification The PP shall furnish the DOE with a list of the relevant specified employees for the purpose of determining the aforesaid				
Project participant response (1st round)				Date: 24/06/2021



Remote meetings via the zoom platform were organized with the staff of the service providers as follows:

- 11/05/2021 with three employees
- 16/06/2021 with two employees.

The staff, who were on site for the virtual interactions, are engaged in a range of activities including security, administration and cleaning.

Documentation provided by project participant (1 st round)			
☐	Changes in the PoA-DD	Section(s):	New version No.:
☐	Changes in the CPA-DD	Section(s):	New version No.:
☒	Changes in MR	Section(s): C	New version No.: 2.0
☐	Changes in XLS	Worksheet(s):	New version No.:
☐	Other:		
DOE assessment (1 st round)			Date: 25/06/2021

The verifier organized a remote zoom meeting on 11/05/2021 with 3 random employees and on 16/06/2021 with further two staff of the service providers to the CME of component project activity. The table below summarizes the interview questions and the answers provided, in order to gauge the quality of employment.

Name & Affiliation/position	Question	Answer
Murangwa Sylva (Afritech/Cleaner)	How long have you worked for Afritech	6 years
	What is your qualification	Only have primary studies
	Received any training	Yes, four days on occupational health and safety, and security
	Received any promotion over the period	No, same position. Was first employed by EPC during construction. Afritech was engaged for civil works by Scatec/EPC
	Any salary increases?	None
	Compare salary with locals doing the same job	Better
	How satisfied with your salary	Very satisfied. Achieved a few personal projects
	Other benefits	Sick leave, direct health insurance from employer, 18 days per year for holidays
	Are any problems or grievances addressed satisfactorily	Yes
	Any protective gear	Yes, PPEs
	How long is your contract	Indefinite
Tinduka Samwel (VCSS/Security Guard)	How long have you worked for VCSS	On 30/05/2021 it will be 5 years
	How many are you in the security team	Before Covid 7 during the day and 6 at night. After covid, 3 during the day and 2 at night due to covid measures
	How were you employed	One employee left
	Have you received training and for how long	Yes, two weeks
	Do you think two weeks is enough	Yes, I did the same kind of job before
	How long is your contract	Indefinite

	Salary satisfaction	It is OK, but company promised to increase in January. So far, no word
	Compare your salary with other guards	ISCO pays better, under the same conditions. But they have real arms-guns
	Salary same for day and night guards	Yes, no difference
	Other benefits	18 days of annual leave. Insurance I pay for myself – the national insurance (Mituelle de Sante)
	Are problems and grievances addressed?	Yes, fully
	Promotion structure	No promotions yet
	Overall satisfaction?	Salary has not been reviewed.
Patrick Byishimo (Afritech/mechanical technician)	How long have you worked for Afritech	6 years (since 2015)
	What is your qualification	Electrical engineering – Kabale University
	Received any training	Yes, in 2012 at Bralirwa Brewery Rubagabaga (Scatec hydro site) – laying cables Occupational health and safety
	Any salary increases?	Yes twice 2017 & 2021
	Compare salary with locals doing the same job	Better
	How satisfied with your salary	Very satisfied. Covers all my expenses and achieved a few personal projects
	Other benefits	Sick paid leave, 14 days per year for holidays Accident insurance from the company
	Are any problems or grievances addressed satisfactorily	Yes
	How long is your contract	Indefinite

Samson Niyonsaba (Afritech/mechanical technician)	How long have you worked for Afritech	7 years (since 2014)
	What is your qualification	High School Diploma – Emmanuel Secondary School
	Have you received training and for how long	Rubagabaga (Scatec hydro site) – laying cables Occupational health and safety
	Any salary increases?	Yes twice 2017 & 2021
	Salary satisfaction	It is OK, but can be better
	How long is your contract	Indefinite
	Other benefits	14 days of annual leave at year end. Accident insurance from the company Health insurance I pay for myself – the national insurance (Mituelle de Sante)
	Are problems and grievances addressed?	Yes, fully
	Overall satisfaction?	Very satisfied
From the foregoing, it can be concluded that salaries and job satisfaction for the main and auxiliary staff are overall above average.		
Conclusion <i>Tick the appropriate checkbox</i>		☐ Additional action should be taken (finding remains open) ☒ The finding is closed

FAR ID	02	Section no.	A	Date: 19/05/2021
Description of FAR				
MR version 2.0, Section A				
The Project Developer shall ensure that the start date of the GS monitoring period is not more than three years before the successful completion of an onsite verification (remote site visit in case the physical site visit is not possible) by a VVB. The verifying VVB must also provide its assessment/opinion on the compliance of the start date of the monitoring period with the requirements of the GS decision to this deviation request				
Project participant response				Date: 24/06/20121

In May 2021, the PD with relevant contributions from the VVB submitted a deviation request to the Gold Standard which was approved in line with the FAR as presented in section B.1.1.

The deviation request was to allow for a 28-month monitoring period to be verified through a remote audit, the detail for which can be found in the request form - 20210507_GWG Deviation Request Form_GS3606.GS3587_Final.pdf.

The project developer can confirm that:

- This GS monitoring Period has a start date of 01/09/2018 for which a virtual verification site visit was conducted on 15/04/2021, using the zoom platform, which is less than three years (approx. 31.5 months) from the start of monitoring period. This is in compliance with the requirements for the Gold Standard.

- The VVB has provided its assessment/opinion in the verification report and contributed to the deviation request in the appropriate sections.

The information above is reflected in the latest version of the MR.

Documentation provided by project participant

☐	Changes in the PoA-DD	Section(s):	New version No.:
☐	Changes in the CPA-DD	Section(s):	New version No.:
☒	Changes in MR	Section(s): 2.0	New version No.: 2.0
☐	Changes in XLS	Worksheet(s):	New version No.:
☐	Other:		

VVB assessment

Date: 25/06/2021

The start date of the GS monitoring period is 01/09/2018, which is the same as the start of CDM monitoring for MPIII. The verification team conducted a remote (virtual) onsite verification on 15/04/2021, which is less than three years from the start of monitoring period.

Conclusion

Tick the appropriate checkbox

- ☐ To be checked during next verification
☒ The finding is closed

Table 4.3: CL from this verification

CL ID	01	Section no.	C	Date: 15/04/2021
Description of CL				
MR version 1.0, Section C				
Please clarify the referred standardized baseline and make the exact reference, if applicable				
Project participant response (1st round)				Date: 24/06/2021
The standardized baseline referred to in Section C was an editorial error and has been removed. The Rwanda Grid Emission Factor value was fixed ex-ante for this crediting period.				
Documentation provided by project participant (1st round)				
☐	Changes in the PoA-DD	Section(s):	New version No.:	
☐	Changes in the CPA-DD	Section(s):	New version No.:	
☒	Changes in MR	Section(s): C	New version No.: 2.0	
☐	Changes in XLS	Worksheet(s):	New version No.:	
☐	Other:			
DOE assessment (1st round)				Date: 25/06/2021
MR version 2.0, Section C				
No standardized baseline has been applied				
Conclusion				
Tick the appropriate checkbox				
		☐ Additional action should be taken (finding remains open)		
		☒ The finding is closed		

CL ID	02	Section no.	E.2/E.4/ & Table 2	Date: 15/04/2021
Description of CL				
MR version 1.0, E.2/E.4/ & Table 2				
The PP shall clarify the following observations with regards to the evidences				
1. Evidences for the two permanent employees not provided 2. Only one ULK training certificate for Harouna Ndayisenga (one training) is provided, against 2 permanent employees 3. How the 404 figure has been arrived at (number of visits or number of visitors?) 4. Some site visit evidences, such as Luxembourg delegation do not contain any names 5. <i>Students receiving Solar Technology/Engineering Training</i> in E.2: Clarify what SDGs are addressed by the internship positions				
Project participant response (1st round)				Date: 24/06/2021
1. X3 sample payslips from the monitoring period for the two permanent employees have been included in the supporting documents folder. 2. One of the two permanent employees attended training during this monitoring period. 3. It was determined by the number of individuals that visited the site. 4. This was included in error as the Luxembourg delegation visit did not happen. It has been removed from the supporting documents and not included in the monitoring reported. 5. SDG 8 Indicator 6 which states "By 2020, substantially reduce the proportion of youth not in employment, education or training". The project has contributed to improving the proportion of youth in education and training.				
Documentation provided by project participant (1st round)				
☐	Changes in the PoA-DD	Section(s):	New version No.:	
☐	Changes in the CPA-DD	Section(s):	New version No.:	
☒	Changes in MR	Section(s): E.2/E.4/ & Table 2	New version No.: 2.0	
☐	Changes in XLS	Worksheet(s):	New version No.:	
☐	Other:			
DOE assessment (1st round)				Date: 25/06/2021
MR version 2.0, Evidences (E.2/E.4/ & Table 2)				
1. The evidences are not yet been furnished to the verifier. Pls also clarify if employees are 2 or 3, and if a payslip is sufficient to confirm 'permanent' employment 2. Only one training for one employee out of three, conducted in 2019, against a monitoring frequency of 'annual'. Pls clarify how this complies with the MP 3. As per the monitoring plan, this will be number of academic visits/excursions. Not the number of individuals. 4. The PP is requested to resubmit the visitor documents and revise the MR with the number of actual visits per vintage each with a list of all visitors. However, for reporting purposes, only visits are required in accordance with the monitoring plan. 5. In line with the transition annex, <i>Students receiving Solar Technology/Engineering Training</i> (point 3) contributes to the SDG "Human and institutional capacity & technology transfer and technological self-reliance"				
Project participant response (2nd round)				Date: 08/07/2021

1. The site has two permanent posts, namely technical and managerial staff, that are required to oversee the running of the power plant. These two posts have been in place since the commissioning of the site. These posts have been filled during this monitoring period by the two incumbent employees, Twaha Twagirimana (Plant Supervisor) and Harouna Ndayisenga (Senior Technician). These posts are listed under organizational capacity in the ASYV ESAP reports (2018-2020) and in addition to this, sample payslips from across the monitoring period have been provided ("Scatec Payslip April 2021.pdf", "Scatec Payslip August 2019.pdf" & "Scatec Payslip December 2018.pdf").

2. It is understood that the monitoring frequency is annual as per the plan, though that this is not a guarantee for annual training. That said, the two staff members are part of ongoing training as provided by Scatec. In this monitoring period, in addition to the previously provided certificate of external training (by ULK at the expense of the company), the following internal training was successfully completed and is reflected in the MR - IT Security Training for Twaha Twagirimana (2020) and CMMS Training for Harouna Ndayisenga (2020). The certificates for which have been provided to the VVB ("Scatec Solar - IT security training_Twaha.pdf" and "Scatec Solar - CMMS Training_Harouna.pdf").

As additional contextual information, it is important to note that beyond the specific training courses, the staff members are part of an international company with offices around the globe and access to a company platform. Through this they i) have regular interactions on various topics with dedicated experts in their respective fields through which knowledge is gained, ii) on an ad-hoc basis undertake short trainings and refreshers. To reference this example completion messages have been shared with the VVB – "Scatec Solar Platform_Example completion messages.docx".

3. The MR has been updated to reference information on the number of site visits/excursions (22), and not the number of visitors.

4. The visitor documents under the folder "Site visit records" have been provided to the VVB as part of the supporting documents package, with the total number of visits being 22 (2019 – 17, 2020 – 5). In the MR a list of visits has been made, reference to the actual visitors is contained in the supporting documentation.

5. Training *Students receiving Solar Technology/Engineering Training* has been included under SDG "Human and institutional capacity & technology transfer and technological self-reliance"

Documentation provided by project participant (2nd round)

☐	Changes in the PoA-DD	Section(s):	New version No.:
☐	Changes in the CPA-DD	Section(s):	New version No.:
☒	Changes in MR	Section(s): E.2/E.4/ & Table 2	New version No.: 3.0
☐	Changes in XLS	Worksheet(s):	New version No.:
☐	Other:		

DOE assessment (2nd round)
Date: 14/07/2021

MR version 2.0, Evidences (E.2/E.4/ & Table 2)

1. The CME has provided evidence of two permanent employment positions and sample payslips indicating employment from commissioning to the end of this MP. This is consistent with provided evidences (ASYV ESAP 2018-2020) and hence acceptable. The payslips indicate above average pay
2. Evidence of trainings^{/TC/} to support SDG 8 have been furnished to the VVB as follows: -
 - IT training by the CME to Twaha Twagirimana (2020)
 - CMMS Training to Harouna Ndayisenga (2019)
 - ULK training in electrical power lines and solar systems installation, offered to Harouna Ndayisenga (2019)

Scatec also conducts a number of continuous trainings globally on different topics, as demonstrated by the document "Solar Scatec Solar Platform_Example completion messages"

3. Number of visits to the plant has been updated to 22, with a total of 404 individuals consistent with the the available evidences^{/EXC/}.
4. Visitor documents have been provided and corroborate the values indicated in the monitoring report^{/EXC/}.
5. The project has contributed to improving the proportion of youth in education and training as evidenced by the two internship positions held in (2019)^{/CERT/}

Conclusion

Tick the appropriate checkbox

- ☐ Additional action should be taken (finding remains open)
- ☒ The finding is closed

Table 4.4: CAR from this verification

CAR ID	01	Section no.	Table 2	Date: 15/04/2021
Description of CAR				
MR version 1.0, Key Project Information				
Table 2: All the values indicated are not correct				
Project participant response (1 st round)				Date: 24/06/2021
Values indicated in Table 2 have been corrected and are now accurate.				
Documentation provided by project participant (1 st round)				
☐	Changes in the PoA-DD	Section(s):	New version No.:	
☐	Changes in the CPA-DD	Section(s):	New version No.:	
☒	Changes in MR	Section(s): Table 2	New version No.: 3.0	
☐	Changes in XLS	Worksheet(s):	New version No.:	
☐	Other:			
DOE assessment (1 st round)				Date: 25/06/2021
MR version 2.0,				
The values indicated are correct for the SDG 13. However, the following is observed				
1. The table has been altered from the original MR template version 1.1				
2. Only SDG 13 impact has been included. Please include all others as per the approved monitoring plan in the transition annex				
Project participant response (2nd round)				Date: 13/07/2021

The table is now as per the MR template version 1.1. All the indicators of the SDGs have been included as per the approved monitoring plan in the transition annex.		
Documentation provided by project participant (2nd round)		
☐ Changes in the PoA-DD	Section(s):	New version No.:
☐ Changes in the CPA-DD	Section(s):	New version No.:
☒ Changes in MR	Section(s): Table 2	New version No.: 3.0
☐ Changes in XLS	Worksheet(s):	New version No.:
☐ Other:		
DOE assessment (2nd round)		Date: 14/07/2021
MR version 3.0, All monitored SDG values are now included in Table 2		
Conclusion Tick the appropriate checkbox	☐ Additional action should be taken (finding remains open) ☒ The finding is closed	

CAR ID	02	Section no.	A.4	Date: 15/04/2021
Description of CAR				
MR version 1.0, A.4 The crediting period shall be corrected				
Project participant response (1st round)				Date: 24/06/2021
The crediting period has been corrected.				
Documentation provided by project participant (1st round)				
☐ Changes in the PoA-DD	Section(s):	New version No.:		
☐ Changes in the CPA-DD	Section(s):	New version No.:		
☒ Changes in MR	Section(s): A.4	New version No.: 2.0		
☐ Changes in XLS	Worksheet(s):	New version No.:		
☐ Other:				
DOE assessment (1st round)				Date: 25/06/2021
MR version 2.0, Section A.4 The crediting period has been corrected in line with the VPA transition annex				
Conclusion Tick the appropriate checkbox	☐ Additional action should be taken (finding remains open) ☒ The finding is closed			

CAR ID	03	Section no.	D.2	Date: 15/04/2021
Description of CAR				
MR version 1.0, Section D.2				
1. Please insert the tables in section C.1 of the transition Annex version 3.0. And report their actual monitored values, with appropriate referencing to the supporting documents 2. For the parameter $EF_{facility,y}$ in section 2.5.1 of the CDM CPA-DD, adopt the same GS parameter tables for consistency and include the monitored value 3. SDG 8: Please include monitored values for each parameter (under <i>Value (s) applied</i>), correct units, and appropriate references to the supporting evidences				
Project participant response (1st round)				Date: 24/06/2021

1. Table in Section C.1 of the Transition Annex version 3.0 has been inserted indicating the actual monitoring values, with the appropriate referencing to the supporting documents. 2. PP assumes indicated parameter should be $EG_{PJfacility,y}$ which is in section 2.5.1 of the CDM CPA-DD. The same GS parameter table has been adopted for consistency and includes the monitored value. 3. Correct values, units and appropriate references for the supporting evidences have been included for each SDG 8 parameter.		
Documentation provided by project participant (1st round)		
☐ Changes in the PoA-DD	Section(s):	New version No.:
☐ Changes in the CPA-DD	Section(s):	New version No.:
☒ Changes in MR	Section(s): D.2	New version No.: 2.0
☐ Changes in XLS	Worksheet(s):	New version No.:
☐ Other:		
DOE assessment (1st round)		Date: 25/06/2021
MR version 2.0, ER Spreadsheet		
1. OK revised accordingly 2. OK as adopted 3. The following is observed i. SDG 8: Quality of employment: Trainings were not conducted for two of the three vintages ii. SDG 8: Quantitative Employment and Income Generation: Clarify if permanent employees are 2 or 3, and make consistent throughout iii. SDG 8: Human and Institutional Capacity & Technology Transfer and Technological Self-Reliance: Clarify the parameter to measure is visitors and not visits 4. For the SDG 8 (Quantitative employment), please include information on why the reports do not include the permanent staff, hence, the difference of two employees per vintage		
Project participant response (2nd round)		Date: 08/07/2021
3. i. Additional certificates for two trainings (three in total) have been provided being, - IT Security Training for Twaha Twagirimana (2020) and CMMS Training for Harouna Ndayisenga (2020). The certificates for which have been provided to the VVB ("Scatec Solar - IT security training_Twaha.pdf" and "Scatec Solar - CMMS Training_Harouna.pdf"). ii. We can confirm that there are two permanent posts, in line with the information presented in the annual ASYV ESAPs across the period, which is now consistently reflected throughout the document; iii. Parameter "excursions" included to measure SDG 8 with confirmation that the number is visits reported (22). 4. It is unclear if the "report" referenced in point 4 of this CAR is the Monitoring Report or the ASYV ESAP. It is assumed to be the latter - The ASYV ESAP reports separate out the 2-permanent staff from the service providers employees. For example, in 2018 on page 12 under organizational capacity the 2 permanent staff are listed and in Table 1 on page 16 the other engagement numbers are listed per activity (module cleaning, vegetation control, general site cleaning, Banana Farming, Afritech contractor and security guards). <i>For further clarity it is clear that the listed roles in Table 1 are not performed by the permanent staff who act as the plant manager and senior electrician.</i>		
Documentation provided by project participant (2nd round)		
☐ Changes in the PoA-DD	Section(s):	New version No.:
☐ Changes in the CPA-DD	Section(s):	New version No.:



TÜV NORD JI/CDM Certification Program

R-No: 8003030903-21/019

☒ Changes in MR	Section(s): D.2	New version No.: 3.0
☐ Changes in XLS	Worksheet(s):	New version No.:
☐ Other:		
DOE assessment (2nd round)		Date: 14/07/2021
MR version 3.0, ER Spreadsheet		
3.		
i. Additional certificates have been provided and as resolved under CL 01 above		
ii. It has been clarified and evidenced of 2 permanent employees as demonstrated under CL 1 above		
iii. The parameter records both visits and visitors. Evidence has been furnished to the verifier as resolved under CL 01 above		
4. OK as clarified and reasons for separating the two employee categories in the ASYV reports. Evidences of the two permanent positions has been adequately demonstrated in the finding CL 01 above		
Conclusion Tick the appropriate checkbox	☐ Additional action should be taken (finding remains open) ☒ The finding is closed	

CAR ID	04	Section no.	E.2	Date: 15/04/2021
Description of CAR				
MR version 1.0, Section E.2				
The emission reductions achieved are indicated as zero. A correction or clarification is due				
Project participant response (1st round)				Date: 24/06/2021
The value of the emission reductions has been corrected.				
Documentation provided by project participant (1st round)				
☐ Changes in the PoA-DD	Section(s):	New version No.:		
☐ Changes in the CPA-DD	Section(s):	New version No.:		
☒ Changes in MR	Section(s): E.2	New version No.: 2.0		
☐ Changes in XLS	Worksheet(s):	New version No.:		
☐ Other:				
DOE assessment (1st round)				Date: 25/06/2021
MR version 2.0, Section E.2				
Section has been corrected with the SDG 13 value achieved during this monitoring period				
Conclusion Tick the appropriate checkbox	☐ Additional action should be taken (finding remains open) ☒ The finding is closed			

Table 4.5: FAR from this verification

FAR ID	-	Section no.	-	Date: DD/MM/YYYY
Description of FAR				
N/A				
Project participant response				Date: DD/MM/YYYY
Documentation provided by project participant				
☐ Changes in the PoA-DD	Section(s):	New version No.:		
☐ Changes in the CPA-DD	Section(s):	New version No.:		
☐ Changes in MR	Section(s):	New version No.:		



☐	Changes in XLS	Worksheet(s):	New version No.:
☐	Other:		
VVB assessment			Date: 27/05/2021
Conclusion <i>Tick the appropriate checkbox</i>		☐ To be checked during next verification	

5. SUMMARY OF VERIFICATION ASSESSMENTS

The following paragraphs include the summary of the final verification assessments after all CARs and CLs are closed out. For details of the assessments pl. refer to the discussion of the verification findings in chapter 4 and the verification protocol (Annex 1).

5.1. Involved Parties and Project Participants

The following parties to the Kyoto Protocol and project participants are involved in this project activity.

Table 5-1: Project Parties and project participants

Characteristic	Party	Project Participant
Non-Annex 1	Rwanda	Gigawatt Global Cooperatief U.A
Annex 1	N/A	N/A

5.2. Implementation of the project

During the verification, a remote site visit was carried on 15/04/2021. Based on this remote site visit and the reviewed project documentation, it can be confirmed that w.r.t. the realized technology, the project has been implemented and operated as described in the registered PoA-DD, VPA-DD and GS transition Annex.

This 3rd monitoring period is from 01/09/2018 to 31/12/2020 (both days included).

The VPA involves the installation and operation of a SSC grid-connected renewable energy solar PV power plant in Rwamagana district, Rwanda.

The verification team via remote virtual onsite interviews with staff from the CPA implementing partner Scatec Solar Africa) and the carbon consultant (Carbon Africa) and with supporting documentation was able to confirm that the project is implemented in accordance with the project description contained in the registered PoA-DD. The previous issued verification documents have also been checked.

5.3. Project history

During the validation, the validating VVB might have raised issues that could not be closed or resolved during the validation stage. For this purpose, FARs might have been raised. This is the third verification cycle

During the 2nd verification a FAR (FAR 01) was raised by Gold Standard for consideration for this 3rd verification. Accordingly, the verification team has thus fully addressed the forward action request as FAR 01, and closed the issue in Chapter 4 of this report.

During the 3rd verification a FAR (FAR 02) was raised by Gold Standard for consideration for this verification. Accordingly, the PP and the verification team have fully addressed the forward action request as FAR 02, and closed the issue in Chapter 4 of this report.

5.4. Post registration changes

No post registration changes applicable for this monitoring period have been observed.

5.5. Compliance with the monitoring plan

The monitoring system and all applied procedures are in compliance to monitoring plan of the registered VPA-DD, the Transition Annex, and the PoA-DD. Evidences were available to the verification team to check the compliance of the monitoring plan for all carbon and SDG monitoring parameters.

The reporting and QA/QC procedures reflect the requirements of the monitoring plan for the carbon monitoring and sustainability development criteria. All relevant data stored is for the whole monitoring period and traceable to the computer server at the PP office and database records. Relevant findings for SDGs are in Chapter 4, and GHG findings addressed in the CDM verification report (MPIII).

5.6. Compliance with the monitoring methodology

The monitoring system is in compliance with the applied CDM baseline and monitoring methodology “AMSI.D Grid connected renewable electricity generation (version 18.0).”^{/GSM/}

5.7. Carbon Monitoring parameters

During the verification all relevant monitoring parameters (as listed in chapter B.6.1 of the VPA-DD^{/GSPVPA1/}) have been verified with regard to the appropriateness of the applied measurement / determination method, the correctness of the values applied for ER calculation, the accuracy, and applied QA/QC measures. The results as well as the verification procedure are described parameter-wise in the project specific verification checklist.

Data and parameters monitored:

Parameter	Monitored Value	Verification Opinion
EG_{PJfacility,y} (Climate Action)	30,359 MWh	This parameter measures the net electricity exported to the grid by the VPA. The electricity exported to the grid minus the imported electricity from the grid will be the net electricity exported to the grid.



Parameter	Monitored Value	Verification Opinion
		The data is measured continuously by bi-directional power meters and recorded monthly. There are 3 meters, 1 main and 1 backup located at the power plant. And 1 auxiliary meter which is controlled by the grid operator. The main and back-up meters are bi-directional. The monthly electricity invoices have been cross-checked with the electricity data for both the exported and imported electricity applied in the emission reduction calculation. The lower values of the measured data which are mainly the exported (generation less deemed energy) data have been conservatively taken and applied as the input values for the emission reduction calculations (Please refer to CDM verification report section E.3.6.1). The verification team can confirm that the values applied are correct, and accurate as the QA/QC procedures have been followed. Meter testing and calibration have followed the manufacturer and PPA provisions^{/CR//PPA//IM02//ER/}

Data and parameters not monitored:

The ex-ante parameters stated in under section D.1 of MR are derived from the registered VPA-DD. Data and parameters that are to be reported ex-ante of the registered VPA-DD

version 2.0. The ex-ante data will be applicable for the first current crediting period. The ex-ante fixed parameters have been correctly applied in the emission reductions calculation for this monitoring period.

5.8. Monitoring Report

A GS Monitoring Report^{MR/} along with relevant supporting documents was submitted to the verification team by the project participants. These documents form the basis for the verification opinion of TÜV NORD.

During the verification, mistakes and needs for clarification were identified. The PP has carried out the requested corrections so that it can be confirmed that the Monitoring report is complete and transparent and accordance with the registered VPA-DD, the transition Annex and other relevant GS requirements.

5.9. Sampling

5.10. Implementation of the sampling plan

Not applicable

5.11. Sampling approaches during verification

Not applicable

5.12. ER Calculation

During the verification mistakes in the ER calculation were identified. Corresponding CARs were raised. A revised ER calculation was prepared by the PP and presented to the verification team. All raised issues were addressed appropriately so that all corresponding CARs could be closed out. Thus, it is confirmed that the ER calculation is overall correct.

Baseline Emissions:

The baseline emissions (BE_y) are calculated using equation (1) of AMS-I.D (version 18.0):

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

As per AMS-I.D (version 18.0):

$$EG_{PJ,y} = EG_{PJ,facility,y}$$

Where:

$EG_{facility,y}$ = Quantity of net electricity generation that is produced and fed into the grid as a result of the implementation of the CDM project activity in year y (MWh)

Where:

EF_{grid} = Quantity of net electricity generation that is produced and fed into the grid as a result of the implementation of the CDM project activity in year y (MWh)

$$EF_{grid,y} = 0.66 \text{ tCO}_2/\text{MWh}$$

$$BE_y = 30,359 \times 0.66 = \mathbf{20,035 \text{ t CO}_2\text{e}}$$

5.13. Quality Management

Quality Management procedures for measurements, collection and compilation of data, data storage and archiving, calibration, maintenance and training of personnel in the framework of this PoA-DD have been defined. The procedures defined can be assessed as appropriate for the purpose. No significant deviations thereof have been observed during the verification.

5.14. Actual emission reductions during the first commitment period and the period from 1 January 2013 onwards

The MR(s) include(s) actual ER values achieved from 1 January 2013 onwards as follows:

Table 5-2: Emission reductions before and after the end of 2012

	until 31/12/2012 ¹⁾	from 01/09/2018 ¹⁾ to 31/12/2020	Sum
Emission reductions [tCO₂e]	-	20,035	20,035

¹⁾ Both days included

5.15. Comparison with ex-ante estimated emission reductions

The MR includes a comparison of the calculated actual emission reductions with the ex-ante calculated values in the registered VPA-DD.

Ex-Ante ERs: **23,451 tCO₂e**

Ex-Post ERs: **20,035 tCO₂e**

Difference: **316 tCO₂e**

The ex-post value is found to be lower than the ex-ante determined value. Therefore, no justification is required

5.16. Contribution to Sustainable Development

The SD indicators as outlined in the sustainability monitoring plan of the GS VPA transition annex are monitored and reported appropriately and cross-verified by means of desk review of survey reports, interviews with the CME operation personnel and selected households. The monitoring system and all applied procedures are in compliance to the sustainability monitoring plan in the registered GS VPA-DD and the Gold Standard principles.

Table 5-1: Assessment of monitored SD Indicators⁴

No	SDG Indicator	Chosen Parameter	Situation as at 31/12/2020	Verification Opinion
7	Affordable and clean energy	MWh	30,359	This parameter is monitored through bidirectional digital energy meters located at the plant site. The electricity generated from solar power is evacuated and fed into the national grid by the grid operator. The verification team has checked details of every invoice against generation data as well as the values applied for the emission reduction calculations QA/QC procedures have been duly adhered to via periodic inspection and testing of the energy meters. The meters are manufacturer calibrated and sealed, and do not require scheduled calibration, unless found to be faulty, as per the PPA.
8.	Decent Work and Economic Growth			
	Quality of Employment	1. Training records for employees during construction and operation period 2. Feedback loop between the employee and the employer e.g., suggestion box	3	There were several trainings conducted in line with the monitoring plan, and as assessed under CL 01^{TCI}. During the virtual onsite interviews, the temporary and permanent staff also confirmed that there were no grievances aired with regards to their quality of employment
	Quantitative employment and income generation	1. Number of jobs created for Rwandans during construction period 2. Number of jobs created for Rwandans during operation period 3. Number of men and women employed by the project activity	2	This is the number of jobs created during the operation period of the project. It has been confirmed that 2 permanent employment opportunities exist through checking the payroll. Further staff were employed during construction phase as confirmed during the last monitoring period. More staff are employed indirectly by service providers such as VCSS and Afritech, as security agents, cleaners, and so on. A total of 83 opportunities

⁴ As per the approved transition annex

No	SDG Indicator	Chosen Parameter	Situation as at 31/12/2020	Verification Opinion
				were availed to the locals during the construction and operation phases. The ASYV ESAP Reports (2018-2020) have been cross-checked accordingly with per-vintage numbers indicated in the MR ^{/ESAP/} ..
	Human and institutional capacity & technology transfer and technological self-reliance	1. Number of trainings carried out by the project implementer for employees of the power plant	3	The verifier has assessed the three training certificates obtained by the three main employees over the monitoring period. It is confirmed that trainings were conducted in line with the approved monitoring plan and monitored annually ^{/TC/} .
		2. Number of excursions to the power plant by various institutions will be recorded as part of training programmes	22/404	There were 22 visits and a total of 404 visitors to the project site recorded in 2019 and 2020, which is during the monitoring period ^{/EXC/} .
		3. Number of students receiving solar technology / engineering training	2	Two students were offered internship positions at the project site. The same is confirmed by checking their internship-completion certificates awarded by Scatec Solar Rwanda ^{/CERT/} .
13	Climate Action	tCO ₂ e	20,035	The parameter is calculated from SDG 7 and is the product of the net electricity exported the Rwanda national grid, and the grid emission factor which is fixed ex-ante ^{/ER//MR/} .

The verification team can confirm that no changes to the registered SD parameters have occurred that may have an impact on Gold Standard qualification of this project activity.

5.17. Assessment of Safeguarding Principles

The verification team has assessed the safeguarding principles as specified in the Transition Annex and the GS Monitoring Report. For continued observation and or any mitigation measures that can be identified at implementation stage, as follows: -



Safeguarding principles	Assessment questions	Assessment of relevance to the project (Yes/potentially/no)	VVB justification of no mitigation measure
3.2 Gender Equality and Women's Rights	Is there a possibility that the Project might reduce or put at risk women's access to or control of resources, entitlements and benefits?	No	The verification team can confirm that the project does not reduce or risk women's access to or control of resources, entitlements or benefits. The project is on leased land and sells electricity generated directly to the national grid. Therefore, this is not relevant and still no mitigation measure is required, as per the initial validation in the transition annex.
	Is there a possibility that the Project can adversely affect men and women in marginalized or vulnerable communities (e.g., potential increased burden on women or social isolation of men)?	No	The verification team can confirm that the project does not reduce or risk women's access to or control of resources, entitlements or benefits. The project is on leased land and sells electricity generated directly to the national grid. Therefore, this is not relevant and still no mitigation measure is required, as per the initial validation in the transition annex.
	Is there a possibility that the Project might not take into account gender roles and the abilities of women or men to participate in the decisions/designs of the project's activities (such as lack of time, child care duties, low literacy or educational levels, or societal discrimination)?	No	The women were invited during the stakeholder consultation process, and allowed to comment on the project during the design stage. At implementation, the verification team does not see any possibilities that their roles and rights would be violated
	Does the Project take into account gender roles and the abilities of women or men to benefit from the Project's activities (e.g., Does the project criteria ensure that it includes minority groups or landless peoples)?	Yes	The project exports electricity to the grid which benefits the entire country and does not interfere with any gender roles
	Does the Project design contribute to an increase in women's workload that adds to their care responsibilities or that prevents them from engaging in other activities?	No	The project exports electricity to the grid which benefits the entire country and does not increase women's workload in any way



	Would the Project potentially reproduce or further deepen discrimination against women based on gender, for instance, regarding their full participation in design and implementation or access to opportunities and benefits?	No	This is a renewable energy project exporting power to the grid. The project does not lead to discrimination against women both at construction and implementation
	Would the Project potentially limit women's ability to use, develop and protect natural resources, taking into account different roles and priorities of women and men in accessing and managing environmental goods and services?	No	This is a renewable energy project exporting power to the national grid. The project does not limit women's ability to use, develop and protect natural resources
	Is there a likelihood that the proposed Project would expose women and girls to further risks or hazards?	No	This is a renewable energy project exporting power to the national grid. The project is implemented under existing Rwandan laws, and does not expose women and girls to further risks or hazards?
3.4.3 Land Tenure and Other Rights	Does the Project require any change to land tenure arrangements and/or other rights?	No	The land was leased from Agahozo-Shalom Youth Village for the project activity solely for the generation of renewable electricity using solar power. The land was cleared for installation of solar PV panels and all mitigation measures were effected and approved at construction stage. At implementation and operation phase, the project does not lead to any changes
	For Projects involving land-use tenure, are there any uncertainties with regards land tenure, access rights, usage rights or land ownership?	No	The land was leased from Agahozo-Shalom Youth Village for the project activity solely for the generation of renewable electricity using solar power. The project is already implemented and therefore no uncertainties or issues have been raised
3.6.2 Negative Economic Consequences	Is the Project financially sustainable during implementation and beyond the Project Certification period?	Yes	The project has a 25-year PPA with the national utility, and therefore will sell generated power to the national grid sustainably
	Does the Project pose any potential risks to the local economy and have they been taken into consideration during	No	The project has been implemented and operated for a number of years and does not pose any risks to the local economy

	design, implementation, operation and after the Project?		
4.1.1 Emissions	Will the Project increase greenhouse gas emissions over the Baseline Scenario?	No	The project supplies renewable electricity from a renewable energy source to the national grid. Therefore, it does not contribute to increase GHG emissions
4.1.2 Energy Supply	Will the Project use energy from a local grid or power supply (i.e., not connected to a national or regional grid) or fuel resource (such as wood, biomass) that provides for other local users?	No	The solar power plant is connected to the national grid only for new power export.
4.2.1 Impact on natural water patterns and flow	Will the Project affect the natural or pre-existing pattern of watercourses, ground-water and/or the watershed(s) such as high seasonal flow variability, flooding potential, lack of aquatic connectivity or water scarcity?	No	During the implementation period the project does not alter or affect any natural or pre-existing water courses. In fact, the project is not implemented on or near any water bodies
4.2.2 Erosion and/or water body stability	1. Could the Project directly or indirectly cause additional erosion and/or water body instability or disrupt the natural pattern of erosion? If 'Yes' or 'Potentially' proceed to question 2.	No	This was possible during construction phase, and appropriate mitigation measures were carried out. However, at implementation, no excavation activities take place and therefore, no erosion attributed to the same is expected
	2. Is the Project's area of influence susceptible to excessive erosion and/or water body instability?	No	As above
4.3.1 Landscape modification and soil	Does the Project involve the use of land and soil for production of crops or other products?	No	Not applicable
4.3.2 Vulnerability to Natural Disaster	Will the Project be susceptible to or lead to increased vulnerability to wind, earthquakes, subsidence, landslides, erosion, flooding, drought or other extreme climatic conditions?	no	The project is implemented above ground and does not adversely affect the topography. However, susceptibility is not increased at operation stage



4.3.3 Genetic Resources	Could the Project be negatively impacted by the use of genetically modified organisms or GMOs (e.g., contamination, collection and/or harvesting, commercial development)?	No	Not applicable
4.3.4 Release of pollutants	Could the Project potentially result in the release of pollutants to the environment?	no	The project does not typically release pollutants. However, as validated during the project GS4GG transition, a contracted that party manages the same during operation phase to ensure that environmental laws are adhered to. Therefore, no extra mitigation measure by PP is required
4.3.5 Hazardous and Non-hazardous Waste	Will the Project involve the manufacture, trade, release, and/ or use of hazardous and non- hazardous chemicals and/or materials?	No	Not applicable
4.3.6 Pesticides and fertilizers	Will the Project involve the application of pesticides and/or fertilisers?	No	Not applicable
4.3.7 Harvesting of forests	Will the Project involve the harvesting of forests?	No	Not applicable
4.3.8 Food	Does the Project modify the quantity or nutritional quality of food available such as through crop regime alteration or export or economic incentives?	No	Not applicable
4.3.9 Animal Husbandry	Will the Project involve animal husbandry?	No	Not applicable

5.18. Overall Aspects of the Verification

All necessary and requested documentation was provided by the project participants so that a complete verification of all relevant issues could be carried out.

No issues have been identified indicating that the implementation of the project activity and the steps to claim emission reductions are compliant with the GS requirements.

5.19. Grievances

The verification team has interviewed the operational personnel, workers within and outside the plant, and can confirm that there are no complaints or grievances raised during the monitoring period. The result is within the FAR 01 in Chapter 4 of this report.

5.20. Hints for next periodic Verification

No FAR has been issued for the next periodic verification.

6. VERIFICATION AND CERTIFICATION STATEMENT

Gigawatt Global Cooperatief U.A has commissioned the TÜV NORD JI/CDM Certification Program to carry out the 3rd periodic verification of the PoA: “**ASYV 8.5 MW Solar PV Project (CPA-001) (GS3606)**”, with regard to the relevant requirements for GS VPA project activities. The PoA reduces GHG emissions by implementing grid-connected renewable energy projects (solar PV technology) in the Republic of Rwanda.

This verification covers the emission reductions achieved by a single VPA in its corresponding monitoring periods:

VPA No.	Monitoring period (MP):	
0001	From:	To:
	01/09/2018	31/12/2020

In the course of the verification 04 Corrective Action Requests (CAR), 02 Clarification Requests (CL) were raised and successfully closed. No Forward Action Request (FAR) has been raised to be considered during next verification. The verification is based on the draft monitoring report(s), revised monitoring report(s), the monitoring plan as set out in the registered VPA-DD(s), the validation report, emission reduction calculation spreadsheet and supporting documents made available to the TÜV NORD JI/CDM CP by the project participant.

As a result of this verification, the verifier confirms that:

- all operations of the project are implemented and installed as planned and described in the validated project design document.
- the monitoring plan is in accordance with the applied approved GS methodology.
- the installed equipment essential for measuring parameters required for calculating emission reductions are calibrated appropriately.
- the monitoring system is in place and functional. The project has generated GHG emission reductions.
- the project contributes to sustainability development

As the result of the 3rd periodic verification, the verifier confirms that the GHG emission reductions are calculated without material misstatements in a conservative and appropriate manner. TÜV NORD JI/CDM CP herewith confirms that the PoA has achieved emission reductions in the above-mentioned reporting period as follows:

Emission reductions: **20,035 tCO₂e**

Nairobi, 22/12/2021



Lubanga, David

TÜV NORD JI/CDM Certification Program

Verification Team Leader

Essen, 22/12/2021

Rami, Kunal

TÜV NORD JI/CDM Certification Program

Final Approval

7. REFERENCES

Table 7-1: Documents provided by the project participant(s)

No.	Author	Reference	Title	References to the document	Provider
1.	UNFCCC	/ACM2/	ACM0002: Grid-connected electricity generation from renewable sources (version 16.0.0)	https://cdm.unfccc.int/methodologies/SSCmethodologies/approved	Other
2.	UNFCCC	/AMS/	AMS.I.D: Grid connected renewable electricity generation (version 18.0).	https://cdm.unfccc.int/methodologies/SSCmethodologies/approved	Other
3.	UNFCCC	/CPAD DF/	Component project activity design document form (Version 09.0)	http://cdm.unfccc.int/Reference/PDDs_Forms/index.html#reg	Other
4.	UNFCCC	/GT/	Glossary "CDM terms" (version 10.0)	https://cdm.unfccc.int/Reference/Guidclarif/gloss_CDM.pdf	Other
5.	UNFCCC	/KP/	Kyoto Protocol (1997)	http://unfccc.int/kyoto_protocol/items/2830.php	Other
6.	UNFCCC	/MA/	Decision 3/CMP. 1 (Marrakesh – Accords)	http://cdm.unfccc.int/Reference/COPMOP/index.html	Other
7.	IPCC	/IPCC/	1. 1996 IPCC Guidelines for National Greenhouse Gas Inventories: work book 2. 2006 IPCC Guidelines for National Greenhouse Gas Inventories: work book	www.ipcc-nggip.iges.or.jp	Other
8.	VVB	/CPM/	TÜV NORD JI / CDM CP Manual (incl. CP procedures and forms)		VVB
9.	UNFCCC	/PoA-DD/	• Registered Project Design Document for CDM PoA: "Gigawatt Global Programme of Activities" version 5.0, dated 08/10/2015	https://cdm.unfccc.int/ProgrammeOfActivities/po_a_db/069O1LAWYS37INVEB5RZHMCU4KJFPD/view	Other
10.	UNFCCC	/CPA-DD/	• Registered CPA-DD for ASYV 8.5MW Solar PV Project (CPA-001), v7.0, dated 14/11/2017	https://cdm.unfccc.int/ProgrammeOfActivities/po_a_db/069O1LAWYS37INVEB5RZHMCU4KJFPD/view	Other
11.	UNFCCC	/VAL/	• Validation Report for CDM PoA project Gigawatt Global Programme of Activities version 2.0, dated 13/10/2015	https://cdm.unfccc.int/ProgrammeOfActivities/po_a_db/069O1LAWYS37INVEB5RZHMCU4KJFPD/view	Other

			Validation Report for CPA ASYV 8.5MW Solar PV Project (CPA-001), version 2.0 dated 21/10/2015		
12.	UNFCCC	/VER/	Documents of previous verifications (Monitoring report, verification report, ER calculation sheet)	https://cdm.unfccc.int/ProgrammeOfActivities/po_a_db/069O1LAWYS37INVEB5RZHMCU4KJFPD/view	Other
13.	CME	/MR/	CDM Monitoring Report version 01 dated 04/03/2021 CDM Monitoring Report version 02 dated 06/04/2021 CDM Monitoring Report version 02 dated 20/04/2021 CDM Monitoring Report version 03 dated 13/05/2021 CDM Monitoring Report version 04 dated 27/05/2021 GS Monitoring Report version 01 dated 04/03/2021 GS Monitoring Report version 02 dated 06/04/2021 GS Monitoring Report version 03 dated 13/07/2021 GS Monitoring Report version 04 dated 08/11/2021		CME
14.	CME	/ER/	CDM 00 - GWG Energy_Report_Hourly_data Emission Reduction Calculation: 2021 03 04 GwG CDM PoA ER v1.0 Emission Reduction Calculation: 2021 03 04 GwG CDM PoA ER v2.0 Emission Reduction Calculation: 2021 03 04 GwG CDM PoA ER v3.0 Emission Reduction Calculation: 2021 03 04 GwG CDM PoA ER v4.0 Emission Reduction Calculation: 2021 03 04 GwG CDM PoA ER v5.0		CME



15.	CME	/CR/	Refer Appendix 6 for details of meters and calibration for the CPA.		CME
16.	CME	/TEST/	Testing Certificate for main meter serial number 3507510704209, dated 11/04/2019 Testing Certificate for back-up meter serial number 3507510704191, dated 05/01/2019 Testing Certificate for main meter serial number 3507510704209, dated 16/07/2019 Testing Certificate for back-up meter serial number 3507510704191, dated 16/07/2019 Testing Certificate for main meter serial number 3507510704209, dated 04/11/2019 Testing Certificate for back-up meter serial number 3507510704191, dated 04/11/2019 Testing Certificate for main meter serial number 3507510704209, dated 21/01/2020 Testing Certificate for back-up meter serial number 3507510704191, dated 21/01/2020 Testing Certificate for main meter serial number 3507510704209, dated 04/05/2020 Testing Certificate for back-up meter serial number 3507510704191, dated 04/05/2020 Testing Certificate for main meter serial number 3507510704209, dated 30/07/2020 Testing Certificate for back-up meter serial number 3507510704191, dated 30/07/2020 Testing Certificate for auxiliary meter serial number		



			3507510704217, dated 30/07/2020 Testing Certificate for main meter serial number 3507510704209, dated 23/11/2020 Testing Certificate for back-up meter serial number 3507510704191, dated 23/11/2020 Testing Certificate for auxiliary meter serial number 3507510704217, dated 23/11/2020		
17.	CME	/GR/	Monthly sale invoices from 01/09/2018 to 31/12/2020		CME
18.	GS	/DEV/	Deviation Request Approval, dated 19/05/2021		GS
19.	CME	/TC/	- IT training by the CME to Twaha Twagirimana (2020) - CMMS Training to Harouna Ndayisenga (2019) - ULK training in electrical power lines and solar systems installation, offered to Harouna Ndayisenga (2019)		CME
20.	CME	/EXC/	Excursions reports showing number of visits and list of visitors (2019-2020)		CME
21.	CME	/CERT/	Certificates of internships (19/08/2019 – 17/09/2019) awarded to 1. Aimable Ngendahayo 2. Fabien Mukundufite		CME
22.	CME	/PPA/	Power Purchase Agreement – metering extract		CME
23.	CME	/ESAP/	- ASYV ESAP Report 2018 - ASYV ESAP Report 2019 - 2020 ASYV ESAP Report:		CME
Websites					
24.	-	/unfccc/	UNFCCC	http://cdm.unfccc.int	Other
25.	-	/ipcc/	IPCC publications	www.ipcc-nggip.iges.or.jp	Other
26.	-	/dnaHP/	DNA of Rwanda	https://www.rema.gov.rw/	Other

27.	-	/gs/	Gold Standard	https://www.goldstandard.org/	Other
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Table 7-2: Background investigation and assessment documents

Reference	Document
/CPM/	TÜV NORD JI / CDM CP Manual (incl. CP procedures and forms)
/GS4GG TA/	GS4GG Requirements
/GSGWP/	The Application of Global Warming Potentials for Gold Standard Project Activities
/GSIR/	GS Issuance Review dated 07/05/2018
/GSRI/	Gold Standard Requirements version 2.2
/GST/	Gold Standard Toolkit version 2.2
/IPCC/	Good Practice Guidance and Uncertainty Management in National Greenhouse Gas Inventories: 1. Non-CO₂ Stationery Combustion 2. Emissions from Livestock and Manure Management (Chapter 10) 3. IPCC Second Assessment Report – Climate Change 1995: A Report of the Intergovernmental Panel on Climate Change
/KPI/	Kyoto Protocol (1997)
/MA/	Decision 3/CMP. 1 (Marrakesh – Accords)
/PS/	CDM Project Standard (Version 2.0)
/VER/	Documents of previous verification (Monitoring report, verification report, ER calculation sheet, GS review feedback Report)
/TA/	Approved Transition Annex
/VVS/	CDM Validation and Verification Standard (Version 02.0)

Table 7-3: Websites used

Reference	Link	Organisation
/gs/	http://www.goldstandard.org/	CDM Gold Standard
/unfccc/	http://cdm.unfccc.int	UNFCCC

Reference	Link	Organisation
/ipcc/	www.ipcc-nggip.iges.or.jp	IPCC publications

Table 7-4: List of interviewed persons

Reference	Mol ¹		Name	Organisation / Function
/IM01/	E, Z	☒ Mr. ☐ Ms	Tim Cowman	Carbon Africa/Director
/IM02/	Z	☒ Mr. ☐ Ms	Julie Aguko	Carbon Africa/
/IM02/	Z	☐ Mr. ☒ Ms	Jessica	Carbon Africa/
/IM02/	Z	☒ Mr. ☐ Ms	Amos Rikhotso	Carbon Africa/
/IM03/	Z	☒ Mr. ☐ Ms	Twaha Tagirimana	Scatec Solar/
/IM03/	Z	☒ Mr. ☐ Ms	Murangwa Sylva	Afritech/Cleaner
/IM03/	Z	☒ Mr. ☐ Ms	Tinduka Samwel	VCSS/Security Guard
/IM03/	Z	☒ Mr. ☐ Ms	Patrick Byishimo	Afritech/mechanical technician
/IM03/	Z	☒ Mr. ☐ Ms	Samson Niyonsaba	fritech/mechanical technician

¹⁾ Means of Interview: (Telephone, E-Mail, Zoom, Skype, Webex, MS Teams, Visit)

ANNEX

- A1:** Verification Protocol
- A2:** Statements of Competence of
involved Personnel

ANNEX 1: VERIFICATION PROTOCOL

Table A-1: GHG calculation procedures and management control testing / detailed audit testing of residual risk areas and random testing

Identification of potential reporting risk	Identification, assessment and testing of management controls	Areas of residual risks	Additional verification testing	Conclusions and Areas Requiring Improvement (including <i>Forward Action Requests</i>)
Raw data generation				
• Installation of measuring equipment • Dysfunction of installed equipment • Maloperation by operational personnel • Downtimes of equipment • Exchange of equipment • Change of measurement equipment characteristic • Insufficient accuracy • Change of technology • Accuracy of values supplied by Third Parties	• Installation of modern and state of the art equipment • Process control automation • Internal data review • Regular visual inspections of installed equipment • Only skilled and trained personnel operate the relevant equipment • Daily raw data checks • Immediate exchange of dysfunctional equipment • Stand-by duty is organized • Training • Internal audit procedures	• Inadequate installation / operation of the monitoring equipment • Inadequate exchange of equipment • Change of personnel • Undetected measurement errors • Inappropriateness of Management system procedures w.r.t. monitoring plan requirements (e.g. substitute value strategies) • Non-application of management system • Insufficient accuracy • Inappropriate QA/QC measures of Third Parties	• Site – visit • Check of equipment • Check of technical data sheets • Check of suppliers' information / guarantees • Check of calibration records, if applicable • Check of maintenance records • Counter-check of raw data and commercial data • Check of CDM management system • Check of CDM related procedures	• See Table A-2

	Internal check of QA/QC measures of involved Third Parties		- Application of CDM management system procedures - Check of trainings - Check of responsibilities - Check of QA/QC documentation / evidences of involved Third Parties	
Raw data collection and data aggregation				
- Wrong data transfer from raw data to daily and monthly aggregated reporting forms - IT Systems - Spread sheet programming - Manual data transmission - Data protection - Responsibilities	- Cross-check of data - Plausibility checks of various parameters. - Appropriate archiving system - Clear allocation of responsibilities - Application of CDM Management system procedures - Usage of standard software solutions (Spreadsheets) - Limited access to IT systems - Data protection procedures	- Unintended usage of old data that has been revised - Incomplete documentation - Ex-post corrections of records - Ambiguous sources of information - Non-application of management system procedures - Manual data transfer mistakes - Unintended change of spread sheet programming or data base entries - Problems caused by updating/upgrading or change of applied software	- Check of data aggregation steps - Counter-calculation - Data integrity checks by means of graphical data analysis and calculation of specific performance figures - Check of management system certification - Check of data archiving system - Check of application of Management system procedures	See Table A-2
Other calculation parameters				

Emission factors, oxidation factors, coefficients	The values and data sources applied are defined in the VPA-DD and monitoring plan	- Unintended or intended Modification of calculation parameters - Wrong application of values - Misinterpretations of the applied methodology and/ or the VPA-DD - Missing update of applicable regulatory framework (e.g., IPCC values)	- Update-check of regulatory framework - Countercheck of the applied MP in the MR against the methodology and the VPA-DD	See Table A-2
Calculation Methods				
- Applied formulae - Miscalculation - Mistakes in spread-sheet calculation	- Advanced calculation and reporting tools - A CDM coordinator is in charge of the CDM related calculations - Usage of tested / counterchecked Excel spreadsheets - Involvement of external consultants	The danger of miscalculation can only be minimized.	- Countercheck on the basis of own calculation. - Spread sheet walk-trough. - Plausibility checks - Check of plots	See Table A-2
Monitoring reporting				
- Data transfer to the author of the monitoring report - Data transfer to the monitoring report - Unintended use of outdated versions	- An experienced CDM consultant is responsible for monitoring reporting. - CDM QMS procedures are defined	- The danger of data transfer mistakes can only be minimized - Inappropriate application of QMS procedures	- Counter check with evidences provided. - Audit of procedure application	See Table A-2

Table A-2: (Project specific) Periodic Verification Checklist

Checklist Item (incl. guidance for the verification team)		Reference	Verification Team Comments (Means and results of assessment)	Draft Concl	Final Concl				
A. EG _{PJfacility,y} (SDG13: Climate Action)	VPA No.: 0001		Description: Quantity of net electricity generation supplied by the project plant/unit to the grid in year y						
0) Measurement / Determination method (VVS, §§ 363-367) <i>Describe how the monitoring parameter was measured / determined. Focus primarily on the original data level (ODL) but also describe the applied data aggregation trails (from ODL to data aggregation level zero (DAL0)). Check if relevant equipment has been exchanged and if in cases of failures / downtimes of standard equipment other measurement / determination methods have been used. Furthermore, verify the frequency of measurements as per the requirements. Assess whether the measurement / determination method is in line with the registered monitoring plan of the PDD and the applied methodology.</i>		/MR/ /CPA-DD/ /PoA-DD/ /ER/ /CR/ /GR/ /IM01/ /IM02/	<i>Description:</i> This parameter measures the net electricity exported to the national grid by the CPA. The electricity exported to the grid minus the imported electricity from the grid will be the net electricity exported to the grid. For this monitoring period, the net electricity exported by the CPA is as below: <table><tr><th>VPA</th><th>Net electricity exported (MWh)</th></tr><tr><td>0001</td><td>30,359</td></tr></table> The data is measured continuously by bi-directional energy meters and recorded monthly. There are 3 meters, 1 main, 1 backup and 1 auxiliary meter located at the power plant. The auxiliary meter is however not used to measure generated or imported electricity but for internal loads and consumption management only. The monthly protocols and the sale invoices are based on the meters' readings installed at the power plant.	VPA	Net electricity exported (MWh)	0001	30,359	OK	OK
VPA	Net electricity exported (MWh)								
0001	30,359								
			Verifier's action:						

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl .	Final Concl .
		The monthly electricity invoices have been checked against both export and import electricity values applied in the spreadsheet calculation. The data in the ER spreadsheets were also crosschecked against the monthly generation data. The generation data was taken as the input for the ER calculations to determine the CPA emission reductions. No delays in calibration or testing occurred <i>Conclusion:</i> The parameter is monitored according to the registered / revised CPA-DD. ☐ In this context the following findings have been raised: ☐ ☐		
b) Accuracy, correctness and QA/QC Procedure (VVS, §§ 368-374) <i>In case of measured (or estimated) values, check whether the accuracy of equipment used for monitoring is controlled and calibrated in accordance with the monitoring plan or if significant inaccuracies occur; in this case, make sure that the most conservative assumptions theoretically possible have been made for calculating Ers.</i>	/MR/ /CPA-DD/ /PoA-DD/ /ER/ /CR/ /GR/	☒ It is confirmed that the accuracy of the equipment used for monitoring is controlled and calibrated in accordance with the monitoring plan	OK	OK
		☒ For details regarding the accuracy and calibration details please refer to Appendix 6		
		☒ No delayed calibration has occurred		

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)		Draft Concl .	Final Concl .
<i>Describe whether all applicable QA/QC procedures are met. Assess further if the calibration of the monitoring equipment has been carried out in line with the latest EB guidance.</i> <i>Include calibration dates and information in validity of the installed monitoring equipment in the table in Appendix 6.</i>		☒	As per the initial assessment the monitored value is deemed to be correct.		
		☒	Based on calibration certificates checked it can be confirmed that the monitoring equipment has been duly calibrated for this entire monitoring period.		
		☒	Based on calibration certificates checked a delay in calibration has been identified for the following period: Start date of delay: N/A End date of delay: N/A		
		☐	A delay in calibration has been identified, the PP applied related actions and therefore the VVB can confirm that the:		
		☐	The maximum permissible error of the instrument has been applied to the values during the period between scheduled date of calibration and the actual date of calibration		
		☐	The result of the delayed calibration did not identify an error beyond the maximum permissible error of the instrument		
		☐	The error as identified during the delayed calibration has been applied as the error is beyond the maximum permissible error of the instrument		
		☐	The error has been applied in a conservative manner, such that the adjusted measured values of the delayed calibration shall result in fewer claimed GHG emission reductions or net anthropogenic GHG removals		



Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)		Draft Concl .	Final Concl .
		☐	The error has been applied all measured values taken during the period between the scheduled date of calibration and the actual date of calibration.		
		☐	In this context the following findings have been raised:		
			☐		
			☐		

ANNEX 2: STATEMENTS OF COMPETENCE OF INVOLVED PERSONNEL



Statement of Competence

Appointment and authorization according to the procedures
of the TÜV NORD JI/CDM Certification Program

Mr. David Lubanga

SCHEME	STATUS	VALID UNTIL
CDM	Senior Assessor (Validation, Verification) Technical Reviewer	2021-10-20
VCS / ISO 14064-2	Senior Assessor Technical Reviewer	2021-10-20

Authorization status for technical areas within sectoral scopes:

CODE	TECHNICAL AREA
1.2	Renewables
3.1	Energy demand
13.2	Manure

251 - Rev. 7, Date: 2018-10-19

251_S01-VA060-F20_2018-10-19_rev7.doc

S01-VA060-F20 rev3 / 2012-10-25



Statement of Competence

Appointment and authorization according to the procedures
of the TÜV NORD JI/CDM Certification Program

Mr. Kunal Rami

SCHEME	STATUS	VALID UNTIL
CDM	Senior Assessor (Validation, Verification) Technical Reviewer	2023-03-26
VCS / ISO 14064-2	Senior Assessor Technical Reviewer	2023-03-26

Authorization status for technical areas within sectoral scopes:

CODE	TECHNICAL AREA
1.2	Renewables
2.1	Energy distribution
3.1	Energy demand
6.1	Construction
7.1	Transport
13.1	Solid waste and wastewater

224 - Rev. 9, Date: 2020-12-03

224_S01-VA060-F20_202005-12-03_rev9

S01-VA060-F20 rev3 / 2012-10-25