



PAVAGADA SOLAR RENEWABLE POWER PROJECT BY GREENKO GROUP

Document Prepared By



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Summary:

VKU Certification Pvt. Ltd. (here after referred as VKU) was commissioned by Infinite Environmental Solution LLP (hereafter referred as Client) and SEI Suryashakti Power Private Limited (here after referred as PP). VKU, has verified greenhouse gas emission reductions reported for the project Activity **“Pavagada Solar Renewable Power Project by Greenko Group” (VCS ID 1791)**, which is a 90MW_{AC} plant in Karnataka covering monitoring period from **01-January-2021 to 31-December-2022** (Inclusive of both start and end dates) with regard to the relevant requirements for VCS Standard version 4.5 /7/.

Purpose Of Verification: The purpose of the verification is to have an independent review of ex-post determination of the monitored GHG emission reductions. It also includes to verify that the monitoring methodology is implemented according to the monitoring plan and monitoring data used, confirms the reductions in anthropogenic emissions by sources is sufficient, definitive and presented in a concise and transparent manner from **01-January-2021 to 31-December-2022** (Inclusive of both start and end dates) under first renewable crediting period from **30-March-2017 to 29-March-2027** (Inclusive of both start and end dates).

The verification scope of the project is:

- To verify that the project is implemented as described in the registered VCS Joint PD&MR /03/
- To assess the project's compliance with other relevant rules including the Indian legislation.
- To confirm that the monitoring system is implemented and fully functional to generate voluntary carbon units without any double counting.
- To establish that the data reported are accurate, complete, consistent, transparent and free of material error or omission by checking the monitoring records and the emissions reduction calculation
- To verify that actual monitoring systems and procedures are in compliance with the monitoring systems and procedures described in the monitoring plan;
- To evaluate the GHG emission reduction data and express a conclusion with a reasonable level of assurance about whether the reported GHG emission reduction data is free from material misstatement

Verification was conducted using VKU's procedures in line with the requirements specified in the VCS Program Guide version 4.4/6/, VCS Standard Version 4.5/7/, VCS Validation and Verification Manual version 3.2/8/, CDM Validation and Verification Standard 3.0/9/, and applying standard auditing techniques.

The verification consisted of desk review, on-site assessment and the resolution of outstanding issues and the issuance of the final verification report and certification.

VKU followed the rule-based approach to perform this verification. During the course of verification, related to operation, monitoring and GHG emission reduction calculation of the VCS project activity in relation to all relevant VCS requirements for the project activity and the applied baseline and monitoring methodology. A total of **06** findings were raised, which includes: **04** Corrective Action Request (CARs); **02** Clarification Requests (CLs) and **00** Forward Action Requested (FAR). All the findings were raised and successfully resolved by the PP. The same has been discussed in Appendix-B of this verification report. The verification team ensured that the reported emission reductions are complete and accurate in accordance with applicable VCS requirements in order to be certified therefore the verification team has detected no further uncertainties.

The GHG emission reductions were calculated on the basis of the approved methodology (ACM0002) "Grid-connected electricity generation from renewable sources", Version 18.1/12/ and the monitoring plan included in the registered VCS Joint PD&MR Version 2.0 dated **22-November-2018/03/**

The project has also referred to following documents.

- Tool to calculate the emission factor for an electricity system - Version 07.0 (EB 100, Annex 04)/13 /
- Methodological Tool- Tool for the demonstration and assessment of additionality Version 07.0.0 (EB 70, Annex 08)/ 14/

- VCS:VCS Standard ,version 4.5 dated 29-August-2023/ 7/
- VCS:VCS Program Guide ,version 4.4 dated 29-August-2023 /6 /
- VCS Validation and Verificatio manual version 3.2 dated 19-October-2016 /8 /
- VCS Program Definitions version 4.4 dated 29-August-2023/10/
- VCS: Monitoring report template Version 4.2/11 /
- CDM Validation and Verification Standard version 3.0/9/

Summary of the verification conclusion;

In conclusion, it is VKU's opinion that the bundle project activity "Pavagada Solar Renewable Power Project by Greenko Group" (**VCS ID 1791**), meets all relevant requirements for VCS standard and guidelines and correctly applies the baseline and monitoring methodology ACM0002) "Grid-connected electricity generation from renewable sources", **Version 18.1./12/**. The monitoring system is in place and the emission reductions are calculated without material misstatement. Hence, VKU is able to certify that the emission reductions from the project during the fourth monitoring period from **01-January-2021 to 31-December-2022** (Inclusive of both start and end dates) under **first crediting period** from **30-March-2017 to 29-March-2027** (Inclusive of both start and end dates) amounts to **294,911 tCO₂e**.

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1 INTRODUCTION

1.1 Objective

Infinite Environmental Solutions LLP (hereafter referred as Infinite Solutions) commissioned VKU Certification Pvt Ltd (here after referred as VKU) to carry out the fourth verification of bundle project “**Pavagada Solar Renewable Power Project by Greenko Group**” (**VCS ID 1791**) in India for the period from **01-January-2021 to 31-December-2022** (Inclusive of both start and end dates) under **first crediting period** from **30-March-2017 to 29-March-2027** (Inclusive of both start and end dates) for a period of 2 years (730) days. The project activity follows a renewable crediting period¹ of 10 years, which can be extended a maximum of two times, as outlined in **section 1.6** of VCS Joint Project Description and monitoring report version 2.0 dated 22-November-2018/3/.

The objectives of this verification exercise are, by review of objective evidence, to establish that.

- To have an independent evaluation of project activity by an accredited validation and verification body against the requirements of the VCS Program Guide Version 4.4/6/, VCS standard version 4.5/7/ and UNFCCC criteria for CDM, as well as criteria given to provide for consistent project operations, monitoring and reporting, on the basis of the registered VCS Joint PD&MR /3/
- The bundle project activity has been implemented and operating as per the registered VCS Joint PD&MR/3/ and that all physical features (technology, project equipment, and monitoring) of the project are in place;
- Monitoring report/1/ and other supporting documents submitted by PP are complete;
- The data is recorded and stored as per the monitoring methodology and approved monitoring plan.
- To confirm that the monitoring system is implemented and fully functional to generate Verified Carbon Units (VCUs) without any double counting/30/
- To establish that the data reported are accurate, complete, consistent, transparent and free of material error or omission by checking the monitoring records and the emissions reduction calculation

The verification process is conducted with the goal of smooth execution and complete operational effectiveness of the monitoring system, assuring the precise generation of Verified Carbon Units (VCUs) without encountering any double counting/30/. Furthermore, a thorough examination of the monitoring records and emissions reduction calculations was performed to ensure the data's comprehensiveness, coherence, transparency, and absence of significant errors or omissions, all in pursuit of establishing the trustworthiness and credibility of the data

1.2 Scope and Criteria

The scope of this verification is the independent, objective review and ex-post determination of the monitored reductions in GHG emissions from the “Pavagada Solar Renewable Power Project by Greenko Group” (**VCS ID 1791**) in India for the period from **01-January-2021 to 31-December-2022** (Inclusive of both start and end dates). The verification of this project was based on the validated & registered VCS Joint PD&MR/3/ and monitoring report/1/ along with supporting documents submitted by the project proponent to the VKU Assessment team. The documents thus submitted to the VKU Assessment team were reviewed against the following guidance & protocols:

- VCS Programme Guide Version 4.4 /6/
- VCS Standard Version 4.5 /7/
- VCS Program Definitions Version 4.4 /10/
- VCS Validation and Verification Manual version 3.2/8/
- CDM Approved methodology ACM0002", “Grid-connected electricity generation from renewable sources” version 18.1 /12/
- CDM Standard: Validation and Verification Standard for Project Activities version 3.0/9/
- Tool for the demonstration and assessment of additionality- Version 07.0.0 (EB 70, Annex 08)/14/
- Tool to calculate the emission factor for an electricity system - Version 07.0 (EB 100, Annex 04)/13/

The steps involved are as follows:

- To verify that the project is implemented as described in the registered VCS Joint PD&MR/3/
- To assess the project’s compliance with other relevant rules applicable under Indian legislation
- To confirm that the monitoring system is implemented and fully functional to generate voluntary carbon units (VCUs) without any double counting /30/.
- To establish that the data reported are accurate, complete, consistent, transparent and free of material error or omission by checking the monitoring records and the emissions reduction calculation/2/.
- To verify that actual monitoring systems and procedures are in compliance with the monitoring systems and procedures described in the monitoring plan;
- To evaluate the GHG emission reduction data and express a conclusion with a reasonable level of assurance about whether the reported GHG emission reduction data is free from material misstatement;
- To verify that reported GHG emission data is sufficiently supported by evidence.

The verification method and criteria encompassed several phases, including

- Desk review of the MR/01/ & ER/02/ and registered VCS Joint PD&MR/03/ and other supporting documents listed in **Table No:- 05**;
- Onsite visit and interviews with PP representative and local stakeholders documented in **VKU.F46W. Attendance Sheet for Audit_ VKU.VER.109.23_VCS _1791/35/**
- Resolution of outstanding issues and issuance of final verification report and applicable VCS Verification Deed of Representation.

Verification is not meant to provide any consultancy to the project proponents. However, stated requests for clarifications and/or corrective actions may have provided input for improvement of the monitoring and reporting of the project.

1.3 Level of Assurance

All the revisions of the verification report before being submitted to the client were subjected to an independent internal technical review to confirm that all verification activities had been completed according to the pertinent VKU's procedure, with a **Reasonable level of assurance**, as per section 04 clause 4.1.2 and clause 4.1.10 (1) of the VCS Standard version 4.5/7/.

The threshold for quantitative materiality with respect to the aggregate of errors, omissions, and misrepresentations, relative to the total reported GHG emission reductions and/or removals was to 5% percent, as required by clause 4.1.10 of the VCS Standard version 4.5/7/ As the project is large scale project, The materiality of the project activity based on actual emission reduction achieved is **5% of 294,911 tCO₂e**. which is equal to **14,745.55 tCO₂e** The verification report is based on the Monitoring report /01/, registered VCS Joint PD&MR /3/ and supporting documents /24//25//26//27//28//29//30//31//32//33//34//37 made available to the assessment team and further information is also collected through performing interviews/36/ and site visit/35/.

The technical review was performed by a technical reviewer qualified in accordance with VKU's qualification procedure.

The following individuals were part of the Verification Team as presented in **Table No.- 01** below

Role/Qualification of Assessment Team	Last Name	First Name
Team Leader, VCS Verifier & Technical Expert (T.A. 1.2)	Kathuria	Sunil
Validator/Verifier	Chauhan	Shivani
Validator/Verifier-Trainee	Tripathi	Apoorva

The following individuals were part of the Technical Reviewer Team as presented in **Table No.-02** below:

Role/Qualification of Technical Team	Last Name	First Name
Technical Reviewer & Technical Expert (T.A 1.2)	Kumar K	Sanjay

1.4 Summary Description of the Project

The project activity involves electricity generation by renewable source (solar energy) and supplying the generated electricity to the unified Indian grid system which is under the purview of the Indian Electricity Grid of India. This is a greenfield project activity i.e., there was no renewable energy-based electricity generation facility in each site of this bundled project and equivalent amount of electricity would have been supplied by fossil-fuel dominated grid – which is pre-project scenario as well as baseline scenario for this project activity. The project activity ensures the reduction of greenhouse gas (GHG) emissions that are real, measurable, and verifiable and also plays beneficial role in the mitigation of climate change.

The project activity is grid-connected solar energy generation, located in multiple villages in Pavagada, Tumkur district in Karnataka state of India. The project is a bundled project activity by **Greenko Group** and the project is promoted by **SEI Suryashakti Power Private Limited**.

The project activity involves total installation **90 MW_{ac}** and the power produced displaces an equivalent amount of power from the grid, which is fed mainly by fossil fuel fired power plants. This project was commissioned on **30-March-2017** and runs satisfactorily since then. All 3 sites included under this bundled project activity were commissioned on **30-March-2017**. The entire project is in continuous operation since its date of commissioning of the solar power project, as witnessed by the assessment team during our observations of Inverters and transformer, switchgear connectivity during onsite visit. It was further verified against the registered VCS Joint PD&MR/3/ previous Verification reports /5/ and commissioning certificates/34/. Above documents have been submitted by PP in response to the feedback raised during assessment. This is in line with section **3.26** and clause **3.26.3** of the VCS Standard version 4.5/7/ where it is an obligation for the project proponent to make available to the validation/verification body the required supporting documents.

Hence VKU in adherence to the section 3.1, clause 3.1.8 of the VCS Standard version 4.5/7/ conforms that the capacity of the project has been verified from the commissioning certificates/31/. This is also verified during on site visit/35/, while interviewing the site personnels, and hence declare that the project capacity is in line with the defined methodology ACM0002 version 18.1/12/ & registered VCS joint PD&MR /3/

The details of the SPVs for the project and their location of installation are mentioned in Table No.- 03 below: -

Name of Investor	Capacity in MW	COD	Connection with Grid	State	Usage
SEI Suryashakti Power Private Limited	30 MW _{AC}	30-March-2017	Indian Grid	Karnataka	Sale to State BESCOM
SEI Bheem Private Limited	30 MW _{AC}	30-March-2017			
SEI Aditi Power Private Limited	30 MW _{AC}	30-March-2017			

The location of all SPVs installed at the site is provided in section 1.7 of MR/1/ which is verified by assessment team during desk review with the help of Google earth pro/23/ and some inconsistencies were observed raised in CAR#04 which were updated by PP. Locations were again reconfirmed through Google earth pro software/23/ and found to be correct as presented below in **Figure 01, Figure 02 and Figure 03** in **section 4.1** of this report. Locations were further cross verified during site visit with the help of GPS map camera/22/ although some discrepancies were observed during desk review which were addressed by PP and revised MR version 03/1/ have correct location references, hence accepted by the VKU assessment team tabulated in **Table No.-04** below:

Table No.-04: Locations of the bundled plant sites

Name of Investor	Capacity (MW)	Village(s)	Tehsil/ Mandal	District	State	Latitude (N)	Longitude (E)
SEI Suryashakti Power Private Limited	30 MW _{AC}	Kamballahalli	Pavagada	Tumkur	Karnataka	14° 12' 18.9648"	77° 22' 48.2340"
SEI Bheem Private Limited	30 MW _{AC}	Upparahalli & Agalwadke	Pavagada	Tumkur	Karnataka	14° 11' 33.8460"	77° 20' 46.1688"
SEI Aditi Power Private Limited	30 MW _{AC}	Pallavalli	Pavagada	Tumkur	Karnataka	14° 08' 26.2104"	77° 18' 54.5796"

As per MR/1/, the electricity generated from the project is supplied to the state grid system (BESCOM) which is under the purview of the Unified Indian Grid. This is confirmed by means of registered VCS Joint PD&MR /3/, B-Form issued by **BESCL- (Bangalore Electricity Supply Company Limited)**, and previous verification reports /5/ and interview with PP/36/. This information was verified during on site assessment and found to be in line with the details provided in the registered VCS Joint PD&MR /3/.

The net electricity of **311,251.38 MWh** was generated by the bundled project activity and was evacuated to the grid, during the current monitoring period from **01-January-2021 to 31-December-2022** (Inclusive of both start and end dates) which resulted in total emission reductions of **294,911 tCO_{2e}** which is **5.90%** higher than the estimated value of **278,478 tCO_{2e}** due to high PLF of **5.90%** achieved in current monitoring period and some minor breakdown of 0.54% which did not have major impact on generation, hence this high PLF generation is acceptable.

This information was verified through document review and interview with representatives from PP who were present onsite of the project activity, Verification team confirms that all the components of installed technology are fully functional and found to be in line with the details provided in the registered VCS Joint PD&MR/3/. Since the project activity is a large-scale project activity, it follows approved large scale CDM methodology **ACM0002 Version 18.1** for quantification of net GHG emission reductions. The total emission reductions achieved by the project activity under the current verification period from **01-January-2021 to 31-December-2022** (Inclusive of both start and end dates) amount to **294,911 tCO_{2e}**.

2 VERIFICATION PROCESS

2.1 Method and Criteria

Verification was conducted using VKU's procedures in line with the requirements specified in the VCS Requirements, i.e., VCS Program Guide version 4.4/6/, VCS Standard version 4.5/7/. The GHG emission reductions are calculated on the basis of the approved Baseline and monitoring methodology, **ACM0002, Grid-connected electricity generation from renewable sources- Version 18.1/12/**

Scope: 01 Energy Industries (renewable- and non-renewable sources)

Title: ACM0002 "Grid Connected Renewable Electricity Generation" (version 18.1) /12/.

During onsite visit/36/ verification team **reviewed 100% data for all the PV Modules, Inverters and Transformers** involved in this project at site **and hence no sampling was involved.**

The verification consisted of the following phases

- **Planning and Intimation to VERRA about site visit:** The assessment team plans the GHG-programme site visit and starts with a desk review of MR/1/ and ER calculation spreadsheet/2/. Assessment team also shared a NOVS Form 15 business days before the initial meeting with the project proponent.
- **Strategic Analysis:** The assessment team conducted a strategic analysis to gain insights into the organization's, project's, or product's activities. This analysis was aimed at determining the scope and scale of the verification activities and will be utilized in the risk assessment process.
- **Risk Assessment;** The assessment team carried out a risk assessment of the GHG statement to identify the likelihood of a substantial error or noncompliance with the established criteria.
- **Evidence Gathering Activities;** Using a risk-based approach assessment team prepared the evidence gathering activities to collect sufficient and appropriate evidence upon which to base the conclusion & determine whether the GHG statement conforms to the criteria, taking into account the principles of the standards that apply to the GHG statement.
- The requirement for a site visit is recognized, and subsequently, the planning for the site visit is undertaken. Decision to take site visit was based on independent risk assessment, as defined in section 4.1.13 of VCS standard version 4.5/7/
- **Audit and Sampling Plan:** An audit plan is prepared, including all sub-elements required for an integrated verification process aligned with the contract, scope, objectives, level of assurance, and materiality.
- **Evidence Gathering Plan:** The evidence-gathering plan is formulated in accordance with the risk assessment conducted by VKU Assessment Team. This plan is structured to reduce the verification risk to a level considered acceptable. As a result, the evidence-

gathering plan outlines the specific nature and scope of the evidence collection activities.

- **Client Confirmation and Approval:** The audit plan for the site visit is shared with the client for their review and confirmation, and it has received their approval,
- **Document Review:** Relevant documents, such as the verification report, monitoring plan, methodology, VCS Joint PD&MR/3/, and QA/QC procedures, are thoroughly reviewed.
- **On-Site Assessment:** This includes interviews and evaluation of the actual project scenario and this is line with the VCS standard version 4.5
- **Resolution of Discrepancies:** Any non-conformities identified during the assessment are addressed and resolved and documented in Appendix-B of this report.
- **Independent Review:** A technical reviewer provides an independent assessment of the project.
- **Final Verification:** After completeness checks, the verification report and certification are issued.

The following sections outline each step involved in verification in more detail.

2.2 Document Review

During the document review, VKU has applied standard auditing techniques to assess the quality of information provided. The verification was performed primarily based on the review of the monitoring report (MR) version **1.0** dated **01-May-2023**/1/, and final MR version **3.0** dated **12-October-2023**/1/.

The emission reduction (ER) calculations spreadsheet **version 1.0** dated **01-May-2023** and Final **version 3.0** dated **12-October-2023** received from PP /2/ were assessed also along with the monitoring reports as part of the verification. In addition, the registered Project Documents VCS Joint PD&MR /3/ is also reviewed in particular for, baseline estimations and the monitoring plan.

As per **section 3.26** and **clause 3.26.3** of the VCS Standard version 4.5/7/ it is an obligation for the project proponent to make available to the assessment team, the required supporting documents and data needed to support statements which are documented in the monitoring report/01/. Thus, the assessment team reviewed the following documents during verification.

The following **Table No.-05** lists the documentation that were reviewed during the verification

/1/	Infinite Environmental Solutions LLP: VCS monitoring report for “Pavagada Solar Renewable Power Project by Greenko Group” • Version 1.0 dated 01-May-2023 • Version 2.0 dated 28-August-2023 • Version 3.0 dated 12-October-2023
/2/	Infinite Environmental Solutions LLP: Emission Reduction Calculation Spreadsheet, for “Pavagada Solar Renewable Power Project by Greenko Group” • Version 1.0 dated 01-May-2023 • Version 2.0 dated 28-August-2023

	Version 3.0 dated 12-October-2023
/3/	EKI Energy Services Limited: registered VCS Joint PD&MR for the project ‘Pavagada Solar Renewable Power Project by Greenko Group’ version 2.0 dated 22-November-2018
/4/	LGAI Technological Center, S.A. (Applus+ Certification): Registered VCS Joint Validation/Verification report for the project “Renewable Power Project by Pavagada Solar Renewable Power Project by Greenko Group”, Version 02 dated 12-December-2018
/5/	Previous Verification Reports: Earthood Services Private Limited: VCS Verification Report “Pavagada Solar Renewable Power Project by Greenko Group” Version 2.0 dated 25-June-2020 covering second monitoring period from 01-August-2018 to 01-October-2019 (inclusive of both dates) TÜV SÜD South Asia Pvt. Ltd: VCS Verification Report “Pavagada Solar Renewable Power Project by Greenko Group” Version 2.0 dated 26-May-2021 covering third monitoring period from 02-October-2019 to 31-December-2020 (inclusive of both dates)
/6/	<u>VCS: VCS Program Guide, version 4.4 dated 29-August-2023</u>
/7/	<u>VCS: VCS Standard, version 4.5 dated 29-August-2023</u>
/8/	<u>VCS Validation and verification manual version 3.2 dated 19-October-2016</u>
/9/	<u>CDM Validation and Verification Standard version 3.0 dated 09-September-2021</u>
/10/	VCS Program Definitions version 4.4 dated 29-August-2023
/11/	VCS: Monitoring report Template VCS Version 4.2
/12/	<u>CDM Executive Board: Baseline and Monitoring Methodology Baseline and monitoring methodology ACM0002”, “Grid-connected electricity generation from renewable sources” (version 18.1)</u>
/13/	<u>Tool to calculate the emission factor for an electricity system² - Version 07.0 (EB 100, Annex 04)</u>
/14/	<u>Methodological Tool- Tool for the demonstration and assessment of additionality - Version 07.0.0 (EB 70, Annex 08)</u>
/15/	<u>CO₂ Baseline Database for the Indian Power Sector User Guide Version 13.0</u>
/16/	UNFCCC: Project search: https://cdm.unfccc.int/Projects/projsearch.html
/17/	Gold Standard Foundation: https://registry.goldstandard.org/projects?q=&page=1
/18/	Central Electricity Authority (Installation and Operation of Meters) Regulations Notified on 17-March-2006 No. 502/70/CEA/DP&D Amendments Notified on 26-June-2010 No. 502/6/2009/DP&D/D-I

² <http://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-07-v7.0.pdf>

/19/	VERRA: https://registry.terra.org/app/projectDetail/VCS/1791
/20/	(Renewable Energy Certificate Registry of INDIA - Registered RE Generator List (recregistryindia.nic.in))
/21/	EIA NOTIFICATION dated 14-September-2006; https://moef.gov.in/wp-content/uploads/2018/03/so1533.pdf
/22/	<u>GPS map camera (GPS App)</u>
/23/	<u>GPS Google earth software used for Location</u>
/24/	Power purchase Agreement between - • SEI Suryashakti Power Private Limited (30 MW) and M/s. Bangalore Electricity Supply Company Limited (BESCOM), Bengaluru • SEI Aditi Power Private Limited (30 MW) and M/s. Bangalore Electricity Supply Company Limited (BESCOM), Bengaluru • SEI Bheem Private Limited (30 MW) and M/s. Bangalore Electricity Supply Company Limited (BESCOM), Bengaluru
/25/	Bangalore Electricity Supply Company Limited - Certificates of Calibration for all the meters belongs to project activity
/26/	Operation and Maintenance done by Greenko
/27/	Generation Log Book
/28/	Monthly B- Forms issued by Bangalore Electricity Supply Company Limited (BESCL) for the current monitoring period 01-January-2021 to 31-December-2022 (Inclusive of both start and end dates)
/29/	Invoice issued by PP SEI Suryashakti Power Private Limited for the current monitoring period from 01-January-2021 to 31-December-2022 (Inclusive of both start and end dates)
/30/	Letter of declaration from SEI Suryashakti Power Private Limited dated 31-July-2023 regarding not having created or sought any other form of environmental credit for the current verification period from 01-January-2021 to 31-December-2022 (Inclusive of both start and end dates)
/31/	Commissioning Certificates of all 3 sites
/32/	Technical specification of the bundled solar project
/33/	Grievance Register present on-site
/34/	Training records of Site Personnels
/35/	Site visit dated 14-June-2023 photographs and attendance sheet VKU.F46W. Attendance Sheet for Audit_ VKU.VER.109.23_VCS _1791
/36/	Onsite Personnel Interviews and Focussed Group Discussions dated 14-June-2023
/37/	Breakdown Details (Please Refer Appendix 2 of MR and section 04 Verification Process of this Verification Report) PP has submitted Breakdown Details
/38/	VKU.F64W.Field Assessment Checklist for Onsite Visit_ VKU.VER.109.23_VCS _1791

2.3 Interviews

An on-site inspection has been performed by the assessment team. Representatives of the PP and O&M team were interviewed personally by assessment team on **14-June-2023** at Multiple Villages of **Pavagada-Tehsil** in **Tumkur district, Karnataka, India** for all 3 sites. Personnel responsible for monitoring of project activity, data collection, management, and QA/QC procedure were also interviewed. These tables outline the personnel involved in the interviews, along with their respective roles. The interviews specifically targeted individuals responsible for monitoring -of project activity, data collection, quality assurance and quality control (QA/QC) procedures. The tables serve to identify the individuals interviewed and provide relevant information regarding their roles within the project.

The details of the people interviewed are mentioned in the Table No.-06 below

Location: District- Tumkur of **State-** Karnataka, Country- India

S. No.	Name & Gender	Organization and Designation	Topic
1	Chandrashwar Verma (Male)	SEI Suryashakti Power Private Limited (Senior Manager)	- Data archiving, breakdown details - Maintenance of generation records and Calibration of meters - Project Implementation and technical details of the Project like breakdown details - Training requirement of the personnels - O&M of the plant site and personnel responsible for monitoring of required monitored parameters and implementation of QA/QC Procedure.
2	A.V Suresh (Male)	SEI Suryashakti Power Private Limited (Site In-charge)	
3	Balaji MN. (Male)	SEI Suryashakti Power Private Limite (Manager)	
4	Virupak shamt (Male)	SEI Bheem Private Limited (Site In-charge)	
5	P. Rakesh (Male)	SEI Bheem Private Limited (Senior Manager)	
6	Avinash Reddy (Male)	SEI Bheem Private Limited (Assistant Manager)	
7	Prabhat (Male)	SEI Aditi Power Private Limited (Assistant Manager)	

8	Sv. Rama Kumar (Male)	SEI Aditi Power Private Limited (Deputy Manager Assistant)	
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The topics covered during interview ranges from general features and implementation of project to technical details of the project like calibration, monitoring and measuring system, data collection, recording, emergency procedures internal audit, Procedures for handling non-conformances with the validated monitoring plan, personal training and archiving procedures. The assessment was based on the feedback received during onsite interview coupled with the documentation in **VKU.F62W.Field Assessment Checklist for Onsite Visit/38/**

During Onsite Visit/36/, Assessment team also interviewed the local stakeholders involved in the projects to verify the implementation and process of grievance resolution as claimed and mentioned in the Monitoring report/1/ (refer section 2.2 of MR). The assessment team confirmed the sustainable development claims and assessed the socio-economic impact of the project on the local community and details about the same is provided in section 4.1 of the report. Assessment Team also checked the records and observed that PP has provided opportunities for the locals to express their opinions and grievances in the grievance register/33/ placed at the site, with efforts to resolve any issues through consultation with stakeholders. Assessment team thus verified the grievance register at the site and discussed about this with the stakeholders via focussed group discussions and personal interview/36/ with stakeholders and it was accepted as PP has a well-defined procedure to solve any grievance when raised by any local stakeholders in the project implementation and that their grievances are resolved appropriately which was confirmed during site visit, although no negative feedback was received during current monitoring period.

The Details of the Interview with Local Stakeholders are mentioned in the Table No.-07 below

S. No.	Name & Gender	Category	Topic of Discussion
1	K. Mani Krishna (Male)- SEI Suryashakti Power Private Limited	Local Stakeholder	- Execution of Project activity and its impact on the economic, social and environmental parameters on the local people of the area & around the situated project activity - The ongoing communication procedure and the
2	Sv. Krishna Rai (Male)- SEI Suryashakti Power Private Limited		
3	Ramakrishna (Male)- SEI Bheem Private Limited		

4	K. Swami (Male)- SEI Bheem Private Limited		addressal of their grievance by the project proponent
5	T. Muthuswamy (Male)- SEI Aditi Power Private Limited		The employment generation due to project activity implementation.
6	T.V Chandrakumar (Male)- SEI Aditi Power Private Limited		

The above stated information regarding the Interview with site personnel/36/ was recorded by VKU's Assessment Team in a form called as **VKU.F46W. Attendance Sheet of Onsite audit/35/** & there were no negative comments received during the stakeholder consultation interview conducted on site and more detail is enlisted in the section 4.2.2 below of this report

2.4 Site Visits

Site Location visited:

Location: Multiple Villages of **Pavagada-Tehsil in Tumkur district, Karnataka**, in Country - India. Further the location along with longitude and latitude were assessed and mentioned in section 4.1. of this report.

An On-site visit was undertaken by the verification team to the project location identified in the MR/01/ at Village- Multiple Villages of Pavagada-Tehsil in Tumkur district, Karnataka, on **14-June-2023** to carry out the following;

- A review of the operation and implementation of the registered project activity in accordance with the VCS Joint PD&MR version 2.0 dated **22-November-2018/3/**and VCS MR/1/.
- An analysis of information flows used in generating, aggregating and reporting the monitoring parameters.
- Interviews/36/ with relevant personnel to determine whether the operational and data collection procedures are implemented in accordance with the monitoring plan in the registered VCS Joint PD&MR /0maam 3/
- A cross check between information provided in the monitoring report and data from other sources such as plant logbooks, DGR Reports, B-forms, or other similar data sources
- A check of the monitoring equipment including calibration performance and observations of monitoring practices against the requirements of the VCS Joint PD&MR /03/ the applied methodology/12/ including applicable tool/13/
- A review of calculations and assumptions made in determining the GHG data and emission reductions;

- An identification of quality control and quality assurance procedures in place to prevent or identify and correct any errors or omissions in the reported monitoring parameters

2.5 Resolution of Findings

The objective of this phase of the verification is to resolve any outstanding issues which need to be clarified for VKU's positive conclusion on the project description. To guarantee transparency a verification protocol has been customized for the project. The protocol shows in a transparent manner the requirements, means of verification and the results from verifying the identified criteria. The verification protocol consists of three situations in tables; the different columns in these tables are described below.

A corrective action request (CAR) is raised if one of the following occurs:

- 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 that will impair the estimate of emission reductions;
- Issues identified in a FAR during previous assessment i.e., in validation or verification report to be cross verified during verification have not been resolved by the project participants.

A clarification request (**CL**) is raised if information is insufficient or not clear enough to determine whether the applicable VCS requirements have been met.

A forward action request (**FAR**) is also raised in cases where any required deviation/information is not fulfilled in current verification and thus needs to be taken up in consequent verification for better transparency thus holding the applicability of the methodology eligible to the project activity and there is no impact of the same on additionality, baseline scenario & emission reduction calculation of project.

In summary, **02 CLs**, **04 CARs** and **00 FAR** were raised during this verification which were closed successfully and details are provided under **Appendix B** of this report.

2.5.1 Forward Action Requests

Based on the review of the registered VCS Joint Validation and Verification Report/04/ and previous VCS Verification Reports /05/, no FAR was raised during previous verification which needs to be closed during this verification and no FAR has been raised during current verification.

2.6 Eligibility for Validation Activities

VKU has not undertaken any validation activities as part of the verification and does not hold accreditation for validation of any relevant sectoral scope Hence this section is not applicable. It

is to further conclude that during current verification there is no validation assessment undertaken either by VKU itself or parallelly by other certification bodies, as the same was confirmed with focussed group discussions and interview with the PP /36/ during site visit/35/.

Assessment team assessed the VERRA's website on **20-October-2023:** <https://verra.org/validation-verification/vku-certification-pvt-ltd/#vcs> wherein the scope of services of VKU certification Pvt. Ltd. is mentioned as verification and not validation. Thus, ensuring that the accreditation details mentioned in FVR is consistent and correct.

VKU Certification Pvt. Ltd is currently undergoing validation accreditation with ANAB for which witness audit has already been conducted. Thus, ensuring that the accreditation details mentioned in FVR is consistent and correct.

3 VALIDATION FINDINGS

3.1 Participation under Other GHG Programs

The project has not applied under any other GHG program except VCS for the current monitoring period, **01-January-2021 to 31-December-2022 (Inclusive of both start and end dates)**. The project is registered under VCS with project ID: 1791. This was confirmed by checking VERRA registry website for the project and, it was found that the project was registered with VCS. Simultaneously other registry websites were also checked such as GS, CR-I, UCR, ICR, CR-I and GCC registries with similar project title/capacity and Project Proponents but the assessment team could not find any such project registered on these registries thus it was confirmed that the project does not claim any emission reduction from other registries. This was supported from the declaration/30/ submitted by PP in which they have mentioned that they will not claim same GHG emission reductions of the project from any other GHG program except VCS thus ensuring emission reduction generated from the project activity for current monitoring period from **01-January-2021 to 31-December-2022 (Inclusive of both start and end dates)** will not be double counted hence accepted by the assessment. Assessment team also did the exercise of independently searching for such project registration or claim for current monitoring period was performed for other GHG related benefits such as REC/20/ and I-REC benefits and based on both independent assessment and declaration submitted by PP/30/, the assessment team accepted the claim that there is no double counting from this project activity for current monitoring period from **01-January-2021 to 31-December-2022 (Inclusive of both start and end dates)**. Thus, ensuring emission reduction generated from the project activity will not be double counted hence accepted by the assessment team.

1. <https://www.recregistryindia.nic.in/>
2. <http://cdm.unfccc.int/>
3. <http://www.goldstandard.org/>
4. <https://verra.org/verra-standards-and-programs/>.
5. <https://www.ucarbonregistry.io/>
6. <https://projects.globalcarboncouncil.com/>
7. [I-REC Standard - The International REC Standard Foundation \(irecstandard.org\)](http://www.irecstandard.org/)
8. [Carbon Registry-India](http://www.carbonregistryindia.com/)
9. [International Carbon Registry - International Carbon Registry](http://www.internationalcarbonregistry.com/)
10. [VCU Issuance Records](http://www.vcuissuance.com/)

Rejection by other GHG programs

The Project is not rejected by other GHG programs. A declaration/30/ for the same is checked and found correct by the assessment team. Also, assessment team independently verified with the following registries and checked projects from the PP matching the same project design and found that no such project either exists or were rejected by the registries.

The details of the registries checked are as follows:

1. <https://www.recregistryindia.nic.in/>
2. <http://cdm.unfccc.int/>
3. <http://www.goldstandard.org/>
4. <https://verra.org/verra-standards-and-programs/>
5. <https://www.ucarbonregistry.io/>
6. <https://projects.globalcarboncouncil.com/>
7. [I-REC Standard - The International REC Standard Foundation \(irecstandard.org\)](http://www.irecstandard.org/)
8. Carbon Registry-India
9. [International Carbon Registry - International Carbon Registry](http://www.internationalcarbonregistry.org/)

In conclusion, the project's exclusive registration under VCS for the current monitoring period, along with its absence from rejection lists of other GHG programs, has been comprehensively verified, ensuring the integrity and credibility of its GHG benefits claims.

3.2 Methodology Deviations

There is no methodology description deviation identified during the current monitoring period. No deviation was involved in previous Joint validation and verification/04/and previous verification as well/05/. The assessment team confirms the same by checking the project webpage/19/.

3.3 Project Description Deviations

The following two deviation was reported during the current monitoring periods and will be considered in subsequent verifications. Description of the deviation and the assessment on conservativeness of the deviations is provided below.

Deviation 1:

PP has requested the deviation to change the formula used in the calculation of net electricity supplied to the grid which was not mentioned correctly in the registered VCS Joint PD&MR/3/. This correction is considered as project description deviation in the current monitoring period. The formula used in the monitoring plan for calculating the net electricity supplied to the grid is based on the B-Form values provided by KPTCL is as follows: -

$$EG_{PJ,y} = \text{Export (KWh)} - 115\% \text{Import (KWh)} - \text{Transmission losses (KWh)}$$

This is in line with the actual monitoring procedure followed on the project activity.

The Project deviation is in line with the guidance provided under Section 3.21.2 para no. 2 of the VCS standard, Version 4.5/7/ and it does not impact the existing applicability conditions of the methodology, additionality or the appropriateness of the baseline scenario. Since the net value used prior to this deviation was also B-form/JMR provided by BESCL for calculation of baseline emissions and now also same form will be used, only the formula representation was inconsistent which has been corrected now and thus accepted by VKU assessment team.

Deviation 2:

PP has requested this second deviation related to change in number of solar panels modules which have been replaced, causing minor changes in , technical specifications stated in registered VCS Joint PD&MR/3/. It has been now updated as per the actual scenario and the same has been described in table:

The technical specifications are different as per the registered VCS Joint PD&MR and it has been updated as per the actual scenario and the same has been described below from Table No:-07 to Table No.-09 below:

Technical specification for 90 MW_{AC} solar project is provided in tables below:

Table No:-08- Technical specification of 30 MW_{AC} solar project by SEI Suryashakti Power Private Limited

S.No.	Technical details of the equipment	Description
1	Technology Used	Solar PV technology (Poly-Crystalline)
2	Module Make, Number of modules and their capacity	Make- JA Solar Risen Energy RENO No. of Modules- 5853 for 310 Wp, 491,99 for 315 Wp, 421,24 for 320 Wp Total modules- 969,36 Module Capacity- 310 Wp, 315 Wp & 320 Wp
3	Number of Inverters, Inverter Make & Model	40 Inverters Make: TMEIC

		Model: PVL0750 E (750 KW) – 40 nos
4	Technical specifications of power transformer, make, voltage, rated power, frequency	Make: Schneider Pvt. Ltd. Voltage: 380/33kV Rated power: 1.65 MVA Frequency: 50Hz
5	Tilt	Tracking

Table No:-09- Technical specification of 30MW_{AC} MW solar project by SEI Bheem Private Limited

S. No.	Technical details of the equipment	Description
1	Technology Used	Solar PV technology (Poly-Crystalline)
2	Module Make, Number of modules and their capacity	Make- JA Solar Risen Solar Technology Total No. of Modules- 97,020 Module Capacity- 310 Wp
3	Number of Inverters, Inverter Make & Model	40 Inverters Make: TMEIC Model: PVL0750 E (750 KW) – 40 nos
4	Technical specifications of power transformer, make, voltage, rated power, frequency	Make: Schneider Pvt. Ltd. Voltage: 380/33kV Rated power: 1.65 MVA Frequency: 50Hz
5	Tilt	Tracking

Table No:-10- Technical specification of 30MW_{AC} MW solar project by SEI Aditi Power Private Limited

Sl. No.	Technical details of the equipment	Description
1	Technology Used	Solar PV technology (Poly-Crystalline)
2	Module Make, Number of modules and their capacity	Make- JA Solar Risen Energy RENO No. of Modules- 97,020 Module Capacity- 310 Wp
3	Number of Inverters, Inverter Make & Model	40 Inverters Make: TMEIC Model: PVL0750 E (750 KW) – 40 nos

4	Technical specifications of power transformer, make, voltage, rated power, frequency	Make: Raychem Pvt. Ltd. Voltage: 380/33kV Rated power: 1.65 MVA Frequency: 50Hz
5	Tilt	Tracking

The verification team has assessed this change and acknowledged and accepted this deviation, affirming that the project remains fully compliant with the VCS rules. Furthermore, it is important to note that this deviation has no impact on the project capacity, applicability of the methodology, the concept of additionality, or the appropriateness of the baseline scenario. The project continues to meet all relevant requirements and remains in adherence with VCS guidelines.

3.4 Grouped Project

The project does not involve any addition of new project activity and thus the project do not fall under grouped project.

4 VERIFICATION FINDINGS

4.1 Project Implementation Status

During the onsite audit with the project proponent (PP) representative, it was concluded that the project is implemented as per the requirement of the registered VCS Joint PD&MR /3/and approved monitoring plan. The project activity is a bundled project of 90 MW_{AC} in the state of Karnataka by three investors listed in **Table No.- 3** above. As described in section 1.4 of this report this is a greenfield renewable project which generates electricity from solar PV modules hence reduces the emissions from the coal based Indian grid. After commissioning On 30-March-2017, the plant is satisfactorily working and below Table No. 10 presents the breakdown and operational hours percentage of the plant site for the current monitoring period.

The breakdown and operational hours site wise³ are mentioned in the **Table No.-11**; below:

S.No.	Plant Site	Total Hours	Net operational Hours	Breakdown Hours
1	SEI Suryashakti Power Private Limited	17,520 hours ⁴	17,441.77 hours/ 99.55% of total hours	78.23 hours/ 0.44% of total hours
2.	SEI Bheem Private Limited		17,502.66 hours/99.90% of total hours	17.34 hours/0.098% of total hours
Total			17,424.5 hours/99.45% of total hours	95.5 hours/0.54% of total hours

³ The breakdown happened at two sites only, hence those two sites were listed in table- there was no breakdown observed in SEI Aditi Power Private Limited, hence that is not included under breakdown hours calculations.

⁴ Total hours = 17520 (i.e.,730*24)

The SPVs are under operation for 99.45% of the total hours during the current monitoring period. The breakdown occurred only for a total of 0.54% of total hours of only two SPVs out of three and it is beyond the control of PP. Therefore, due to this minor percentage variations of breakdown identified in the current monitoring period it does not have major impact on the GHG emissions reductions. The summary of breakdown details in the current monitoring period has been described in detail in Appendix 02 of MR/1/. These were assessed by assessment during site visit with the help of interviews of site personnel and checking the records at the site and desk review of the MR/1/ and breakdown sheet/37/ submitted by PP for the two sites.

Assessment team observed through breakdown details provided by PP /37/and Appendix 02 section of MR/1/ that no unforeseen incident/event evolved which can impact the operation of the project activity. The project underwent continuous operation and only scheduled maintenance as per the manufacture's specification happened which is acceptable to the assessment team as verified during the interview with PP personnel/36/ Senior engineers/Junior engineer/Assistant manager present at site during onsite visit. Moreover, there is no unforeseen incident which can affect the applicability of the methodology and thus the same is acceptable to the assessment team.

The breakdowns were attributed to various major reasons, which include:

- Due to Pole no-14 B phase conductor Span joint opened
- Pin insulator failure
- PSS side snake hitting for isolator side
- Line LC taken for KPTCL 66kv line string work purpose near bheem site
- Line LC taken for KPTCL 66kv line string work purpose near bheem site
- Pin insulator damaged 3 no's
- Manually shut down taken due to pss T/F -1 testing purpose
- MCR O/G Manully shut down taken due to ABT meter Calibration
- PSS side bheem site feeder CT Selector switch cable connection issue amp not shown so that observed the found slightly burnt.
- PTR-02 to PTR-1 load shifted
- 33 kv PSS side LC taken Our end due to Pole no-286 conductor melted
- PTR-1 LV bushing Y-Phase PG clamp bolts & Nuts replaced after work completion breakers was charged

The project activity was operational for a total of **17,424.5 hours (99.45%)**, representing **730 days**. However, during the monitoring period **from 01-January-2021 to 31-December-2022**, the project experienced breakdowns for a duration of **95 hours 57 minutes (0.54%)**, as detailed in Appendix 2 of the monitoring report (MR)/ 1/. It is important to note that the plant was not entirely shut down during these breakdown hours; only the affected parts were temporarily taken out of operation.

The verification process involved reviewing the generation log book records/27/ and breakdown sheet/37/ provided by the project proponent (PP). Additionally, an onsite visit to the project site/36/ was conducted, where it was confirmed that only the affected parts were shut down while the rest of the plant remained operational. This information is consistent with the details mentioned in Section 3.1 and **Appendix 2** of MR/1/.

During the current monitoring period, solar power plant was operational and the project activity has supplied **311,251.38 MWh** of electricity, and thus contributing to **294,911 tCO_{2e}**. The ex-ante emission reduction for this monitoring period as per registered VCS Joint PD & MR/3/ were **278,478 tCO_{2e}**, whereas actual emission reductions achieved are **294,911 tCO_{2e}**, which is **5.90%** higher than the estimated emission reductions due to higher sunshine hours, high PLF and minor breakdowns during this monitoring period. Further explanation is provided section 4.5 of this report.

GHG emission reductions.

Table No.- 12 presents the vintage wise calculation as per ER Sheet /2/ submitted by PP

Vintage wise	Generation MWh			Emission Reductions tCO _{2e}		
	SEI Aditi	SEI Bheem	SEI Suryashakti	SEI Aditi	SEI Bheem	SEI Suryashakti
Year 2021	52,029.12	51,952.66	52,754.77	49,298	49,225	49,985
Year 2022	51,865.88	50,880.88	51,768.07	49,143	48,210	49,050
Total	1,03,895.00	1,02,833.54	1,04,522.84	98,441	97,435	99,035
	311,251.38 MWh			2,94,911 tCO_{2e}		

The assessment team also conducted a verification of the project location. This was accomplished through a desk review using Google Earth/23/ and during the onsite visit using GPS map camera software/22/. The latitude and longitude coordinates specified in the registered VCS Joint PD&MR/3/, VCS Joint Validation/Verification Report/4/, and VCS MR/1/ were confirmed to be accurate. **Figure 01, Figure 02 and Figure 03** below from the google earth pro software/23/ shows the entire location of SPVs installed at the site.

Figure 01: Location of “SEI Suryashakti Power Private Limited (30MW_{AC})” as verified through Google Earth pro/23/



Figure 02: Location of “SEI Bheem Private Limited (30MW_{AC})” as verified through Google Earth pro /23/



Figure 03: Location of “SEI Aditi Power Private Limited (30MW_{AC})” as verified through Google Earth pro/23/



The latitudes and longitudes of project activity are confirmed as listed in **Table No.-13** below:

Name of Investor	Capacity (MW)	Village(s)	Tehsil/ Mandal	District	State	Latitude (N)	Longitude (E)
SEI Suryashakti Power Private Limited	30 MW	Kamballahalli	Pavagada	Tumkur	Karnataka	14° 12' 18.96 48"	77° 22' 48.234 0"
SEI Bheem Private Limited	30 MW	Upparahalli & Agalmadke	Pavagada	Tumkur	Karnataka	14° 11' 33.84 60"	77° 20' 46.168 8"
SEI Aditi Power Private Limited	30 MW	Pallavalli	Pavagada	Tumkur	Karnataka	14° 08' 26.21 04"	77° 18' 54.579 6"

Assessment team checked the commissioning certificates of all 3 sites/15/ and confirmed that the dates of commissioning for the Project are correct. Assessment team also confirmed during the onsite audit that there is no change in project design viz., capacity of the solar panels remained the same and the project is implemented as per the description provided in the registered VCS Joint PD&MR /3/. This has been further verified from the registered VCS Joint Validation & Verification report/4/ and previous verification reports/5/. For commissioning dates/31 /, see **section 1.4 Table No.-03** of this report.

The verification team conducted a thorough assessment of the implementation status of the project activity and the installed instrumentation. This evaluation included an onsite visit/38/, desk review and technical review to verify the technical specifications/32/. The team examined the nameplates and confirmed that the installed modules matched the provided specifications. Additionally, the project proponent (PP) submitted supporting documents detailing the salient features of the solar technology. The relevant information from these documents has been compiled and presented in **the Table No.- 14, Table No.- 15 and Table No.- 16 below:**

Solar Power Project Technology Details

The adopted technology for the project activity involves the conversion of solar energy into electrical energy. This process includes the transformation of solar energy into mechanical energy, which is then further converted into electrical energy. It is important to note that this technology is environmentally friendly, as it does not generate any greenhouse gas (GHG) emissions during the electricity generation process. Furthermore, there is no transfer of technology associated with the implementation of the project activity.

Table No.- 14; Technical specification of 30 MW_{AC} solar project by SEI Suryashakti Power Private Limited

S.No.	Technical details of the equipment	Description
1	Technology Used	Solar PV technology (Poly-Crystalline)
2	Module Make, Number of modules and their capacity	Make- JA Solar Risen Energy RENO No. of Modules- 5853 for 310 Wp, 49199 for 315 Wp, 42124 for 320 Wp Module Capacity- 310 Wp, 315 Wp & 320 Wp
3	Number of Inverters, Inverter Make & Model	40 Inverters Make: TMEIC Model no: PVL0750 E (750 KW) – 40 nos
4	Technical specifications of power transformer, make, voltage, rated power, frequency	Make: Schneider Pvt. Ltd. Voltage: 380/33kV Rated power: 1.65 MVA Frequency: 50Hz
5	Tilt	Tracking

Table No.- 15; Technical specification of 30 MW_{AC} solar project by SEI Bheem Private Limited

S. No.	Technical details of the equipment	Description
1	Technology Used	Solar PV technology (Poly-Crystalline)
2	Module Make, Number of modules and their capacity	Make- JA Solar Risen Solar Technology Total No. of Modules- 97,020 Module Capacity- 310 Wp
3	Number of Inverters, Inverter Make & Model	40 Inverters Make: TMEIC Model no: PVLO750 E (750 KW) – 40 nos
4	Technical specifications of power transformer, make, voltage, rated power, frequency	Make: Schneider Pvt. Ltd. Voltage: 380/33kV Rated power: 1.65 MVA Frequency: 50Hz
5	Tilt	Tracking

Table No.- 16; Technical specification of 30 MW_{AC} solar project by SEI Aditi Power Private Limited

S. No.	Technical details of the equipment	Description
1	Technology Used	Solar PV technology (Poly-Crystalline)
2	Module Make, Number of modules and their capacity	Make- JA Solar Risen Energy RENO No. of Modules- 97,020 Module Capacity- 310 Wp
3	Number of Inverters, Inverter Make & Model	40 Inverters Make: TMEIC Model no: PVLO750 E (750 KW) – 40 nos
4	Technical specifications of power transformer, make, voltage, rated power, frequency	Make: Raychem Pvt. Ltd. Voltage: 380/33kV Rated power: 1.65 MVA Frequency: 50Hz
5	Tilt	Tracking

Based on the interviews conducted with site personnel/36/ and the verification team's onsite visit/35/, it has been confirmed that all quality assurance and quality control (QA/QC) procedures specified in the registered VCS Joint PD&MR/3/ have been followed during the operation of the project activity. The monitoring plan outlined in the registered registered VCS Joint PD&MR/3/ and the applied methodology have been effectively implemented, monitoring all the specified parameters in the current monitoring report.

It was observed that the monitoring plan was implemented as per the registered VCS Joint PD&MR /3/and applied methodology ACM0002, Version 18.1/12/. The organizational role and responsibility as mentioned in the registered VCS Joint PD&MR /3/ is followed onsite. Meters are calibrated as per calibration frequency mentioned in registered VCS Joint PD&MR /3/.

The baseline emission parameters specified in the registered VCS Joint PD&MR/03/ have been verified, ensuring their accuracy and compliance. The PP has provided a declaration as an evidence requirement defined under section 3.24 clause 3.24.3 of VCS Standard version 4.5/7/ stating that they will not claim credits under any other GHG emission reduction scheme, including the Clean Development Mechanism (CDM), for the present monitoring period under VCS. This declaration ensures that there is no possibility of double counting.

Overall, based on the interviews, onsite visit, and verification of documents, it can be concluded that the project activity has adhered to the necessary procedures, monitoring parameters, emergency preparedness, and baseline emission parameters outlined in the registered VCS Joint PD&MR/3/.

Assessment team concludes the following:

- The monitoring plan is implemented completely and monitoring system (i.e., process and schedule for obtaining, recording, compiling and analysing the monitored data and parameters) is appropriate as per the registered monitoring plan in VCS Joint PD&MR /3/ and MR/1/. However, Deviation 01 relates to the change in formula used to calculate the net electricity exported to the grid as per the change in procedure at the site in line with the B-form. Deviation 02 relates to the technical specifications. Other than that, no material discrepancies between project implementation and the project description provided in the registered VCS Joint PD&MR /3/.
- There are no material discrepancies between project implementation and the project description provided in the registered VCS Joint PD&MR /3/.
- There are no material discrepancies between the actual monitoring system, and the monitoring plan set out in the project description and the applied methodology /12/
- Materiality threshold applied is 5% as per 4.1.10 of VCS Standard v4.5/7/, It was concluded that the materiality threshold applicable to the project activity based on the type of project i.e., Project is 5%. This effectively means that there is uncertainty inherent in the estimation of emission reduction of 5%. This is consistent with the section 4.1.10 of VCS standard v4.5 which is equal to **14,745.55 tCO₂e**.
- The GHG emission reductions or removals generated by the project have not been included in any emissions trading program or any other mechanism that includes GHG allowance trading.
- The project has not received or sought any other form of environmental credit, or has become eligible to do so since Joint validation & verification/04/ or previous verifications/05/
- The project is registered under VCS only and complying with 3.24.5 of the VCS Standard version 4.5/7/; however, PP has submitted the declaration stating/30/, they will not claim same GHG emission reductions of the project from any other GHG program for the current monitoring period when project is seeking to get GHG emission reduction from VCS. Audit team also checked the REC mechanism- Renewable Energy Certificate Registry of India (Renewable Energy Certificate Registry of INDIA - Registered RE Generator List

(recregistryindia.nic.in)/20/ which confirms that the project is not registered under this mechanism.

- The project activity complies with indicators for sustainable development in the interim approval guidelines for Clean Development Mechanism (CDM) projects from India as discussed under section 1.11 of MR/01/. Assessment team has verified the same during on site visit/36/ and found all the indicators to be effective and applicable for the project activity.
- According to clause 3.24.7 of VCS Standard 4.5/7/, specific guidelines are applicable when the producer(s) or retailer(s) of the impacted good or service are identified but not involved in the project or do not possess a website. The project Activity is a solar power project and does not involve any supply chain in the project such as manufacturers, wholesalers, distributors and retailers. So, no indirect upstream and downstream GHG emissions are involved in the project activity. Thus, the Scope 3 emissions are not applicable in this project activity. The project activity complies with 2 indicators for sustainable development in the interim approval guidelines for Clean Development Mechanism (CDM) projects from India as discussed under section 1.11 of MR/1/. Assessment team has verified the same during on site visit/35/ and found all the indicators to be effective and applicable for the project activity.

The project activity has implemented activities that results in 2 SDG Contributions; 7.2 & 13.0

- **7.2 i.e. (Renewable energy share in the total final energy consumption)** As a part of this bundle project activity the renewable electricity supplied is **719,139.66 MWh** to Indian grid till end of this monitoring period. This has helped to strengthen the renewable energy share in the energy mix. For the current monitoring period project has supplied **311,251.38 MWh** of electricity to Indian grid. Assessment team has referred previous verification reports/05/ to verify the claims and found that the above claimed renewable electricity supplied to Indian grid to be correct.
- **13.0 i.e. (Tonnes of greenhouse gas emissions avoided or removed)** Due to installation of this project activity, PP has prevented the release **681,378 tCO_{2e}** emissions into the atmosphere till end the current monitoring period. For the current monitoring period the project activity has prevented the release of **294,911 tCO_{2e}** emissions. Assessment team has referred previous verification reports/05/ to verify the claims and found that the above claimed emission reductions to be correct Thus, proving that the project generates eco-friendly, GHG free power which contributes to sustainable development of the region.

All the above stated information was verified by VKU assessment team during onsite visit/35/ at the project site by interviewing the site personnel and by conducting focussed group discussion with them /36/. There are no potential harmful socio-economic and environmental effects in the project activities. The project activity does not have any major adverse impacts on environment during its construction or operational phase. VKU assessment team has assessed the project activity on site and confirms that there were no negative environmental and socio-economic

impacts observed during current monitoring period as this is a solar power project and all necessary measures were found in place which was confirmed during site visit /35/.

- As per the section 1.1 of the MR/1/, PP has provided the audit history as below

Table No. 17: Audit History Table

Audit type	Monitoring Period Dates (Inclusive of both start and end dates)	Program	Numbers of Years	VVB Name	VCUs Issued	Conclusion
Validation+ Verification	30-March-2017 to 31-July-2018 (First and last date included)	VCS	1 year 4 months 2 days	LGAI Technological Center S.A. (Applus+ Certification	59,827 tCO _{2e}	VKU's assessment team has conducted a cross-verification of the emission reductions reported in the monitoring report for MP 1 with the Joint Validation & Verification Report/4/ for MP 1. Additionally, the issuance of VCUs was cross-verified with the <u>VCU's issuance record</u> link available on the project's web page/19/
Verification	01-August-2018 to 01-October-2019 (First and last date included)	VCS	1 year 2 months 01 days	Earthood Services Private Limited	140,717 tCO _{2e}	VKU's assessment team has cross verified the emission reductions reported in the <u>monitoring report for MP 2</u> with the <u>verification report/5/ for MP 2</u> and VCU's issued were cross verified from the <u>VCU's issuance record</u> available on the project webpage/19/
Verification	02-October-2019 to 31-December-2020 (First and	VCS	1 year 2 months 30 days	TUV SUD South Asia Pvt. Ltd.	185,923 tCO _{2e}	VKU's assessment team has cross verified the emission reductions reported in the <u>monitoring report for MP 3</u> with the <u>verification report</u>

	last date included)					/5/ for MP 3 and VCU's issued were cross verified from the <u>VCU's issuance record</u> available on the project webpage/19/
Verification	01-January-2021 to 31-December-2022 (First and last date included) (Current Monitoring period)	VCS	02 years 00 months 00 days	VKU Certification Private Limited	294,911 tCO ₂ e	VKU assessment team conducted the verification for current monitoring period (MP-4) and verified the emission reductions reported in the ER Sheet/2/ and MR/1/ via supporting documents.
Total	30-March-2017 to 31-December-2022 (First and last date included)	VCS	5 years 9 months 2 days	N/A	6,81,378 tCO ₂ e	The Total emission Reduction prevented by the project activity since commissioning was verified by VKU's Assessment team via previous verification reports and other supporting documents

The project is contributing in sustainable development by generating electricity and reduction of CO₂ emissions due to implementation of project activity and generates employment to the local stakeholders. Through Project activity economic development has been achieved in the project location by creating opportunities of employment during the project lifetime. Project proponent monitors the carbon emission with help of the record of electricity generated.

In view of the information's as verified above the assessment team is able to conclude that the project has been implemented as described in the registered VCS Joint PD&MR/3/, All the above stated information was verified by VVB during onsite visit/35/ and site personnel interviews /36/ and desk review of VCS Joint PD&MR/3/, VCS Joint validation & verification report/4/ and previous verification reports/05/ already approved and uploaded on Verra's webpage which is deemed accurate and satisfactory to VKU's assessment team.

4.2 Safeguards

4.2.1 No Net Harm

The renewable solar energy project has demonstrated numerous positive impacts on both socioeconomic and environmental aspects. By utilizing solar energy, the project contributes to sustainable development by providing clean and environmentally friendly power. According to Indian regulation solar power generation through photovoltaic cells falls under the White category of industries, which are considered practically non-polluting. As a result, the project does not require an Environmental Impact Assessment (EIA) or the consent to operate. Exemptions granted to solar power projects from environmental clearance requirements further support this fact, as per the relevant EIA notifications and Ministry of Environment & Forests OM. Moreover, renewable SPVs-based power generation projects are promoted by Indian government. According to Final Document on Revised Classification of Industrial Sectors Under Red, Orange, Green and White Categories (29-February-2016), the solar power projects come under White category of industries which are practically non-polluting. Therefore, does not require an Environmental Impact Assessment (EIA) and there is no necessity of obtaining the Consent to Operate.

As per section 04 page 31 of the report published by Ministry of New and Renewable Energy (MNRE) on September 2013 (Developmental Impacts and Sustainable Governance Aspects of Renewable Energy), "As established by life-cycle assessment, RE projects have comparatively low environmental externalities that too are limited to project development phase. The RE projects don't generate solid or liquid effluents during operations and thereby pollution of land, surface water or ground water resources is not anticipated from such projects. During the operations phase the impacts on the surrounding environment are negligible and are reversible in nature and can be mitigated by proper Environmental Management plan.

Thus, there is no harm identified from the project and hence no mitigations measures are applicable.

VKU concluded that the project has contributed to the region's labour force by creating job opportunities, resulting in improved socio-economic conditions in adherence to the section 3.19, **clause 3.19.1 of VCS Standard version 4.5/7/** Overall, the project has demonstrated a net positive impact on both the socioeconomic and environmental aspects of the project region.

4.2.2 Local Stakeholder Consultation

The Project is already registered with VCS and registered VCS Joint PD&MR/03/; sections 2.2 describe the Local Stakeholder Consultation Process as in-line with VCS requirement. The Local Stakeholder Meetings were organized for local stakeholder consultation and informed local stakeholder regarding the meeting. The followings are the local stakeholders for the project activity

- Local community
- Local village administration
- Technology suppliers
- Local vendors

The details of the Stakeholder Meetings are presented in **Table No.-18** below:

Name of Investor	Capacity	Project Location			Date of invitation	Date of meeting
		Village	District	State		
SEI Suryashakti Power Private Limited	30 MW	Kamballahalli	Tumkur	Karnataka	10-November-2015	10-November-2015
SEI Bheem Private Limited	30 MW	Upparahalli & Agalmadke	Tumkur	Karnataka	13-July-2015	20-July-2015
SEI Aditi Power Private Limited	30 MW	Pallavalli	Tumkur	Karnataka	14-July-2015	21-July-2015

The Stakeholders of the project activity were invited through submission of the invitation letter and Public Notice to attend the stakeholder meeting at the project site. The meeting was attended by Local community, Local village administration, Technology suppliers, Local vendors and representatives of PPs.

In the introductory speech, the representative of SEI Suryashakti Power Private Limited (Project Investor), welcomed the gathering and given a brief about the climate mitigation project activity. Subsequent to the introductory speech, stakeholders were explained about the electricity generation from solar project is an environmentally friendly power generation technology contributing to reduction in GHG emissions. They were also explained about the benefits of the solar power projects like, increasing energy availability and improving quality of power and its

assistance to the local population by providing employment opportunities to both skilled & unskilled labours. The stakeholders were explained about the project activity and the various benefits arising out of the project activity. A discussion was held in which the views of the local stakeholders were addressed. No negative comments received.

As a part of continual improvement process, feedback from the associated stakeholders is vital, therefore a dedicated Visitor register cum grievance register has been placed at the project site which is accessible to stakeholders to provide their feedback on the project. It is appropriate publicly accessible location at which local stakeholders can provide their feedback on the project. This location is also conducive to continuous and regular checks for stakeholder comments.

Nevertheless, PP is open for the continuous stakeholder interaction and formed a grievance/suggestion register and a grievance box placed at the project site for the comments at any point of time during the project crediting period. PP has explained this mechanism for on-going communication to the local stakeholders and transparently kept the notice mentioning the grievance register and box at the project site.

The accounting of all and any input received during ongoing communication should be taken in consideration to take the appropriate measure to resolve the grievance

Discussions with Local stakeholders is being carried out at periodic intervals. There are no negative comments received for the project. In line with VCS requirements all the processes have been implemented to receive comments from local stakeholders as well as communicate with them at periodic intervals.

However, no negative feedback received during the current monitoring period as verified from grievance register photograph submitted by PP/33/ also, assessment team has interviewed some local stakeholders mentioned in Table No.-06. which confirms that no major grievances over there however a lot of CSR activity over implemented by PP for the near by local community which include distribution of school bag, Laptop. construction of road.

4.3 AFOLU-Specific Safeguards

As the project comes under the category of NON-AFOLU projects therefore this section does not apply for this verification. Hence Not Applicable

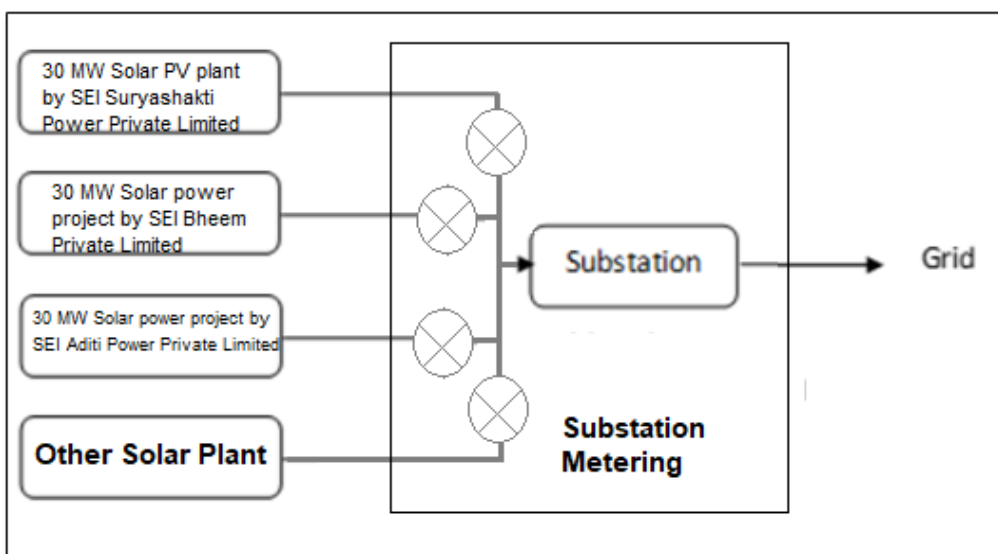
4.4 Accuracy of GHG Emission Reduction and Removal Calculations

The project monitoring has been carried in accordance with the registered VCS Joint PD&MR /03/and the monitoring report/01/. The monitoring plan laid in the registered VCS Joint

PD&MR/3/ is being followed at the site/36/. The assessment team has verified the information flow (from data generation, aggregation, to recording, calculation and reporting for these parameters including the values) in the MR/01/. The emission reductions are purely based on the net electricity generated and exported from the Solar Modules. PP has provided all the sufficient data for current monitoring period. The values of the parameter net electricity generation supplied to the grid by each phase used in deriving the GHG emission reduction could be very well correlated between the data sets and ER spreadsheet/02/ provided by PP. The verification of each monitoring parameter has been discussed later in section 4.5.

The only monitoring parameter in the project activity is “Quantity of net electricity supplied to the project (Wind) plant/unit to the grid in year y”, $EG_{PJ,y}$ (MWh). This parameter is monitored through the reading of bulk energy meters installed.

The export and import energy are measured continuously using above-mentioned Main and Check meters located at the substations. Readings of the meter are taken on monthly basis (FORM-B) by authorized officer of SEB in the presence of PP or representative of PP. The metering arrangement for all the three solar sites are the same. Each solar plant has their own dedicated metering arrangement at the substation end at 33kV. There are two meters i.e. main and check and no standby meter is there at the metering location site. The metering arrangement is under control of state electricity board and may change in future.



The project activity metering is done at the PSS {input (33kV) and output (220kV)}.

All the electricity received at the PSS through input 33kV meters is stepped up to 220kV and recorded at the output meter means bulk meter (Meter Y). While stepping up the power from 33kV to 220kV, there is some transformation/transmission loss. For record purpose it is termed as “Transmission loss”/Z.

The Net Electricity generation is calculated after deducting the Imports & transmission loss from the Export i.e., Net Electricity supplied to the grid = Export – 115% Import – Transmission loss.

In the state of Karnataka, the current value for assessment of Transmission loss is calculated based on the actual line losses assessed each month and the value is sourced from the B-form. Further the import value is also sourced from B-form however the grid considers 115% of import value (taking into the transmission losses) while considering the financial transactions (invoicing). These values (import and Transmission losses) are regulated by KPTCL and may be revised upon discretion of the KPTCL. Thus, they shall be revised considering the latest applicable guideline at the time of monitoring.

The monitoring plan specified in the registered VCS Joint PD&MR/3/, is diligently being followed at the site except deviation 1 & 2 taken by PP in current monitoring period. The assessment team has conducted a thorough verification of the entire information flow, starting from data generation and aggregation to recording, calculation, and reporting of the relevant parameters in the Monitoring Report /1/. The emission reductions are based on the net electricity generated and exported from the project.

PP has provided all the necessary data for the current monitoring period, ensuring a comprehensive and accurate assessment. The values of the parameter "**Quantity of net electricity generation supplied by the project plant/unit to the grid in year y (MWh)**", which were used in deriving the greenhouse gas (GHG) emission reduction, have been found to be well correlated between the data sets and the ER calculation spreadsheet/2/ provided by PP.

The appropriateness of default values used in the monitoring report is elaborated below

Table No: 19 Data and Parameters Available at Validation or Ex-ante parameters

Parameter	Unit	Description	Value	MOV
$EF_{grid,OM,y}$	tCO ₂ /MWh	Operating Margin CO ₂ Emission Factor in year y	0.9726 tCO ₂ /MWh is consistent with the registered VCS Joint PD&MR /03/ and calculated from CEA database, Version 13, June 2018 ⁵	The values are verified through desk review of the MR submitted /01/ and registered VCS Joint PD&MR /03/ which is found acceptable
$EF_{grid,BM,y}$	tCO ₂ /MWh	Build Margin CO ₂ Emission Factor in year y	0.8723 tCO ₂ /MWh is consistent with the registered VCS Joint PD&MR /03/ Calculated from CEA	The values are verified through desk review of the MR submitted /01/ and registered VCS Joint PD&MR /03/ which is found acceptable

⁵ https://cea.nic.in/old/reports/others/thermal/tpece/cdm_co2/user_guide_ver13.pdf

			database, Version 13, June 2018 ⁶	
$EF_{grid,CM,y}$	tCO ₂ /MWh	Combined Margin CO ₂ Emission Factor in year y	0.9475 tCO ₂ /MWh is consistent with the registered VCS Joint PD&MR /03/ Calculated from CEA database, Version 13, June 2018 ⁷	The values are verified through desk review of the MR submitted /01/ and registered VCS Joint PD&MR /03/ which is found acceptable

According to applicable methodology ACM0002; version 18.1/12/- Since project activity is a solar power project, no other kind of fossil fuel is used hence according to para 34 of the methodology zero project emissions are considered for this project activity. For leakage emissions; zero emissions are considered according to section 5.6 of the applied methodology/12/, Hence, L_{Ey}= 0 & P_{Ey}= 0.

Methods and formulae set out in the project description for calculating actual emissions for current monitoring period.

The calculation of emission reduction has been done in accordance with the applied methodology used i.e., ACM0002 Version 18.1 /12/. The equation used for calculation of baseline emission as per para 42 of the applied methodology given below:

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

Where:

BE_y: Baseline emissions in year y (tCO₂e/yr)

EG_{PJ,y}: Quantity of net electricity generation that is produced and fed into the grid as a result of the implementation of the project activity in year y (MWh/yr)

EF_{grid,CM,y}: Combined margin CO₂ emission factor for grid connected power generation in year y calculated using the latest version of the “Tool 07: Tool to calculate the emission factor for an electricity system” (tCO₂/MWh)

Calculation of EG_{PJ,y}

If the project activity is the installation of a Greenfield power plant, then:

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

⁶ https://cea.nic.in/old/reports/others/thermal/tpece/cdm_co2/user_guide_ver13.pdf

⁷ https://cea.nic.in/old/reports/others/thermal/tpece/cdm_co2/user_guide_ver13.pdf

Where:

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

EG_{facility,y} = Quantity of net electricity generation supplied by the project plant/unit to the grid in year y (MWh/yr)

Table No. 20; Methods and formulae set out in the project description for calculating estimated emissions for current monitoring period.

Estimated Emission Reduction as in VCS Joint PD & MR/3/ for the equivalent period of the current Monitoring period from, 01-January-2021 to 31-December-2022 (Inclusive of both the days):	
Monitoring Period Start Date	01-January-2021
Monitoring Period End Date	31-December-2022
Days in Current Monitoring period	730 days
Annual VCUs as per VCS Joint PD & MR-	139,239 (tCO ₂ e)
Estimated Emission Reduction as in VCS Joint PD&MR- for the equivalent period of the current Monitoring period	= (Annual Estimated GHG emission reductions as per revised VCS Joint PD & MR- /Total days in a year) *days in current monitoring period = (139,239 /365) * 730 = 278,478 tCO₂e
Actual Emission Reduction as per MR and ER during current Monitoring period	294,911 tCO₂e
Percent difference	+5.90% higher than the estimated

PP has submitted all the evidences like B-forms /28/and Invoices /29/ to VKU Assessment team for verification and assessment of ER Sheet/2/

Hence VKU Assessment team can state that the calculation method and formulae used in calculating baseline emission is following the methodology used i.e., ACM0002: “Grid-connected electricity generation from renewable sources” - version 18.1 /12/. The applied default values, emission factors, and assumptions in the calculations are all reasonable. The assumptions, emission factors and default values that were applied in the calculations are justified

4.5 Quality of Evidence to Determine GHG Emission Reductions and Removals

During the verification and onsite audit, all relevant documents were checked to assess the correctness and quality of data submitted by the project proponents, which are used to determine emission reductions.

All records needed for monitoring are archived in line with the requirements of the registered monitoring plan. No significant, lack of evidence and missing data were detected during verification. Hence, the verification team confirms that the monitoring system ensures required

quality of the monitoring system to ensure the quality of the monitored data. All internal data are subjected to QA/QC measures.

The only monitoring parameter in the project activity is “Quantity of net electricity supplied to the project (Solar) plant/unit to the grid in year y”, $EG_{PJ,y}$ (MWh). This parameter is monitored through the reading of bulk energy meters installed.

The table below describes how the parameter $EG_{PJ,y}$ is to be measured according to the monitoring plan, and how the same has been verified to confirm that the actual monitoring complies with the monitoring plan, monitoring data has been thoroughly assessed and that the calibration requirements are met in **Table No.-21, below**

Parameter	Quantity of net electricity generation supplied by the project plant/unit to the grid in year y, $EG_{PJ,y}$ (MWh)	
Means of verification		
	Criteria/Requirements	Assessment/Observation
	Measuring /Reading /Recording frequency	Continuous measurement and at least monthly recording for net electricity generation supplied by the project plant/unit to the grid in year y. The net generated electricity supplied to the grid is determined through SEB energy meter installed at delivery points (i.e., the connected sub-station). Thus, Net electricity supplied to the grid by the project plant in a given month = Export (kWh) – 115% import (kWh) – transmission loss. As per B form import meter values are multiplied by 115% to determine net deduction from export.
	Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes. The reporting frequency is in line with the monitoring plan as outlined in the registered VCS Joint PD&MR /3/ and monitoring methodology/12/. This was verified by assessment team during desk review and by Team Leader during onsite visit and interviews with site personnel. /36/

	Monitoring equipment	Energy meter is used with specifications: Meter and Calibration details of 30 MW Solar power project by SEI Suryashakti Power Private Limited.		
		Meter Details	Main Meter	Check Meter
		Meter Serial No	17010290	17010296
		Meter Make	L & T	L & T
		Accuracy Class	0.2s	0.2s
		Meter and Calibration details of 30 MW Solar power project by SEI Bheem Private Limited		
		Meter Details	Main Meter	Check Meter
		Meter Serial No	17010285	17010251
		Meter Make	L & T	L & T
		Accuracy Class	0.2s	0.2s
		Meter and Calibration details of 30 MW Solar power project by SEI Aditi Power Private Limited		
		Meter Details	Main Meter	Check Meter
		Meter Serial No	17010234	17010245
		Meter Make	L & T	L & T

		Accuracy Class	0.2s	0.2s
	Is accuracy of the monitoring equipment as stated in the monitoring plan? If the monitoring plan does not specify the accuracy of the monitoring equipment, does the accuracy of the monitoring equipment comply with local/national standards, or as per the manufacturer's specification?	The accuracy of the monitoring equipment is 0.2s, which is as per the registered VCS Joint PD&MR /3/ which is as per the norm defined in the PPAs/24/.		
	Is the accuracy valid for the entire measuring range or do different accuracy levels apply to different measuring ranges?	Yes. The accuracy of monitoring equipment's is valid for the entire range which is as per the registered VCS Joint PD&MR /3/		
	Calibration frequency /interval:	As per registered VCS Joint PD&MR/3/ Calibration frequency of the meters is once in 5 years and is carried out by State Electricity Board (SEB) Only Records show that SEB is now carrying out calibration at the interval of Six Months. VVB accepts this as more accurate and conservative approach.		
	Is the calibration interval in line with the monitoring plan and/or methodology? If the monitoring plan does not specify the frequency of calibration, is the selected frequency in accordance with the local/national standards, or as per the	Yes. The calibration frequency is once in 5 years as outlined in the registered VCS Joint PD&MR /3/which is in accordance with the national standard/i.e., Clause 18 of Central Electricity Authority (Installation and Operation of Meters) ⁸ . This was also confirmed during interview with onsite personnel /36/,		

	manufacturer's specifications?	
	Is the calibration of measuring equipment carried out by an accredited person or institution?	Calibration of the measuring equipment's is carried out by "State Electricity Board" as mentioned in VCS Joint PD&MR /3/ and was verified during onsite personnel meeting interviews /36/ with PP and calibration certificates submitted/25/ by PP
	Is(are) calibration(s) valid for the whole reporting period?	Calibration of energy meters is valid for whole reporting period for project activity. The calibration is carried out appropriately as per the registered monitoring plan and is valid throughout the reporting period. This was verified through calibration certificates/25/. Certificate states that error variation observed is lesser than the error variation specified. Hence, it is within the measurable range.
	Is the calibration carried out for a measuring range comparable with the range for which measurements have been carried out?	Yes. As per the calibration certificates, error variation observed is lesser than the error variation specified. Hence, it is within the measurable range. The calibration is carried out appropriately as per the registered monitoring plan.
	How were the values in the monitoring report verified?	Cumulative value of EG_{PJ,y} for entire monitoring period is reported in the monitoring report/01/, and monthly values are mentioned in the ER calculation sheet/02/. The monthly values were verified from JMRs /28/ issued by state utilities and cross verified with the help of invoices issued by PP /29/ and they are found to be consistent. Value of this parameter for the current monitoring period was verified as 311,251.38 MWh.

	If applicable, has the reported data been cross-checked with other available data?	The monthly reported values of $EG_{PJ,y}$ were further cross checked with the monthly invoices raised by PP /29/ to state utilities and found to be consistent.
	Does the data management ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	On site personnel interview/36/ with the project stakeholder of the project activity confirms that the necessary QA/QC procedures are in place and the data management system is effective and reliable for the net electricity supplied by the project plant/unit to the grid in year y
	In case project proponents have temporarily not monitored the parameter, has either i) a deviation been approved by the CDM EB or ii) has the parameter been estimated as stipulated by Appendix 1 to the CDM Project Standard?	No such issues.
Findings	CL#01, CAR#01 and CAR#03 were raised and resolved	
Conclusion	$EG_{PJ,y}$ (MWh) parameter has been monitored appropriately, in accordance with the registered monitoring plan (as per measurement methods and procedures to be applied) and applied methodology. The monitoring results were recorded consistently as per the approved frequency in the monitoring plan. The emission reduction calculation for the project activity is estimated based on the electricity supplied by the Solar panels. Since 100% data was verified, the team can ascertain that the values taken for emission reduction calculation are free from material errors.	

Calibration of meters

During the verification assessment of the project activity, accuracy of all the metering equipment's has been checked and found appropriate. The installation and working conditions of the meters were checked during the site inspection and were found to be satisfactory by VKU. It was confirmed that meters installed at each site are dedicated and not shared with any other activity. Details of meters are provided in below table:

Calibration details of meters

Meter and Calibration details of 30 MW_{AC} Solar power project by SEI Suryashakti Power Private Limited in **Table No. -22** below

Meter Details	Main Meter	Check Meter
Meter Serial No	17010290	17010296
Meter Make	L & T	L & T
Accuracy Class	0.2s	0.2s
Date of Subsequent Calibration	16-September-2020	16-September-2020
Due date of Calibration	15-September-2025	15-September-2025

Meter and Calibration details of 30 MW Solar power project by SEI Bheem Private Limited in **Table No.-23** below

Meter Details	Main Meter	Check Meter
Meter Serial No	17010285	17010251
Meter Make	L & T	L & T
Accuracy Class	0.2s	0.2s
Date of Subsequent Calibration	16-September-2020	16-September-2020
Due date of Calibration	15-September-2025	15-September-2025

Meter and Calibration details of 30 MW Solar power project by SEI Aditi Power Private Limited in **Table No.-24** below

Meter Details	Main Meter	Check Meter
Meter Serial No	17010234	17010245
Meter Make	L & T	L & T
Accuracy Class	0.2s	0.2s
Date of Subsequent Calibration	16-September-2020	16-September-2020
Due date of Calibration	15-September-2025	15-September-2025

The energy meter calibration certificates/25/ are checked and found that the calibration details provided in MR /1/ are correct. From the verification of above table, verification team also confirms that the energy meter calibrations are valid for the complete monitoring period i.e., from **01-January-2021 to 31-December-2022** (Inclusive of both start and end dates).

The verification team has checked all the meters and confirmed that the meters were working satisfactorily. Also, the calibration of meters is completely under purview of state utility and PP has no control over the same as confirmed through interviews of site personnel and PPAs signed by PP with state utilities /24/.

Hence it can be concluded that the approach followed by the PP is conservative and in line with the guidelines provided under paragraph 3.4.2 of VCS Validation and Verification Manual version 3.2/8/.

The meters are installed at 220/66/11kV KPTGL substation at KOTAGUDDA; the substation activity metering is done at the PSS {input (33kV) and output (220kV)}. Further the metering arrangement is explained in section 4.4 above of this report which was confirmed by assessment team during site visit and it is consistent with the MR/1/ submitted by PP and registered VCS Joint PD&MR/3/

The registered VCS Joint PD&MR /3/& MR /1/ and site audit observations confirm that the metering equipment are sealed and maintained by the state utility.

Further the Monitoring of the project activity is performed by PP as per the following established procedure:

Data Measurement

The export and import energy are measured continuously using above-mentioned Main and Check meters located at the substations. Readings of the meter are taken on monthly basis (FORM-B) by authorized officer of SEB in the presence of PP or representative of PP. Based on the Meter Reading Statement to PP, invoices are raised. These invoices are used for cross checking the meter readings (FORM-B) taken for the respective project activity. The meters are in the custody of State Utility and the calibration of the meters are done by the state utility and not under the control of PP. The frequency of calibration is once in 5 years Bangalore Electricity Supply Company Limited.

Data Collection and Archiving:

Readings from meters are collected in the presence of the plant in-charge. Export and Import data are recorded and stored in logs as well as in electronic form on a daily basis. The records are checked periodically by the Plant Manager and discussed thoroughly with the plant supervisor. The period of storage of the monitored data will be 2 years after the end of crediting period or till the last issuance of VCUs for the project activity whichever occurs later

In accordance with **section 6 paragraph 66 of ACM0002, version 18.1**, all monitoring-related data is electronically archived and retained for a minimum of two years following the conclusion of the last crediting period. Site personnel are primarily responsible for collecting, collating, and aggregating this data. They achieve this through the use of centrally through the Supervisory Control and Data Acquisition (SCADA) system at the Central Monitoring Station maintained at project implemented site.

Emergency Preparedness:

The project activity does not result in any unidentified activity that results in substantial emissions from the project activity. No need for emergency preparedness in data monitoring is visualized.

In case Main meter or Check meter is found to be outside the acceptable limits of accuracy or faulty or not functioning properly, it will be repaired, recalibrated or replaced as soon as possible. In the above event if the Main meter is not in service as a result of maintenance, repairs or testing, the Check meter is used for readings. During the monitoring period the main meter and

check meter were operating in the acceptable limits of accuracy and there were no issued identified during the monitoring period.

Personnel training

In order to ensure a proper functioning of the project activity and a properly monitoring of emission reductions, the staff are trained. The plant helpers are being trained in equipment operation, data recording, reports writing, operation and maintenance and emergency procedures in compliance with the monitoring plan. The project activity does not result in any unidentified activity that results in substantial emissions from the project activity. No need for emergency preparedness in data monitoring is visualized.

QA/QC Procedures:

The meters are approved, tested & sealed by the State Utility. The meters are in the custody of State Utility. Calibration of all the meters is undertaken at required intervals and faulty meters are duly replaced immediately based on CEA guidelines which specifies calibration, and the frequency of calibration is once in 5 years.⁹ The monthly electricity supplied/exported by the project activity in the JMR report is cross checked with the monthly invoices of sale. In the absence or delay in the meter calibration appropriate Guidelines are applied appropriately to confirm the conservativeness of metering.

The metering arrangement, accuracy class of meters, calibration frequency is under control of state electricity board and PP does not have any control on it. PP is getting value of net electricity supplied to grid and the same is considered in the monitoring parameter. The billing is raised based on substation meters.

All the data items monitored under the monitoring plan is being kept for 2 years after the end of crediting period or till the last issuance of VCUs for this project activity, whichever occurs later. The data is archived both electronically and manually, and kept in safe storage by PP.

The assessment team has verified the monthly JMRs issued by the state utilities confirmed that only the data recorded through main meters is used to calculate net electricity supplied to the grid consequently for ER calculations recorded in ER sheet /02/

In view of the above discussion the assessment team is able to confirm that evidence used to determine the GHG reductions and removals are sufficient and appropriate with respect to quality and quantity.

GHG Calculations:

The emission reduction calculated as per the applied methodology equals the baseline emissions since project emissions and leakage emissions for such project activities is considered zero as per applied methodology/12/.

The formula provided for the calculation of baseline emissions is:

⁹ https://cea.nic.in/wp-content/uploads/2020/04/review_regulation.pdf

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

Where:

BE_y: Baseline emissions in year y (tCO₂e/yr)

EG_{PJ,y}: Quantity of net electricity generation supplied by the project plant/unit to the grid in year y (MWh)

EF_{grid,CM,y}: Combined margin CO₂ emission factor for grid connected power generation in year y calculated using the latest version of the “Tool to calculate the emission factor for an electricity system” (tCO₂/MWh)

Calculation of EG_{PJ,y}

If the project activity is the installation of a Greenfield power plant, then:

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

Where:

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

EG_{facility,y} = Quantity of net electricity generation supplied by the project plant/unit to the grid in year y (MWh/yr).

Table No. 25; The site and Vintage wise generation of ERs for the current monitoring period is presented below

Vintage-wise calculation	SEI Aditi (Generation, MWh)	SEI Bheem (Generation, MWh)	SEI Suryashakti (Generation, MWh)
Year			
2021 (01-January-2021 to 31-December-2021)	52,029.12	51,952.66	52,754.77
2022 (01-January-2022 to 31-December-2022)	51,865.88	50,880.88	51,768.07
Total	103,895.00	102,833.54	104,522.84

Table No. 26 shows the calculation ER generation during current monitoring period out of net electricity supplied to grid.

Parameter	Unit	Value
EG _{PJ, y}	MWh	311,251.38
EF _{grid,CM,y}	tCO ₂ e	0.9475
BE _y	=	311,251.38 * 0.9475
	=	294,911 tCO ₂ e (Round down value)

As per registered VCS Joint PD&MR, project activity is expected to reduce emissions by **278,478 tCO₂e** for the current monitoring period, whereas the actual emission reductions achieved are **294,911 tCO₂e**, i.e., **5.90%** higher than what was anticipated and it is due to high PLF of **5.90%** achieved in the current monitoring period which is due to the higher number of sunshine hours. The generation of electricity depends upon many other climatic conditions. The actual PLF achieved for the generated energy in this monitoring period is **19.74%** whereas as per registered VCS Joint PD & MR/3/ the breaching value of PLF is **59.42%**. The achieved **19.74%** PLF is **5.90%** higher than the estimated PLF value in registered VCS Joint PD&MR/3/, however it is still within the benchmark value of **59.42%**. Assessment team has assessed the PLF independently and calculated the value for each vintage and its variation as presented in **Table No. 27 below**:

Year ((Inclusive of both start and end dates))	Actual Generation (MWh)	Achieved PLF	Variation in PLF with the estimated PLF of 18.64%	Breaching value
Year 2021 (01-January-2021 to 31-December-2021)	156,736.55	19.88%	6.65%	59.42%
Year 2022 (01-January-2022 to 31-December-2022)	154,514.83	19.60%	5.14%	59.42%

Assessment team verified the same via PLF analysis mentioned in ER sheet/2/ and an independent assessment of the PLF as stated in table above, this is evident from the calculation that the achieved PLF is higher than the estimated PLF but it is within the benchmark value of **59.42%**, hence the higher generation is accepted by VKU assessment team.

In section 4.4 and 4.5 of this report, section 5.4 of MR /1/ and in ER sheet/2/ calculations has been stated which has been verified by the assessment team from B-Form (JMRs) issued to PP by (BESCL)/28/ & Invoices issued by PP to state electricity authority /29/ submitted to VVB by PP as evidence. Hence VVB verified that the calculation method and formulae used in calculating baseline emissions is in compliance with the methodology used i.e., ACM0002 Version 18.1 /12/.

The verification team attests to the correctness of the formulas and methodologies used to compute baseline emissions. The applied default values, emission factors, and assumptions in the calculations are all reasonable. The verification team attests to the correctness of the formulas and methodologies used to calculate baseline emissions.

Assumptions, emission factors and default values applied in the calculations are justified. Actual emission reduction achieved during this period of 24 months (730 days) from **01-January-2021 to 31-December-2022** ((Inclusive of both start and end dates)) are **5.90%** higher than the estimated emission reductions. We as VVB accepted this as this is mainly due to the higher

generation of electricity achieved during current monitoring period which is due to high PLF. High PLF is the consequence of the higher generation of electricity which depends upon the number of annual days of sunshine availability and many other natural conditions and high maintenance by PP for solar power plant energy generation which is not constant throughout the year, which are not within the direct control of the project participant.

All the data were made available and have been monitored as per required monitoring frequency. The means of verification for the values of parameters, used for baseline emission calculation, is described above.

VKU is of the opinion that this method of calculation of emission reductions is accurate and results in conservative estimation of emission reduction and is in line with the applicable VCS requirements set out in **section 3.15** of VCS Standard version 4.5/7/ and that the verification of the GHG statement was conducted in accordance with ISO 14064-3; 2019)

4.6 Non-Permanence Risk Analysis

This project is not an AFOLU project, hence not applicable.

5 VERIFICATION OPINION

VKU Certification Pvt. Ltd. (referred as VKU) declares that it has conducted the fourth verification under the first crediting period, from **30-March-2017 to 29-March-2027** (inclusive of both start and end dates), for the project activity "**Pavagada Solar Renewable Power Project by Greenko Group**" in India. The reported emission reductions for this project activity, with VCS Registry Project ID 1791, during the monitoring period from **01-January-2021 to 31-December-2022 (inclusive of both start and end dates)**, amount to **294,911 tCO₂e**. These reported reductions have been assessed in accordance with the relevant requirements outlined in the VCS Standard, version 4.5 and the opinion are in accordance with clause 4.1.24 of section 4.1 of VCS Standard version 4.5/7/.

The project proponents of the "Pavagada Solar Renewable Power Project by Greenko Group" by "SEI Suryashakti Power Private Limited" is responsible for:

- The preparation of greenhouses gas emissions data and the reported greenhouse gas emission reductions from the project on the basis set out in the monitoring plan contained in the registered VCS Joint PD&MR version 2.0 dated **22-November-2018/03/**.
- The development and maintenance of records and reporting procedures in accordance with that plan, including the calculation and determination of greenhouse gas emission reductions of the project.
- It is the responsibility of VKU to express an independent verification opinion about the project's conformity with the requirements of VCS Standard version 4.5/07/ and GHG program applied, on the reported greenhouse gas emission reductions from the project.

Based on documented evidence and corroborated by an on-site assessment, VKU can confirm that:

- project has been implemented and operated as per the registered VCS Joint PD&MR version 02 Dated 22-November-2018/03/;
- The monitoring report and other supporting documents provided are complete and in accordance with the applicable VCS Standard version 4.5/7/ requirements;
- The monitoring is in place as per the applied baseline and monitoring methodology;
- The monitoring plan in the registered VCS Joint PD&MR version 02 dated **22-November-2018/3/** is as per the applied baseline and monitoring methodology/12/.

VKU's verification approach is based on the understanding of the risks associated with reporting of GHG emission data and the controls in place to mitigate these. VKU Certification planned and performed the verification by obtaining evidence and other information and explanations that VKU Certification considered necessary to give **Reasonable level of assurance** that reported GHG emission reductions are fairly stated.

Opinion	Final Documents	Monitoring Period	Emission Reductions achieved	Remarks

☒ Positive opinion ☐ Negative Opinion	Monitoring Report Version 3.0 dated 12-October-2023 Emission Reduction Sheet Version 2.0 dated 12-October-2023	01-January-2021 to 31-December-2022 (Inclusive of both start and end dates)	294,911 tCO₂e	The GHG emission reductions are calculated on the basis of approved methodology ACM0002 I.D. version 18.1 /12/ and the monitoring plan included in the registered VCS Joint PD & MR version 02 dated 22-November-2018/3/
Adverse Opinion ☐ Unmodified Opinion ☒ Modified Opinion ☐				

Hence VKU is able to certify that the emission reduction from the project during the monitoring period **01-January-2021 to 31-December-2022** (Inclusive of both start and end dates) amounts to **294,911 tCO₂e** is in line with the applicable VCS requirements set out in section 3.15 of VCS Standard version 4.5/7/ and that the verification of the GHG statement was conducted in accordance with ISO 14064-3; 2019.

The VVB hereby issues a positive and unmodified opinion in accordance with ISO 14064-3:2019, and **ISO 14065:2020 Section 09- Clause 9.7.1.6 & 9.7.2**. This opinion also meets the requirement stipulated under ISO/IEC 17029:2019, Section 9.7 with a reasonable level of assurance for the reported GHG emission reduction data which is free from any material misstatement and is sufficiently supported by evidences provided to VVB by PP tabulated in **Table No.-05** of this report.

Verification period: From 01-January-2021 to 31-December-2022 (Inclusive of both start and end dates)

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

Year	Baseline emissions or removals (tCO ₂ e)	Project emissions or removals (tCO ₂ e)	Leakage emissions (tCO ₂ e)	Net GHG emission reductions or removals (tCO ₂ e)
Year 2021 (01-January-2021 to 31-December-2021)	148,508	0	0	148,508

Year 2022 (01-January-2022 to 31-December-2022)	146,403	0	0	146,403
Total	294,911	0	0	294,911

Year	Ex-ante emissions reductions /removals	Achieved emissions reductions /removals	Percent difference	Justification for the difference
Year 2021 (01-January-2021 to 31-December -2021)	139,239 tCO ₂ e	148,508 tCO ₂ e	6.66%	During the assessment it was observed that the estimated emission reduction achieved from the project activity for the current monitoring period is 278,478 tCO ₂ e, whereas actual emission reductions achieved is 294,911 tCO ₂ e, which is 5.90% higher than the estimated value. This is because of high PLF of 19.74% achieved due to natural climate conditions of higher sunshine hours at the site which is not in the control of the project proponent. The achieved GHG emission is higher than the estimated value. The PLF achieved has increased to 5.90% w.r.t. to the estimated PLF in the registered VCS Joint PD&MR/3/. Vintage wise higher generation variation is also shown in adjacent column to justify the higher generation in current monitoring period. However, the breaching value for PLF is 59.42% which is much higher than the achieved PLF hence the project IRR remain within the benchmark with the said increase. Therefore, the higher GHG accounting is acceptable to VKU assessment team.
Year 2022 (01-January-2022 to 31-December -2022)	139,239 tCO ₂ e	146,403 tCO ₂ e	5.14%	
Total (01-January-2021 to 31-December -2022)	278,478 tCO₂e	294,911 tCO₂e	5.90%	

APPENDIX A: < ABBREVIATIONS >

Abbreviations	Full texts
BE	Baseline Emissions
BEF	Baseline Emission Factor
BESCL	Bangalore Electricity Supply Company Limited
CAR	Corrective Action Request
CDM	Clean Development Mechanism
CL	Clarification Request
CO ₂	Carbon dioxide
CO ₂ e	Carbon dioxide equivalent
DNA	Designated National Authority
EF	Emission Factor
ER	Emission Reductions
FAR	Forward Action Request
GHG(s)	Greenhouse gas(es)
GWP	Global Warming Potential
IPCC	Intergovernmental Panel on Climate Change
MoV	Means of Verification
MR	Monitoring Report
NA	Not Applicable
OSV	On Site Visit
PD	Project Description
PP(s)	Project Proponent(s)
QA/QC	Quality Assurance /Quality Check
Ref.	Document Reference
SS(s)	Sectoral Scope(s)
TA(s)	Technical Area(s)

VCU	Verified Carbon Unit
VCS	Verified Carbon Standard
VKU	VKU Certification Ltd.
VVS	Validation and Verification Standard
VVB	Validation and Verification Body

APPENDIX B: < AUDIT FINDINGS>

CAR: Corrective Action Request; (04)

CL: Clarification Request; (02)

FAR: Forward Action Request; (00)

Type	Date	28-June-2023
CAR#01	Reference	Section of Ver protocol: Cover MR and Section 1
Description of the Non-Conformance		
1. Content Page; 1.1 Verification Team finds that “page numbers” are not mentioned in footer of entire MR as per the VCS MR template version 4.2 requirement. 1.2 Verification team finds during desk review that the “font size and font style” are inconsistent with the VCS MR template version 4.2 in various sections of the MR. 2. Section 1.6 of MR; 2.1 Which number of crediting period is valid for the current monitoring period? 3. Section 1.8 of MR; 3.1 During desk review verification team finds that the scale of project is inconsistent with the registered VCS Joint PD&MR. 4. Section 1.11 of MR; 4.1 Verification team observes that the “filling guidelines” for this section of MR are not deleted. 4.2 PP to provide the reference for the values mentioned in the column “Contribution over Project lifetime”. 4.3 Verification Team finds that in Table-1 for SDG target-13, there is inconsistency between the definition of mentioned SDG indicator in MR version 01 and SDG target definition provided in MR template version 4.2 under section 1.11.		
1 st Response from PP	Date	28-August-2023
1. Content Page; 1.1 The page numbers are mentioned in footer of the entire MR as per the VCS MR template version 4.2 requirement. 1.2 The font size and font style are made consistent throughout the revised MR. 2. Section 1.6 of MR; 2.1 The first crediting period i.e 30-Mar-2017 to 29-Mar-2027 is valid for the current monitoring period i.e. 01-Jan-2021 to 31-Dec-2022.		

3. Section 1.8 of MR; 3.1 The project activity is large scale and same is mentioned clearly in Section 1.8 of the revised MR and it is consistent with registered VCS Joint PD&MR. 4. Section 1.11 of MR; 4.1 The filling guidelines for this section of the revised MR has been deleted. 4.2 The references for the values mentioned in the column “Contribution over Project lifetime” has been added in the footnote. 4.3 The SDG target has been corrected the definition has been revised and made consistent with the SDG indicator and link provided under section 1.1 of the revised MR.				
1st Assessment by Audit Team	Status	Closed	Date	15-September-2023
1. Title page 1. PP has updated the font size in the revised MR according to the VCS MR template version 4.2 Hence accepted 2. Content page 1. PP has updated the page number according to the content table in the revised MR. Hence accepted 3. Section 1.6 of MR; 1. PP has mentioned the crediting period number and it is found to be correct. Hence accepted 4. Section 1.8 of MR; 1. The scale of project activity is inline with the registered VCS Joint PD&MR. Hence accepted. 5. Section 1.11 of MR; 1. It is now revised and corrected as per MR guidelines for VCS MR template, Version 4.2. Hence accepted. 2. VVB confirms that PP has inserted the footnote for the values mention in the column of Contribution over the Project lifetime. Hence accepted 3. The Value shown under “SDG target” is consistent with the SDG goal, hence accepted. Hence CAR#01 is Closed				

Type	Date	28-June-2023
CAR#02	Reference	Section of Ver protocol: Section 2 and 3
Description of the Non-Conformance		
1. Section 2.2 of MR;		

1.1 Although no EIA is required for solar project but according to VCS Standard V 4.4 section 3.18.2 requires a project to identify the potential negative impact thus, PP is requested to further elaborate on the potential environmental and social impacts of the project.

1.2 As per the requirements of VCS MR template version 4.2 "The procedures or methods used for engaging local stakeholders (e.g., dates of announcements or meetings, periods during which input was sought). The procedures or methods used for documenting the outcomes of the local stakeholder communication."
The above information is not provided in this section.

1.3 During site visit, team has identified that there are issues logged by stakeholders in grievance register kept at site, for current monitoring period However MR does not take any account of the same and how these issues were addressed.?

2. Section 3.1 of MR;

2.1 What is the total breakdown hours at the plant sites, and how these have impacted on the GHG emission reductions or removals and monitoring.

2.2 During site visit, verification team found inconsistencies in the make and number of Solar modules installed at site, kindly clarify the inconsistencies and provide evidences for the same.

3. Section 3.2.1 & 3.2.2 of MR;

3.1 Is there any methodology deviation/project description deviation applicable in current monitoring period or previous monitoring periods as per the VCS MR template guidelines.

1st Response from PP

Date

28-Aug-2023

1. Section 2.2 of MR;

1.1 There are no negative environmental and/or socio-economic impacts due to the project activity hence no mitigation measure required. Furthermore, the details regarding participation in other GHG program and other forms of credit has already been mentioned in Section 1.9 & 1.10 of the revised MR.

1.2 As per VCS MR template 4.2 the procedures or methods used for engaging local stakeholders has been added in the revised MR.

1.3 The sentence has been restructured as the grievance register is kept at site and the supporting document i.e. grievance register has been submitted and no negative comments has been received during the current monitoring period.

2. Section 3.1 of MR;

2.1 The total breakdown hour details have been added in the Appendix 2 of the MR and due to breakdown identified in the current monitoring period there is no major impact in the GHG emissions reductions and the supporting document for the same has been submitted. 2.2 The inconsistencies are corrected as per actual scenario in site and the evidence for the same has been provided. 3. Section 3.2.1 and 3.2.2 of MR; 3.1 There is no methodology deviation but there is project description deviation in the current monitoring period with respect to registered PDMR and same has been updated as per VCS MR template.				
1st Assessment by Audit Team	Status	Closed	Date	15-September-2023
1. Section 2.2 of MR; 1. PP has updated this section according to the VCS Standard 4.4 in revised MR. Hence accepted 1. The assessment team verifies and confirms that PP has updated the local stakeholders' details in the revised MR according to the VCS MR template version 4.2. Hence accepted 2. Section 3.1 of MR; 1. In the revised MR, PP has updated this section and incorporated breakdown information in Appendix 2. They have also submitted the breakdown details. Hence accepted 2. PP has updated the technical specification for SPVs in revised MR and submitted the technical specification details. Hence accepted 3. Section 3.2.1 of MR; Assessment team confirms that no methodology deviations were raised in current and previous verifications and same description is added in revised MR. Hence accepted Hence CAR#02 is Closed				

Type	Date	28-June-2023
CAR#03	Reference	Section of Ver protocol: Section 4 and 5
Description of the Non-Conformance		
1. Section 4.2 of MR; 1.1 Assessment team finds during site visit, that the frequency of calibration of meters is being carried out every six months, as per the circular released by KPTCL dated 07/08/2018. Why MR is stating it as 5 years? 2. Section 5.1 of MR;		

2.1 Verification team finds during desk review that vintage wise ERs mentioned in MR are inconsistent with provided ER sheet

3. Appendix 01 of MR;

3.1 During site visit, assessment team observed that the calibration of meters is being carried out at the interval of every six months, as per circular released by KPTCL dated 07/08/2018. Complete trail is available at the site, provide the complete trail of calibration as per the documents available.

1 st Response from PP	Date	28-August-2023
1. Section 4.2 of MR; 1.1 As per registered VCS Joint PDMR version 2.0, calibration frequency is once in 5 years, and it is valid throughout the crediting period hence the frequency of 5 years is applied. However, the calibration is carried out by BESCO in every six months which is a conservative approach, but it is to be noted that calibration of meters is not in control of PP. 2. Section 5.1 of MR; 2.1 The values have been updated and made consistent as per the ER sheet. 3. Appendix 01 of MR; 3.1 As per registered VCS Joint PDMR version 2.0, calibration frequency is once in 5 years, and it is valid throughout the crediting period hence the frequency of 5 years is applied. However, the calibration is carried out by BESCO in every six months which is a conservative approach, but it is to be noted that calibration of meters is not in control of PP.		
1 st Assessment by Audit Team	Status	Closed
	Date	15-September-2023
1. Section 4.2 of MR and Appendix 01 of MR; 1. The assessment team verifies and confirms that the calibration frequency is in line with the VCS Joint PD&MR, and the PP has submitted all calibration certificates and updated the details in the revised Monitoring Report (MR). Hence accepted 2. Section 5.1 of MR; 1. PP has updated the vintage value and it is consistent with the ER sheet, Hence accepted Hence CAR#03 is Closed		

Type	Date	09-October-2023
CAR#04	Reference	Section of Ver protocol: Section 1,2,3,4 and 5
Description of the Non-Conformance		

1. Section 1.1 of MR;

1. Update the audit history table inclusive of first and last days results in 1 year 4 months 2 days as per VVB's calculation.
2. Same error as above with 1 day showing less than the VVB's computation

2. Section 1.2 of MR;

1. The status of the project against AFLOU is not stated as per the MR template requirements.

3. Section 1.7 of MR;

1. PP to clarify why the coordinates of the billing meters located in the sub station is not provided as part of the project location.
2. The screen grab lacks context and does not have scale and direction which is a normative practice while showing the map

4. Section 1.7 of MR;

1. Reference to IREC is not mentioned as per the MR template.

5. Section 2.1 of MR;

1. The socio-economic impact of the project activity is not mentioned as per para 3.18.1.

6. Section 3.1 of MR;

1. Is this AC or DC rating?
2. Based on the module capacity and number of panels, the total capacity is coming to 30.79 MW DC.
3. Monocrystalline or polycrystalline?
4. Is the SPV string inverter type? If yes, then the specifications and number of HT panels, ICOG panels (meter at O/G panel) transformer numbers/capacity, whether pooled at a PSS? If yes, they provide the specifications of the PSS. The metering arrangement, location, specifications of the meters used for billing or measurement of energy.
5. Breakup of the number of modules and the module capacity is not provided like in the previous table.

7. Section 4.3 of MR;

1. If the dates of measurement are not matching with the dates of MP, how is the energy supplied to grid calculated.
2. Please clarify how readings are taken if due to natural or manmade calamities the meters are substation are damaged.
3. PP to clarify why apportioning is required when dedicated meters are present for each project bundle?
4. The PP to clarify whether the energy generation measurement of Y is made at the SS end or at the plant boundary end?

8. Section 5.1 of MR;

1. Please provide the duration ie., months within the year.

9. Section 5.4 of MR;

1. PP to provide substantiation wrto the PLF achieved, the effect of breakdown hours and their impact on the PLF, what was the PLF trends based on previous years data

Hence CAR#04 is Open

1st Response from PP

Date

12-October-2023

1. In Section 1.1 of MR:

1. The first date and the last date has been included in the table and has been revised.
2. The dates have been checked and revised.

2. In Section 1.2 of MR;

1. The status of the project against AFLOU as per the MR template requirements has been mentioned and revised. 3. In Section 1.7 of MR; 1. The coordinates of the billing meters are not currently effective as per VCS standard version 4.4 and also version 4.5 was not available at the time of registration and the same has been mentioned. 2. The scale and direction are there in the map and it has been revised. 4. In Section 1.7 of MR; 1. All the links has been provided in the revised monitoring report version 3.0 5. In Section 2.1 of MR; 1. The project is meeting the guidelines as per para 3.18.1 and there is no such socio-economic impact due to the project activity and the same has been mentioned in the monitoring report version 3.0. 6. In Section 3.1 of MR; 1. It is the AC capacity and the same has been mentioned in the report. 2. It is as per the technical specifications provided and there is minute change due to calculation. Based on the module capacity and number of panels, the total capacity is coming to 30.79 MW DC. 3. It is polycrystalline type and the same has been mentioned. 4. The transformer details have been added in the section. The metering is done at PSS as billing is done on these meters and the metering arrangement, location, specifications of the meters used for billing or measurement of energy has been described in section 4.3 and also in appendix 1 of the monitoring report. 5. Breakup of the number of modules and the module capacity has been mentioned in the revised monitoring report version 3.0. 7. In Section 4.3 of MR; 1. If the dates of measurement are not matching with the dates of MP, the apportioning formula has been mentioned and updated in the monitoring report. 2. If due to natural or manmade calamities the meters are damaged it will be repaired, recalibrated or replaced as soon as possible. 3. This is as per JMR and the same has been mentioned in the report and updated. 4. The energy generation is made at plant boundary end 33kV as billing are done on these meters. 8. In Section 5.1 of MR; 1. The duration ie., months within the year has been revised. 9. In Section 5.4 of MR; 1. The PLF analysis has been added in the ER sheet and the same information has been incorporated in the revised monitoring report which clearly indicates that with actual PLF also it is not breaching the IRR.				
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1st Assessment by Audit Team	Status	Closed	Date	18-October-2023
1. Section 1.1 of MR 1. The assessment team confirms that PP has updated the table and it is found to be correct. Hence accepted. 2. The assessment team confirms that PP has correctly revised the table. Hence accepted. 2. Section 1.2 of MR 1. The assessment team confirms that PP has updated the project status against AFOLU and it is found to be correct as per the MR template requirements. Hence accepted.				

3. Section 1.7 of MR

1. The assessment team confirms that PP has clarified the inclusion of coordinates of the billing meters and it is found correct as per the VCS standard. Hence accepted.
2. The assessment team confirms that PP has updated the information as asked. Hence accepted.

4. Section 1.7 of MR

1. The assessment team confirms that PP has updated all the links and they are found correct. Hence accepted.

5. Section 2.1 of MR

1. The assessment team confirms that PP has mentioned all the information as asked and they are found correct. Hence accepted.

6. Section 3.1 of MR

1. The assessment team confirms that PP has clarified the rating and it is found correct. Hence accepted.
2. The assessment team confirms that PP has clarified the capacity and it is found correct. Hence accepted.
3. The assessment team confirms that PP has mentioned the solar PV type in the revised MR and it is found correct. Hence accepted.
4. The assessment team confirms that PP has mentioned all the information as asked and they are found correct. Hence accepted.
5. The assessment team confirms that PP has updated all the information as asked and they are found correct. Hence accepted.

7. Section 4.3 of MR

1. The assessment team confirms that PP has updated all the information as asked and they are found correct. Hence accepted.
2. The assessment team confirms that PP has clarified properly and it is found correct. Hence accepted.
3. The assessment team confirms that PP has mentioned all the information as asked and they are found correct. Hence accepted.
4. The assessment team confirms that PP has clarified properly and it is found correct. Hence accepted.

8. Section 5.1 of MR

1. The assessment team confirms that PP has updated all the information as asked and they are found correct. Hence accepted.

9. Section 5.4 of MR

1. The assessment team confirms that PP has updated all the information as asked and they are found correct. Hence accepted.

Hence CAR#04 is Closed

Type	Date	28-June-2023
CL#01	Reference	Section of Ver protocol: Section 1,4 and 5
Description of the Non-Conformance		
1. Section 1.9 & 1.10 of MR; 1.1 PP to provide evidence to confirm this statement about not participating in any other GHG program/environmental credit and emission trading program. 2. Section 4.2 of MR; 2.1 PP to clarify why, the process of calculating net electricity billed mentioned in MR is different than that, followed at the site & ER Calculation sheet 3. Section 4.3 of MR; 3.1 PP is requested to clarify how CDM team is applicable in the VCS project mentioned in flow chart, under the section 4.3. 3.2 PP is requested to clarify regarding the monitoring mechanism available at site, which will ensure continuous monitoring of energy generation, during non-working of both the meters. 4. Section 5.4 of MR; 4.1 The value of achieved emission reductions is inconsistent from what is stated above in Section 2., Kindly clarify the same and provide evidence		
1 st Response from PP	Date	28-Aug-2023
1. Section 1.9 & 1.10 of MR; 1.1 The supporting document about not participating in any other GHG program/environmental credit and emission trading program has been provided. 2. Section 4.2 of MR; 2.1 The net electricity supplied to the grid by the project is calculated as per the state electricity board and is sourced from monthly generation statement/ JMR as follows: Net electricity = Export (kWh) – 115% import (kWh) – transmission loss Thus, calculation of net electricity billed has been revised in the MR as per actual process followed at site and also made consistent with the ER sheet. 3. Section 4.3 of MR; 3.1 The flowchart has been updated in section 4.3 of revised MR. 3.2 The monitoring mechanism has been revised and a check meter is used to ensure continuous monitoring of energy meters. In case both the meters stop working, it is been repaired and replaced as soon as possible. 4. Section 5.4 of MR; 4.1 The value of achieved emission reductions is consistent with the above statement.		

1st Assessment by Audit Team	Status	Closed	Date	15-September-2023
1. Section 1.9 & 1.10 of MR; 1. The assessment team confirms that PP has submitted the declaration confirming that the project is not participating in any other GHG program or taking any other kind of benefits. Hence accepted 2. Section 4.2 of MR; 1. PP has updated the calculation of net electricity billed has been revised in the MR as per actual process followed at site and also made consistent with the ER sheet 3. Section 4.3 of MR; 1. PP has updated the diagram of organization structure for monitoring as per VCS project has been revised in section 4.3 of revised MR (version 02). Hence accepted 1. The monitoring mechanism has been revised in MR. Hence accepted. 4. Section 5.4 of MR; 1. PP has updated the achieved emission reductions value in revised MR. Hence accepted Hence CL#01 is Closed				

Type	Date	28-June-2023		
CL#02	Reference	Section of Ver protocol: Section 4		
Description of the Non-Conformance				
PP is requested to provide the following documents to verify the MR and project completely: 1. SLD of the Plant site 2. PPA agreement 3. O&M Agreement 4. Undertaking for not claiming credits from other GHG Program and other form of credits. 5. JMRs and Invoices for the current monitoring period. 6. Breakdown details				
1 st Response from PP	Date	28-Aug-2023		
All mentioned documents have been submitted.				
1 st Assessment by Audit Team	Status	Closed	Date	15-September-2023
Assessment team verifies and confirms that PP has submit the all supporting documents to verify the monitoring report and project. Hence accepted				
Hence CL#02 is Closed				

Type		Date	DD/MM/YYYY	
FAR		Reference		
Description of the Non-Conformance				
1 st Response from PP		Date	DD/MM/YYYY	
1 st Assessment by Audit Team	Status	Open/Closed	Date	DD/MM/YYYY

APPENDIX C: COMPETENCE STATEMENT

Team Leader and Sectoral Expert 1.2



Certification Pvt. Ltd.

VKU.F50W: Competence Statement

COMPETENCE STATEMENT

Name	Sunil Kathuria
Nationality	Indian
Countries of Experience	Malaysia, Uganda, Kenya, South Africa, Nigeria Bangladesh, China, Vietnam, Thailand, Philippines, United Kingdom, Germany, USA
Education Qualification	B.E. (Electrical Power)
Year of Experience	40 Years
Area of Expertise	Climate Change & Environment Energy Generation / Distribution GHG Footprints Manufacturing Sector
Eligible Sectoral Scope	TA 1.1 - Thermal energy generation TA 1.2 - Renewables TA 2.1 - Energy distribution TA 3.1 - Energy Demand (General & Cook Stove) TA 4.1 - Cement and lime production (Manufacturing Industries)

Roles

Project Trainee	NO
Validator/Verifier Trainee	NO
Validator	YES
Verifier	YES
Team Leader	YES
Technical Reviewer	YES
Local Expert (Country Wise)	YES
TA Expert (1.1, 1.2, 2.1, 3.1, 4.1)	YES
Financial Expert	NO

Reviewed by	Vandana Gupta (Quality Manager)	Date	13/05/2023
Approved by	Vivek Kumar Ahirwar (Technical Manager)	Date	13/05/2023

Validator/Verifier



Certification Pvt. Ltd.

VKU.F50W. Competence Statement

COMPETENCE STATEMENT

Name	Shivani Chauhan
Nationality	Indian
Countries of Experience	India
Education Qualification	B.Sc. (Environmental Science) M.Sc. (Environmental Science)
Year of Experience	2 years as Intern 9 months as Employee
Area of Expertise	Climate Change & Environment
Eligible Sectoral Scope	NA

Roles

Project Trainee	NO
Validator/Verifier Trainee	NO
Validator	YES
Verifier	YES
Team Leader	NO
Technical Reviewer	NO
Local Expert (Country)	NO
TA Expert (X.X)	NO
Financial Expert	NO

Reviewed by	Vandana Gupta (Quality Manager)	Date	03.04.2023
Approved by	Vivek Kumar Ahirwar (Technical Manager)	Date	03.04.2023

Validator/Verifier-Trainee



Certification Pvt. Ltd.

VKU.F50W. Competence Statement

COMPETENCE STATEMENT

Name	Apoorva Tripathi
Nationality	Indian
Countries of Experience	India
Education Qualification	B.Sc. (BCZ) M.Sc. (Environmental Science)
Year of Experience	8 Months as Project Trainee
Area of Expertise	Climate Change & Environment
Eligible Sectoral Scope	NA

Roles

Project Trainee	NO
Validator/Verifier Trainee	YES
Validator	NO
Verifier	NO
Team Leader	NO
Technical Reviewer	NO
Local Expert (Country Wise)	NO
TA Expert (X.X)	NO
Financial Expert	NO

Reviewed by	Vandana Gupta (Quality Manager)	Date	04/04/2023
Approved by	Vivek Kumar Ahirwar (Technical Manager)	Date	04/04/2023

Technical Reviewer and Sectoral Expert 3.1



Certification Pvt. Ltd.

VKU.F50W. Competence Statement

COMPETENCE STATEMENT

Name	Sanjay Kumar K
Nationality	Indian
Countries of Experience	India
Education Qualification	B.E. (Civil Engineering) M. Tech (Environmental Engineering)
Year of Experience	20 Years +
Area of Expertise	Climate Change & Environment Sustainable Development GHG Footprints
Eligible Sectoral Scope	TA 1.2 - Renewables TA 3.1 - Energy Demand TA 6.1 - Construction

Roles

Project Trainee	NO
Validator/Verifier Trainee	NO
Validator	YES
Verifier	YES
Team Leader	YES
Technical Reviewer	YES
Local Expert (Country Wise)	YES
TA Expert (1.2, 3.1, 6.1)	YES
Financial Expert	YES

Reviewed by	Vandana Gupta (Quality Manager)	Date	03.03.2023
Approved by	Vivek Kumar Ahirwar (Technical Manager)	Date	03.03.2023