VERIFICATION REPORT FOR

"GHANI SOLAR RENEWABLE POWER PROJECT BY GREENKO GROUP"

Document Prepared by Earthood Services Private Limited

Project Title	Ghani Solar Renewable Power Project by Greenko Group
Version	02
Report ID	VCS.VER.21.17

Report Title	Verification report for Ghani Solar Renewable Power Project by Greenko Group
Client	Infinite Solutions
Pages	29

Date of Issue	01/03/2021
Prepared By	Earthood Services Private Limited
Contact	409-410, Tower B4, Spaze I-Tech Park, Sector 49, Gurugram 122018, INDIA Tel: +91 124 4204599 Fax: +91 124 4204599 Website: www.earthood.in Email: info@earthood.in
Approved By	Dr. Kaviraj Singh
Work Carried Out By	Team Leader: Ravi Kant Soni Technical Expert (TA 1.2) and Meth Expert: Ravi Kant Soni Local Expert: Ravi Kant Soni Technical Reviewer: Anshika Gupta Technical Expert (TA 1.2): Anshika Gupta

Summary:

Earthood Services Private Limited (hereafter referred to as ESPL) has been contracted by Infinite Solutions to conduct the verification of the project - "Ghani Solar Renewable Power Project by Greenko Group", VCS ID 1792 with regard to the relevant requirements of VCS programme guidelines and standard (VCS standard version 4.0, & VCS program guide version 04.0). Relevant requirements of the UNFCCC for CDM project activities, as well as criteria for consistent project operations, monitoring and reporting has been applied for verification.

The monitoring period covers under this verification are from 01/10/2019 to 31/12/2020 (both days included).

The verification includes confirming the implementation of the monitoring plan of the registered VCS PD and MR (VCS ID 1792) and the application of the monitoring methodology as per ACM0002 version 18.1: "Grid-connected electricity generation from renewable sources".

The project activity involves electricity generation by the solar power supplying the generated electricity to state DISCOM i.e Indian grid. The project being a renewable energy generation activity, leads to reduction in fossil fuel dominated electricity generation. The project activity results in reductions of greenhouse gas (GHG) emissions that are real, measurable, and verifiable and also plays beneficial role in the mitigation of climate change.

A risk-based approach has been followed to perform this verification. In the course of verification, 02 Corrective Action request (CARs), 00 Forward Action request (FARs), and 01 Clarification request

(CLs) were raised and successfully closed.

The review of the project design documentation, monitoring report and additional documents related to baseline and monitoring methodology; the subsequent background investigation, telephonic interviews and stakeholders have provided ESPL with sufficient evidence to validate the fulfillment of the stated criteria.

ESPL confirms that the project is implemented in accordance with the registered VCS PD.The monitoring system is in place and the emission reductions are calculated without material misstatements. Our opinion relates to the project's GHG emissions and the resulting GHG emission reductions reported and related to the valid and registered project baseline and monitoring and its associated documents. Based on the information seen and evaluated we confirm that the emission reductions from the project activity "Ghani Solar Renewable Power Project by Greenko Group" in India during the period 01/10/2019 to 31/12/2020 (including both days) amount to 1,339,537 tons of CO_2e.

TABLE OF CONTENTS

1 INTRODUCTION

1.1 Objective

Earthood Services Private Limited (ESPL) has been contracted by Infinite Solutions, to undertake the verification of the renewable energy project titled "Ghani Solar Renewable Power Project by Greenko Group" (VCS ID-1792) The verifiers have reviewed the GHG data collected to date for the monitoring period from 01/10/2019 to 31/12/2020 (both days included) covered in this verification. The objective of this verification is a thorough and independent assessment of registered project activities against the applicable VCS requirement by the VVB. The verification process shall determine whether the proposed project activity complies with the requirements of latest VCS guidelines, applicability conditions of the selected methodology, relevant host country regulations and guidance issued by the VCS Board.

1.2 Scope and Criteria

The scope of verification is to assess the claims and assumptions made in the VCS monitoring report (MR) against the VCS criteria, including but not limited to, VCS standard, applied methodology and other relevant rules and requirements established for VCS project activities.

The Verification is not meant to provide any consulting towards the project participants. However, stated requests for clarification and/or correction actions request may have provided inputs for improvement of the project design.

1.3 Level of Assurance

The level of assurance of the verification report falls under reasonable assurance engagements. Reasonable assurance is a high level of assurance regarding material misstatements, but not an absolute one.

Reasonable assurance includes the understanding that there is a remote likelihood that material misstatements will not be prevented or detected on a timely basis. To achieve reasonable assurance, the auditor needs to obtain sufficient appropriate audit evidence to reduce audit risk to an acceptably low level. This means that there is some uncertainty arising from the use of sampling, since it is possible that a material misstatement will be missed.

The evidence used to achieve a reasonable level of assurance is specified in section 2.3 and 2.4 of this report. Materiality for the project is 5%.

1.4 Summary Description of the Project

The project activity comprises installation of a grid connected solar photovoltaic based power project with a total capacity of 500 MW in the state Andhra Pradesh in India. The solar power developers (SPDs) involved in the project has signed power purchase agreement (PPA) with NTPC Limited, which is a government entity responsible for implementation of grid connected solar PV project under the scheme "National Solar Mission". The National Solar Mission is an initiative of the Government of India and State Governments to promote solar power.

The mission is one of the several policies of the National Action Plan on Climate Change. Electricity generated by the project activity is being purchased by NTPC Vidyut Vyapar Nigam Limited (NVVN), which is eventually sold to state DISCOM.

There is 10 SPDs involved in the project activity and the project activity are promoted by Zuvan Energy Private Limited (project proponent). The details of investors (SPDs), installed capacity with location and commissioning status is provided in the below table:

Sr.No	Investor Name	Installed Capacity	Location of the project	Commissioning date
1	Aarish Solar Power Private Limited	50 MW	Kurnool district, Andhra Pradesh	31/03/2017
2	Aashman Energy Private Limited	50 MW	Kurnool district, Andhra Pradesh	31/03/2017
3	Divyesh Power Private Limited	50 MW	Kurnool district, Andhra Pradesh	31/03/2017
4	Elena Renewable Energy Private Limited	50 MW	Kurnool district, Andhra Pradesh	31/03/2017
5	Pratyash Renewable Private Limited	50 MW	Kurnool district, Andhra Pradesh	31/03/2017
6	SEI Baskara Power Private Limited	50 MW	Kurnool district, Andhra Pradesh	31/03/2017
7	SEI Enerstar Renewable Energy Private Limited	50 MW	Kurnool district, Andhra Pradesh	31/03/2017
8	SEI Mihir Energy Private Limited	50 MW	Kurnool district, Andhra Pradesh	31/03/2017
9	Shreyash Renewable Energy Private Limited	50 MW	Kurnool district, Andhra Pradesh	31/03/2017
10	Zuvan Energy Private Limited	50 MW	Kurnool district, Andhra Pradesh	31/03/2017

The commissioning date of each phase is verified though the through the commissioning certificate/12/. The verification team has also verified the latest photographs/19/ of all the equipment's (solar modules, investors and transformers, energy meters) installed at site and SCADA monitoring system submitted by the project proponent. The project activity is undergoing third verification and description of project activity was also verified during second verification/02/ through physical site visit by other VVB (ESPL) on 25/02/2020 and 26/02/2020. Based on the assessment of the documents, the assessment team is able to confirm that the project activity is fully functional and implemented as described in the registered VCS PD.

2 VERIFICATION PROCESS

The registered VCS project is undergoing third verification, the approach adopted to ensure the quality of emission reductions is described in the following sections.

2.1 Method and Criteria

The verification approach consists two phases.

In the first phase, ESPL completed a strategic review and risk assessment of the projects activities and processes in order to gain a full understanding of:

Activities associated with all the sources contributing to the project emissions and emission reductions, including leakage if relevant;

Protocols used to estimate or measure GHG emissions from these sources;

Collection and handling of data;

Controls on the collection and handling of data;

Means of verifying reported data; and

Compilation of the Monitoring Report.

At the end of this phase, ESPL produced a Verification Checklist which, based on the risk assessment of the parameters and data collection and handling processes for each of those parameters, describes the verification approach and the sampling plan.

In the second phase using the Verification checklist, ESPL verified the implementation of the monitoring plan and the data presented in the VCS MR/04/ for the period in question. This involved telephonic interviews of project proponent representative's and a desk review of the Monitoring Report. This verification report describes the findings of this assessment.

2.2 Document Review

The verification is performed primarily as a document review of the registered VCS PD/01/, previous MR and Verification report/02/ and associated documents as stated in details in appendix 1 of this document. The assessment is performed by a verification team using a protocol. The cross checks between information provided in the Monitoring report, VCS PD and information from sources other than those used, if available, the team's sectoral or local expertise and, if necessary, independent background investigations.

2.3 Interviews

Due to the current situation with the global COVID-19 pandemic scenario physical site inspection is not done for the gap validation & verification. Although domestic travel has resumed in India, it is still not recommended until absolutely necessary and considering health and safety a top priority, physical site visit for verification audit is not conducted. Furthermore, as per the Section 4.1.2 of the VCS Standard, v4.0, it is not mandatory to conduct the on-site visit by VVB for verification However the representatives of the PP were interviewed telephonically on 18/02/2021 i.e., personnel responsible for monitoring of the project activity, data collection and management, and QA/QC procedure. The details of the people interviewed are mentioned in the table below:

Name	Organization	Topic covered

Mr. Samarth Barve Mr. Murali Krishnam Raju M	Infinite Solutions (Assistant Manager) Greenko Group (Senior Manager)	Project implementation, start date as per the VCS requirements. Consideration of monitoring period, monitoring methodology, project documentation and emission reduction calculations.
Mr. Aravamudhan. R	Plant Head - Operation	Electricity Generation Records (monthly energy statements, Invoices) Reliability & accuracy of readings considered for emission reduction calculations, Calibration procedure

2.4 Site Inspections

As discussed in the above section, physical site inspection is not done for the current verification. However, to achieve a reasonable level of assurance, the assessment team has followed the alternative means to substantiate the verification criteria as described in the below table:

Assessment Criteria	Means of verification/source documents	Assessment opinion
Description of project activity	Commissioning certificate /12/ PPAs signed with NTPC /13/ VCS verification report for second monitoring period/02/. Telephonic interview with site personnel on 18/02/2021.	The information's with reference to project capacity, technology, plant equipment's and commissioning dates as provided in section 1.1 of MR are found consistent with the documents.
Compliance of the project implementation with the registered project design document	Monthly JMRs issued by APEPDCL /09/. Geographical co-ordinates of project activity verified through Google Map[1] Photograph of equipment's installed at site and screen	Monthly JMRs issued by APEPDCL indicate the following information: Name of the pooling substation, Date of PPA signed with NTPC, Capacity of project and name of project participant. Location of project is verified

[1] https://www.gps-coordinates.net/

	shots of SCADA system /19/ VCS verification report for second monitoring period/02/. Telephonic interview with site personnel on 18/02/2021	through Google Map and found consistent with registered VCS PD. Photograph of equipment's and screen shots of SCADA system are verified to check the operational status of project activity. Grid connectivity of the project is confirmed through the PPA. All the information's regarding the project implementation as discuss above are further verified through VCS PD and found consistent.
Compliance of the registered monitoring plan with applied methodologies and standardized baselines	Telephonic interview with site personnel on 18/02/2021 PPA signed with NTPC /13/ Monthly JMRs issued by APEPDCL /09/. Invoices raised by project developer to NTPC /08/	The organizational structure, responsibilities and competencies of the personnel confirmed through telephonic interview. Frequency of monitoring of parameters listed under approved monitoring plan is verified through JMRs /Invoices. The methods used for measuring, recording, storing, aggregating, and reporting the data on monitored parameters are verified though PPA and telephonic conversations with site personnel. Procedure for data uncertainty, emergency preparedness, roles and responsibility, operational and management structure are mentioned in the MR is confirmed through quality policy documents/20/ and found satisfactory.
Compliance with the calibration frequency requirements for measuring instruments	Calibration certificates of meters/07/ PPA signed with NTPC /13/. Photograph of energy meters indicating sr. No, accuracy class, make /19/. Central Electricity Authority (Installation and Operation of	Calibration frequency and energy meter specifications (Sr. No, make accuracy class) is verified through calibration certificates and further verified through photographs and found consistent. Responsibility of calibration and maintenance of energy meters is solely under control of APEPDCL; this is verified through the PPA.

	Meters) Regulations/16/	
Assessment of data and calculation of emission reductions or net removals	Monthly credit JMRs issued by APEPDCL /09/. Invoices raised by project developer to NTPC /08/ CEA CO_2 Baseline Database for the Indian Power Sector /11/ Previous VCS verification report /02/.	Monthly values of monitoring parameter used in ER calculation are verified through credit reports and cross verified with the invoices. Methods, formulae and emission factor for calculating baseline emissions have been followed are in accordance with the applied methodology and as described in the approved VCS verification report /02/.

It is noteworthy that no sampling plan for verification is applied as 100% data is verified for the current monitoring period. Most of the reference document referred by the assessment team (above table) are either issued /endorsed by state utility (APEPDCL), an external government agency, hence is deemed authentic.

Based on the above assessment it can be concluded that the assessment team has verified sufficient appropriate audit evidences, to reduce audit risk to an acceptably low level as requisite to achieve reasonable level of assurance for the current verification.

2.5 Resolution of Findings

The objective of this step is to identify, discuss and conclude on the issues related to the monitoring, implementation and operations of the registered project activity that could impair the capacity of the registered project activity to achieve emission reductions or influence the monitoring and reporting of emission reductions. This is done based on the desk review and interaction with site personnel over phone. The verification team prepares and/or updates a verification protocol (internal document) that records the conformities and non-conformities, which may be of following types;

CAR (Corrective Action Request) is raised if one of the following occurs:

Non-compliance with the monitoring plan, the methodology or the standardized baseline are found in monitoring and reporting and has not been sufficiently documented by the project participants, or if the evidence provided to prove conformity is insufficient;

Modifications to the implementation, operation and monitoring of the registered project activity has not been sufficiently documented by the project participants;

Mistakes have been made in applying assumptions, data or calculations of emission reductions

that will impact the quantity of emission reductions;

Issues identified in a FAR during validation to be verified during verification or previous verification(s) have not been resolved by the project participants. Clarification request (CL) is raised if information is insufficient or not clear enough to determine whether the applicable CDM requirements have been met. All CARs and CLs raised by the ESPL during verification shall be resolved prior to submitting a request for issuance.

FAR (Forward Action Request) is raised during verification if the monitoring and reporting require attention and/or adjustment for the next verification period. All the findings that are raised and communicated to project participant during the verification are included under Appendix 3. The section also includes the response, if provided, by the project participants and an assessment by the verification team if it was closed out or otherwise.

2.5.1 Forward Action Requests

The project activity is undergoing third verification; there were no FARs raised during the validation or previous verification/02/.

2.6 Eligibility for Validation Activities

The project activity is undergoing third verification , no validation activity performed as part of verification, hence this section is not applicable.

3 VALIDATION FINDINGS

The project is undergoing verification. Not applicable.

3.1 Participation under Other GHG Programs

The project capacity is registered under VCS program only (VCS ID-1792).

The PP has submitted the declaration/15/ which states that the net GHG emission reductions generated by the project activity will not be used for compliance with any other emissions trading program or to meet binding limits on GHG emissions for the same monitoring period.

3.2 Methodology Deviations

There is no methodology deviation identified during the current monitoring period.

3.3 Project Description Deviations

No project description deviation identified during the current monitoring period.

3.4 Grouped Project

Not applicable. The project activity is not a grouped project.

4 VERIFICATION FINDINGS

4.1 Project Implementation Status

The project activity involves installation of a grid connected solar photovoltaic based power project with a total capacity of 500 MW in the state Andhra Pradesh in India. There is total 10 solar power developers involved in the project activity and details of the sub-projects implemented by each SPD is provided under section 1.4 of this report.

This proposed solar power project will reduce the GHG emissions generated by the current generation energy mix in India's Power Grid, which is dominated by fossil fuel-based grid connected power plants. The power generated through the proposed project activity being supplied to Indian grid through a contractual arrangement (PPA) with NTPC Limited. The technical specification of the project activity equipment's have been checked through the photographs of all the equipments installed at site and are found to be consistent with the mentioned under section 3.1 of MR. The current status of the project activity is verified through the screen shots of SCADA system/19/, indicating the real-time generation data and hence it is confirmed that the project is fully functioning.

The monitoring plan of registered VCS PD/01/ includes the parameter "Quantity of net electricity generation supplied by the project plant/unit to the grid in year y" ($EG_{PJ,y}$). This parameter being calculated on monthly basis as difference of electricity exported to the grid and electricity imported from the grid by the project and those are being measured by energy meters of accuracy class 0.2s located at project. This export and import parameters are measured continuously and at least monthly recording. This is in line with methodology and is accepted.

Monthly values of $EG_{PJ,y}$ obtained directly from the monthly JMRs issued by APEPDCL/09/. The invoicing being done against electricity supplied by the project plant to the grid. The measurement results are cross checked with records of invoices and it is in line with applied methodology. Thus, this parameter is considered in emission reduction calculations.

As verified through the JMRs that the sub-projects involved in the project activity are connected to two separate pooling substations and dedicated main and check meter is installed for each sub-project at site pooling substations and are under control of state utility (APEPDCL), sealed in presence of both the state utility official & representative of PP.

Joint Meter Reading is being taken jointly by the officials of state utility and project participant's representative on monthly basis and accordingly monthly JMR is being prepared. The monitoring methodology applies consistently the choice of the option selected for monitoring of baseline emissions. The monitoring plan provide procedures for the collection and archiving of all relevant data necessary for estimation or measuring the emission reductions within the project boundary during the crediting period. This is checked through discussion with consultant and the project participant during the telephonic interview.

The VCS MR/04/ has been reviewed to check that the procedure for data uncertainty, emergency preparedness, roles and responsibility, operational and management structure are mention in the MR. The monitoring plan completely describes all measures to be implemented for monitoring all parameters required. The monitoring plan described the positioning of the equipment. Calibration frequency for Energy meters is once in 5 years. Also CEA Notification/16/ No. 502/70/CEA/DP&D dated 17/03/2006 which is considered as national standard mentions that "All interface meters shall be tested at least once in five years." Hence calibration frequency once in 5 years considered for the project activity is found to be appropriate.

The information relating to the project implementation, provided in the Monitoring Report /04/ is consistent with that stated in the registered PD /01/. The data and variables provided in the monitoring report are the same as stated in the registered PD/01/. Total emission reductions achieved under this monitoring period 01/10/2019 to 31/12/2020 (including both days) is 1,339,537 tCO_2e.

Assessment team concludes the following:

a) There are no material discrepancies between project implementation and the project description provided in the registered PD/01/.

b) 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.

c) There are no material discrepancies between the actual monitoring system, and the monitoring plan set out in the project description and the applied methodology/10/.

d) The GHG emission reductions or removals generated by the project have not included in an emissions trading program or any other mechanism that includes GHG allowance trading/15/.

e) The project has not received or sought any other form of environmental credit, or has become eligible to do so since validation or previous verification/15/.

f) The project is registered under VCS only.

g) The project activity is complying 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.

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 project description.

4.2 Safeguards

4.2.1 No Net Harm

There is no negative impact to any socio-economic conditions of the region due to the project

activity. As per the notifications issued by Ministry of Environment, Forest and Climate Change dated 13/05/2011; Environmental Impact Assessment (EIA) for the solar projects is not required to be done (Ref:http://moef.gov.in/wp-content/uploads/2017/09/OM-SolarPV.pdf).

This project activity will not involve any negative environmental or socio-economic impacts, as the project activity involves generation of power using solar energy which is a clean source of energy. Hence no mitigation measures are required.

4.2.2 Local Stakeholder Consultation

The project activity undergoing second verification and local stakeholder consultation was appropriately conducted prior to validation as a way to inform the design of the project and maximize participation from stakeholders during the validation.

The project proponent has implemented mechanism for ongoing communication with local stakeholders to allow stakeholders to raise concerns about potential negative impacts during implementation and operation of the project activity. The project proponent has placed a grievance register and a grievance box at site office/21/, where the local villagers can register their concerns.

The assessment team has checked the copy of grievance register maintained at site office/22/ and confirmed that no formal complaints were received during the current monitoring period.

4.3 AFOLU-Specific Safeguards

Not applicable to the project activity.

4.4 Accuracy of GHG Emission Reduction and Removal Calculations

The calculation of the emission reductions is found to be correct. The details of the reported and the verified values for all parameters are listed in section 4.5 of this report.

The parameter $EG_{PJ,y}$ is directly sourced from monthly JMRs issued by state utility. The PP has provided the complete set of data for all the monitored parameters in the ER spreadsheet/06/. This data has been verified as described in section 4.5 below. The formulae & method used to calculate the baseline emissions, project emissions and leakage are appropriate and in line with the approved methodology ACM0002 version 18.1.

The PP has calculated the grid emission factor as per the combined margin approach described in the 'Tool to calculate the emission factor for an electricity system', version 07.0. The grid emission factor has been calculated as the weighted average of OM & BM; and has been fixed ex-ante for the entire crediting period.

The OM and BM have been obtained from a publicly available source i.e. "CO2 Baseline Database for Indian Power sector", version 13/11/ published by Central Electricity Authority, Ministry of Power, and Government of India. The OM has been determined as the average of the previous 3 years values obtained from the CEA database/11/. The value of BM has been identified directly from the CEA database. The combined margin emission factor was arrived at by applying weights of 75% for OM and 25% for BM, as specified in the tool. The OM and BM

have been calculated to be 0.9726 tCO2/MWh and 0.8723 tCO2/MWh respectively. Applying the weights, the grid emission factor has been calculated to be 0.9475 t CO2/MWh.

As per CER excel spreadsheet/06/ submitted by the PP, the net emission reductions for the current monitoring period were verified as 1,339,537 tCO2e for the current monitoring period.

The assessment team able to confirm that the GHG emission reductions and removals have been quantified correctly in accordance with the project description and applied methodology.

4.5 Quality of Evidence to Determine GHG Emission Reductions and Removals

All the data recorded is in compliance with the registered VCS PD and Monitoring Report. The assessment team has checked the monthly JMRs for electricity generated and supplied by project activity/09/ for the current monitoring period to verify the values of monitoring parameter reported in ER calculation sheet and found to be consistent. Since the monthly JMRs prepared and issued by state utility, they are found to be reliable and authentic.

The Greenko group is responsible for the operations, maintenance and monitoring of the project activity, Greenko is certified by DNV-GL for implementing ISO 9001:2015, ISO 14001:2015, OHSAS 18001:2007 & ISO 27001:2013 /20/. Hence it is confirmed that the management system of the VCS project is in place; with the responsibilities properly identified. The same was also verified during the telephonic interview of site personnel.

The monitoring of the project activity is found to be in accordance with the monitoring methodology described in ACM0002, Version 18.1 /10/. The monitoring mechanism is effective and reliable. During the con-call, personnel involved at various levels of the operation of the project activity have been interviewed to confirm that the plant personnel are conscious of the importance of the monitoring activities. The verification of the plant records and latest photographs are also substantiating consistency in recording and reporting of monitored data.

The screen shots of SCADA system/19/ confirms that the monitoring systems have been installed and are operational. The meters comply with appropriate quality standards applicable for the used technology. The accuracy class of the meters installed for the project activity was verified through the registered VCS PD/01/, MR /04/, and calibration certificates, latest photographs of meters and cross-checked against the PPA/13/ signed for the project activity, found to be consistent.

The supporting records of monthly credit reports /09/ issued by the state utility and invoices raised to NTPC for the entire monitoring period were checked and found to be sufficient to enable verification of emission reductions.

The following parameter has been verified for current monitoring period:

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	This parameter is monitored continously and recorded monthly in the JMRs.
	Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes. The measuring and reporting frequency is in line with the monitoring plan as outlined in the registered PD/01/ and monitoring methodology/10/.
	Monitoring equipment	Energy meters of accuracy class 0.2s are used, (Calibration details of meter is provided separately in this section, under the heading "Calibration of meters")
	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?	Yes, accuracy class of meter is in line with registered monitoring plan/01/.
	Calibration frequency /interval:	The meters are calibrated every 5 years in line with notification by Central Electricity Authority, Govt. of India/16/.
	Is the calibration interval in line with the monitoring plan	Yes, calibration interval of meters is 5 years, which is in line with the monitoring plan/01/ and national standards/16/.

	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, pending untill the findings are closed or as per the manufacturer's specifications?	
	Is the calibration of measuring equipment carried out by an accredited person or institution?	Yes, the calibration is carried out by NABL accredited institution/07/.
	Is(are) calibration(s) valid for the whole reporting period?	Yes, the calibration is valid for entire monitoring period.
	How were the values in the monitoring report verified?	The values in the monitoring report were verified from the monthly JMRs/09/. Final value of electricity supplied to the grid by the project activity is verified as 1,413,760 MWh.
	If applicable, has the reported data been cross-checked with other available data?	Yes, the data has been cross-checked with invoices raised by the respective devlopers to the NTPC /08/
	Does the data management ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	Yes, the data ensure correct transfer of data and reporting of emission reductions management. QA/QC processes are in place.

	In case project participants 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?	Not Applicable	
Findings	CL #1, CAR #1 and CAR #2 was raised and resolved.		
Conclusion	The parameter has been monitored appropriately in accordance with the registered monitoring plan/01/ and applied methodology/10/. The monitored data was recorded consistently as per the approved frequency in monitoring plan/01/. Since 100% data has been monitored and verified, the verification team can ascertain that the values used for calculation of emission reduction are free from material errors. Implementation of the project is as per the registered monitoring plan/01/.		

Parameters fixed ex ante:

$EF_{grid,OM,y}$; tCo_{2e}/MWh: it is the operating margin emission factor of Indian grid fixed for the entire crediting period and the value is considered as 0.9726 tCO_{2e}/MWh, that is consistent with the registered VCS PD and MR.

$EF_{grid,BM,y}$; tCO_{2e}/MWh: it is build margin emission factor of Indian grid fixed for the entire crediting period and the value is considered as 0.8723 tCO2e/MWh, that is consistent with the registered VCS PD and MR.

$EF_{grid,CM,y}$; tCO_{2e}/MWh: it is the combined margin emission factor of Indian grid fixed for the entire crediting period and the value is considered as 0.9475 tCO2e/MWh, that is consistent with the registered VCS PD and MR.

Calibration of meters:

During the verification assessment of the project activity, accuracy of all the metering have been checked and found appropriate. The installation and working conditions of the meters were checked through calibration certificates, latest photographs and were found to be satisfactory. Details of meters are provided in below table:

Meter location	Feeder No-	Meter Sr.No.	Calibration Date	Calibration validity date	Calibration delay (Y/N)
PSS - 01 - 220 KV Side at 400 KV Substation	211	Main Meter: 16196439	21/09/2019 and 16/10/2020	15/10/2025	N
		Check Meter: 16196441	21/09/2019 and 16/10/2020	15/10/2025	
		Standby Meter: 16196443	21/09/2019 and 16/10/2020	15/10/2025	
	212	Main Meter: 16196434	21/09/2019 and 16/10/2020	15/10/2025	
		Check Meter: 16196435	21/09/2019 and 16/10/2020	15/10/2025	
		Standby Meter: 16196437	21/09/2019 and 16/10/2020	15/10/2025	
PSS - 02 - 220 KV Side at 400 KV Substation	215	Main Meter: 16196452	21/09/2019 and 16/10/2020	15/10/2025	N
		Check Meter: 16196456	21/09/2019 and 16/10/2020	15/10/2025	
		Standby Meter: 16196449	21/09/2019 and 16/10/2020	15/10/2025	
	216	Main Meter: 16196455	21/09/2019 and 16/10/2020	15/10/2025	
		Check Meter: 16196458	21/09/2019 and 16/10/2020	15/10/2025	
		Standby Meter: 16196460	21/09/2019 and 16/10/2020	15/10/2025	

It is evident from the above table that calibration of all the existing meters was valid during the current monitoring period, hence no delay in calibration of meters identified. The CEA Notification No. 502/70/CEA/DP&D dated 17/03/2006 and its amendments Notified on 26/06/2010 No. 502/6/2009/DP&D/D-I /16/ which is considered as national standard, mentions that for voltage of 650 V up to 33 kV, 0.5s accuracy class or above is recommended. Hence, the accuracy classes of 0.2s for the energy meters installed at the project activity site are found to be appropriate.

The details of monitoring equipment are involved in the project activity and their calibration details/07/ are mentioned under Appendix-1 of the VCS MR/04/. The CEA Notification No. 502/70/CEA/DP&D dated 17/03/2006/16/ which is considered as national standard mentions that "All interface meters shall be tested at least once in five years." Hence, the stipulated calibration frequency once in 5 years is appropriate.

In view of the above discussion the assessment team 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 as per the applied methodology equals the baseline emissions (project emissions and leakage emissions for such project activities is considered zero). The formula provided for the calculation of baseline emissions is:

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

Where:

BE_y: Baseline emissions in year y (tCO_2e/yr)

$EG_{PJ, y}$: Quantity of net electricity supplied to the grid as a result of the implementation of the CDM project activity in year *y* (MWh)

For renewable energy projects $EG_{PJ, y} = EG_{facility,y}$

$EF_{grid,CM, y}$: CO2 emission factor of the grid in year y (tCO_2/MWh)

Thus,

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

Thus, BE_y =1,413,760 MWh * 0.9475 tCO2/MWh

= 1,339,537 tCO2 (Round down value)

As per the applied methodology, emission reductions are calculated as follows:

$ER_y = BE_y - PE_y$

ER_y = 1,339,537 -0

ER_y = 1,339,537 tCO2

The verification team confirms that appropriate methods and formulae for calculating baseline emissions have been followed. The assumptions, emission factors and default values that were applied in the calculations are justified. The actual emission reduction achieved during the current monitoring period are 7 % higher than the estimated amount of emission reductions as determined in the registered VCS PD, which is due to the high PLF achieved by the project activity during the monitoring period.

It is to be noted that PLF is completely governed by the availability of sunlight, which is natural phenomenon and same is beyond the control of PP, hence the assessment team has concluded the increase in emission reduction of the project activity is justified and acceptable. All the data were made available and have monitored as per required monitoring frequency. The means of verification for the values of parameters, used for baseline emission calculation, is described above.

4.6 Non-Permanence Risk Analysis

This project is not AFOLU project, hence not applicable for the project activity.

5 VERIFICATION CONCLUSION

Earthood Services Private Limited (ESPL), contracted by Infinite Solutions, to perform the independent verification of the emission reductions for the VCS project activity "Ghani Solar Renewable Power Project by Greenko Group" (VCS ID- 1792) in India for the monitoring period 01/10/2019–31/12/2020 as reported in the Monitoring Report Version 03 dated 21/02/2021. The Greenko group is responsible for the collection of data in accordance with the monitoring plan and the reporting of GHG emissions reductions from the project activity.

It is our responsibility to express an independent verification statement on the reported GHG emission reductions from the project activity. ESPL commenced the verification on the basis of the baseline and monitoring methodology ACM0002 Version 18.1, the monitoring plan contained in the registered Joint VCS PD&MR Version 02, dated 05/12/2018 and VCS guidelines version 4.0, Monitoring Report Version 03 dated 21/02/2021 as per the process described under Section 2 of this report. ESPL 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. ESPL planned and performed the verification by obtaining evidence and other information and explanations that ESPL considered necessary to give reasonable assurance that reported GHG emission reductions are fairly stated.

In our opinion the GHG emissions reductions reported for the project activity for the period 01/10/2019 – 31/12/2020 are fairly stated in the Monitoring Report Version 03 dated 21/02/2021. The GHG emission reductions were calculated correctly on the basis of the approved baseline and monitoring methodology ACM0002, Version 18.1, and the VCS standard version 4.0.

Verification period: From 01/10/2019 – 31/12/2020 (including both days)

Verified GHG emission reductions and removals in the above verification period:

Year	Baseline emissions or removals (tCO_2e)	Project emissions or removals (tCO_2e)	Leakage emissions (tCO_2e)	Net GHG emission reductions or removals (tCO_2e)
2019 (from 01/10/2019 to 31/12/2019)	217,642	0	0	217,642
2020 (from 01/01/2020 to 31/12/2020)	1,121,895	0	0	1,121,895
Total	1,339,537	0	0	1,339,537

Approved by

Dr. Kaviraj Singh

Managing Director **Date: 05/03/2021**

Earthood Services Privated Limited **Place: Gurugram, Haryana**

APPENDIX1: DOCUMENT REFERENCES

S.No	Title of Document	Version	Date
1.	Registered Joint VCS PD&MR	02	05/12/2018
2.	Joint VCS Validation and Verification Report for the monitoring period from 01/07/2018 to 30/09/2019	01	18/03/2020
3.	VCS Monitoring Report	01	29/01/2021
3.1	VCS Monitoring Report	02	11/02/2021
4.	VCS Monitoring Report (Final)	03	21/02/2021
5.	ER spread sheet	01	29/01/2021
		02	11/02/2021
6.	ER spread sheet (corresponding to the final monitoring report)	03	21/02/2021
7.	Certificates of Calibration for all the meters	-	-
8.	Invoice issued by PP to NTPC	For the period 01/10/2019 to 31/12/2020	-
9.	Monthly JMRs issued by APEPDCL	For the period 01/10/2019 to 31/12/2020	-
10.	Approved Consolidated Methodology ACM0002	18.1	-
11.	CEA Database	version 13	-
12.	Commissioning certificate issued by APEPDCL	-	Issued on 31/03/2017
13.	Power Purchase Agreements between project developer and NTPC	-	-
14.	VCS webpage for the project, VCS ID 1792; https://registry.verra.org/app/projectDetail/VCS/1792	-	-
15.	Letter of declaration dated from PP regarding not having created or sought any other form of environmental credit for the same period	-	-
16.	Central Electricity Authority (Installation and Operation of Meters) Regulations Notified on 17/03/2006 No. 502/70/CEA/DP&D Amendments Notified on 26/06/2010 No. 502/6/2009/DP&D/D-I	-	-
17.	VCS Standard	Version 4.0	19/09/2019
18.	VCS Program Guide	Version 4.0	19/09/2019
19.	Latest photographs of SCADA system, solar panel, invertors, transformers and energy meters installed at site	-	-
20.	Greenko Sustainability Report (https://www.greenkogroup.com/assets/Investor%20pdf%27s/SR_2016-17.pdf)	-	-
21.	Grievance register/suggestion box placed at site office	-	-

APPENDIX 2: ABBREVIATIONS

Abbreviations	Full texts
ABT	Availability Based Tariff
BEF	Baseline Emission Factor
BM	Build Margin
CAR	Corrective Action Request
CEA	Central Electricity Authority
CERC	Central Electricity Regulatory Commission
CL	Clarification Request
CMS	Central Monitoring System
CMP	Conference of Parties Serving as Meeting of Parties
CO2	Carbon dioxide
DISCOM	Distribution Company
EB	Executive Board
FAR	Forward Action Request
GHG	Green House Gas
ISO	International Standards Organization
JMR	Joint Meter Reading
Kw	Kilowatt
kWh	Kilowatt hour
MFR	Multi-Function Relay
MR	Monitoring Report
MWh	Megawatt-hour
PD	Project Description
PLF	Plant Load Factor
PP	Project Proponent
QA/QC	Quality Assurance and Quality Control
APEPDCL	Eastern Power Distribution Company of AP Limited
UNFCCC	United Nations Framework Convention on Climate Change
VCS	Voluntary Carbon Standard
VCSA	Voluntary Carbon Standard Association
VCS PD	VCS Project Description
VCUs	Voluntary Carbon Units

APPENDIX 3: FINDINGS OVERVIEW

Table 1. Remaining FAR from validation and/or previous verification

FAR ID	NA	**Section no.**	NA	**Date :**DD/MM/YYYY
Description of FAR				
No FAR from validation or verification				
Project participant response				**Date :**DD/MM/YYYY
NA				
Documentation provided by project participant				
NA				
DOE assessment				**Date:** DD/MM/YYYY
NA				

Table 1. CL from this verification

CL ID	01	**Section no.**	2.2	**Date : 06/02/2021**
Description of CL				
Please submit the following documents: 1. Commissioning certificate for all the sub-projects 2. Calibration certificates of the energy meters 3. PPA signed for the project 4. Please submit the JMRs and Invoices for the current monitoring period Please submit declaration confirming that the GHG Emission reductions or removals generated by the project activity will not be used for compliance with an emission trading program or to meet binding limits on GHG Emissions. Contact details of the project proponent as mentioned at VCS project webpage is not consistent with the MR section 1.3.				
Project participant response				**Date :** 11/02/2021
1. The following documents are submitted herewith; i. Commissioning certificate for all the WTGs ii. Calibration certificates of the energy meters iii. PPA signed for the project iv. JMRs and Invoices for the current monitoring period The declaration confirming that the GHG Emission reductions or removals generated by the project activity will not be used for compliance with an emission trading program or to meet binding limits on GHG Emissions is submitted herewith. Contact details of the project proponent in the monitoring report (MR) are consistent with Registered VCS PD&MR. However, there is an error in the contact details of project proponent in the VCS Project Web, however the necessary action for the correction has been taken and will be updated once it will become consistent.				
Documentation provided by project participant				
Commissioning certificate Calibration certificate PPA JMRs & Invoices Declaration - No double counting Revised MR Version 2.0				

DOE assessment	Date: 12/02/2021
1. The PP has submitted the requested documents and found to be satisfactory, hence accepted. 2. The PP has submitted the declaration confirming that the GHG Emission reductions or removals generated by the project activity will not be used for compliance with an emission trading program or to meet binding limits on GHG Emissions, found to be satisfactory, hence accepted. 3. The name of PP at VCS project webpage is consistent with the MR, registered PD, hence accepted. The contact details of the project proponent were wrongly mentioned at VCS webpage and will be corrected. CL #1 is closed.	

Table 2. CAR from this verification

CAR ID	01	Section no.	4.2.2	Date : 06/02/2021
Description of CAR				
Please clarify why the information regarding the ongoing communication with local stakeholders is not provided in section 2.2 of the MR, in line with the guidelines provided under the clause 3.16.3 and 3.16.4 of the VCS standard v 04.				
Project participant response				Date : 11/02/2021
The section 2.2 of the MR version 2.0 has been revised to include the details for the grievance register maintained at site. The stakeholders may comment or provide suggestions to the project. There are no comments received in the current monitoring period.				
Documentation provided by project participant				
Revised MR Version 2.0 Grievance Register				
DOE assessment				Date: 12/02/2021
The PP has described the ongoing communication with local stakeholders under section 2.2 of the MR, in line with the guidelines provided under the clause 3.16.3 and 3.16.4 of the VCS standard v 04. CAR #1 is closed.				

CAR ID	02	Section no.	4.5	Date : 06/02/2021
Description of CAR				
The formula used to calculate the net emission reductions as mentioned under section 5.4 of the MR is not in line with the applied methodology. The actual emission reductions achieved in the current monitoring period are 7% more than the estimated ERs in the registered PD for comparable period. Kindly clarify the reason for the same.				
Project participant response				Date : 11/02/2021
The formula used to calculate the net emission reductions as mentioned under section 5.4 of the MR is now consistent with the applied methodology. Hence Revised MR Version 2.0 The actual emission reductions achieved during the current monitoring period is 1,339,537 tCO2e which is 7% more than the estimated emission reduction. This is due to the greater number of sunshine hours during the monitoring period. The generation of electricity depends upon many other climatic conditions, and the availability of sunlight is not within the control of the project participant. Further, the increased PLF is within the sensitivity range of 10%, thus there is no impact of emission reductions on the project additionality.				
Documentation provided by project participant				
Revised MR Version 2.0 Revised ER Sheet Version 2.0				
DOE assessment				Date: 12/02/2021

1. The formula used to calculate the net emission reductions under section 5.4 of the MR is corrected and found in line with the applied methodology, hence accepted. 2. The increase in the actual ERs achieved in the current monitoring period is well within the threshold limits of sensitivity analysis, hence accepted. Sub-projects involved in the project activity are connected to two separate pooling substations as mentioned in the JMRs.Kindly clarify why the complete information about the pooling SS (name, technical features, location) along with the sub-project connected is not provided in the MR. Open CAR #2 is open
Project participant response **Date : 21/02/2021**
The Complete information related to pooling substation (name, technical, features, location) along with the subprojects connection with the pooling substation is now provided in the Monitoring report. Hence, Revised MR Version 3.0.
Documentation provided by project participant
MR Version 3.0 ER Sheet Version 3.0
DOE assessment **Date:** 24/02/2021
The PP has mentioned the details of pooling substations and the name of the concerned sub-project connected to the particular substation, found to be correct and in accordance with the JMRs. CAR #2 is closed.

Table 3. FAR from this verification

FAR ID	NA	**Section No.**	NA	**Date :**DD/MM/YYYY
Description of FAR				
No FAR was raised during the current verification.				
Project participant response				**Date :**DD/MM/YYYY
NA				
Documentation provided by project participant				
NA				
DOE assessment				**Date:** DD/MM/YYYY
NA				

APPENDIX4:COMPETENCYSTATEMENTS

Competence Statement			
Name	Ravi Kant Soni		
Country	India		
Education	B. Tech. (Mechanical Engineering) M. Tech. (Energy Management)		
Experience	8 Years +		
Field	Energy and Climate Change		
Approved Roles			
Team Leader	YES		
Validator	YES		
Verifier	YES		
Methodology Expert	AMS-I.D., AMS-I.C., ACM0002		
Local expert	YES (India)		
Financial Expert	No		
Technical Reviewer	No		
TA Expert	YES (TA 1.2)		
Reviewed by	Shreya Garg	**Date**	04/06/2019
Approved by	Anshika Gupta	**Date**	04/06/2019

Competence Statement	
Name	Anshika Gupta
Country	India
Education	M.Sc. (Climate Science & Policy), TERI University
Experience	4 Years +
Field	Climate Change
Approved Roles	

Team Leader	YES		
Validator	YES		
Verifier	YES		
Methodology Expert	AMS-I.A., AMS-II.G., ACM0002, AMS-III.A.V.		
Local expert	YES (India)		
Financial Expert	NO		
Technical Reviewer	YES		
TA Expert	Yes (TA 1.2, TA 3.1)		
Reviewed by	Shreya Garg	**Date**	12/03/2019
Approved by	Kaviraj Singh	**Date**	12/03/2019