5MW BIOMASS BASED COGENERATION PROJECT AT SAINSONS

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Summary:

4K Earth Science Private Limited (4KES) has been contracted by, "PA Research & Consultants Pvt. Ltd." to undertake verification and certification for the greenhouse gas (GHG) emission reductions reported from '5MW biomass based cogeneration project at Sainsons' for the monitoring period 01/10/2020 to 31/12/2021 in the initial monitoring report version 01, date 09/03/2022.

The 5 MW biomass based cogeneration project at Sainsons implemented a 5 MW cogeneration power project based on rice husk, within Kurukshetra district of Haryana state of India. The project is designed to produce electricity by 5MW extraction-cum-condensing steam turbine with alternator. Major equipment of the power project comprises of 50 tonne per hour (TPH) capacity single drum travel grate type boiler. The average inflow of extraction steam is 30 tonne per hour, which is used for process steam requirement in the paper machine section.
The project activity has been operational since commissioning (01/01/2017) /12/ and during the 2nd monitoring period i.e. from 01/10/2020 to 31/12/2021, has generated 35,198 MWh net electricity, thereby resulting in 29,664 tCO2e of emission reduction. The monitoring period subject to this monitoring report is inclusive of first and last day of period.
During the remote audit inspection, location (as mentioned in section 1.7 of MR) and all the technical aspects of the project activity (equipment, serial no., type, date of calibration etc.) mentioned in the PD /05/ have been verified. The same was also crosscheck during the desk review of supporting documents.

A risk based approach has been followed to perform the 2nd periodic verification of the project activity. In the course of the verification, 05 Corrective Action Requests (CARs) and 00 Clarification (CL) were raised.

The management of the 'Sainsons Paper Industries Limited' responsible for the preparation of the GHG emissions data and the reported GHG emissions reductions on the basis set out within the project final monitoring report Version 05 dated 04/08/2022. The calculation and determination of GHG emission reductions from the project is the responsibility of the management of the PA Research & Consultants Pvt. Ltd. The development and maintenance of records and reporting procedures are in accordance with the Monitoring Report Version 05 dated 04/08/2022.

It is our responsibility to express an independent GHG verification opinion on the GHG emissions and on the calculation of GHG emission reductions from the project for the period 01/10/2020 to 31/12/2021 based on the reported emission reductions in the final monitoring report Version 05 dated 04/08/2022 for the same period.

Based on an understanding of the risks associated with reporting GHG emissions data and the controls in place to mitigate these, 4KES planned and performed our work to obtain the information and explanations that we considered necessary to provide sufficient evidence for us to give

reasonable assurance that this reported amount of GHG emission reductions for the period is fairly stated.

4KES confirms the following;
Reporting period: 01/10/2020 to 31/12/2021

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)
2020	5,820	815	0	5,005
2021	28,015	3,356	0	24,659
Total	**33,835**	**4,171**	**0**	**29,664**

1 INTRODUCTION

1.1 Objective

4KES has been commissioned by 'PA Research & Consultants Pvt. Ltd.' to perform verification of its registered VCS project '5MW biomass based cogeneration project at Sainsons', for the reported GHG emission reductions for the given monitoring period 01/10/2020 to 31/12/2021 (both dates included). The VCS projects must undergo an independent third party verification and certification of emission reductions as the basis for issuance of Voluntary Emission Reductions (VERs).

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

- The project activity has been implemented and operated as per the project description (PD) and that all physical features (technology, project equipment, and monitoring and metering equipment) of the project are in place;
- Monitoring report and other supporting documents 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 Voluntary Emission Reductions (VERs/VCUs) without any double counting, and
- 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.

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 verification team verified the complete monitoring data Electricity records /11/, trainings records /13/, calibration certificates /14/ and invoices of biomass procured /15/, Diesel consumption records /17/, Plant logs /18/, Moisture content records /19/, NCV records /20/, Distance travelled /21/ etc. for the monitoring parameter of the monitoring plan against the Monitoring report /1.2/ and ER Calculation sheet /2.2/ and confirms that the reported emission reductions are free from any type of material errors. Remote audit was also conducted to verify the implementation and monitoring plan of the project activity. The implementation of the project activity (i.e. major equipment and the metering arrangement) was verified during the Zoom video conferencing and found in accordance with the monitoring report /1.2/ and registered VCS PD /05/. Verification team has also verified the technical details of the project equipments and metering arrangement with the supportive documents /09/, /10/ and /14/ and found correct. Therefore, 4KES confirms that the verification is conducted with reasonable level of assurance.

1.4 Summary Description of the Project

The 5 MW biomass based cogeneration project at Sainsons implemented a 5 MW cogeneration power project based on rice husk, within Kurukshetra district of Haryana state of India. The project is designed to produce electricity by 5MW extraction-cum-condensing steam turbine with alternator. Major equipment of the power project comprises of 50 tonne per hour (TPH) capacity single drum travel grate type boiler. The average inflow of extraction steam is 30 tonne per hour, which is used for process steam requirement in the paper machine section.

The project activity has been operational since commissioning (01/01/2017) /12/ and during the 2nd monitoring period i.e. from 01/10/2020 to 31/12/2021, has generated 35,198 MWh net electricity, thereby resulting in 29,664 tCO2e of emission reduction. The monitoring period subject to this monitoring report is inclusive of first and last day of period.

During the remote audit inspection, location (as mentioned in section 1.7 of MR) and all the technical aspects of the project activity (equipment, serial no., type, date of calibration etc.) mentioned in the PD /05/ have been verified. The same was also crosscheck during the desk review of supporting documents.

Project entity information as verified is presented below:

Item	Data
Project Entities	Sainsons Paper Industries Limited. (Project Owner)
	PA Research & Consultants Pvt. Ltd. (Consultants) (Project developer: Responsible for development of emission reduction through the Verified Carbon Standard)

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2 VERIFICATION PROCESS

The registered VCS project is undergoing 2nd verification under VCS (1st Crediting period), the approach adopted to ensure the quality of emission reductions is described in the following sections.

2.1 Method and Criteria

4KES assessed and determined whether the proposed implementation and operation of the project activity, and the steps taken to report emission reductions comply with the criteria and relevant guidance provided by the VCS Board. The validation/verification process consist of the following three phases;

- A desk review of the VCS PD and VCS MR
- follow up interviews with project stakeholders
- The resolution of outstanding issues and issuance of final report and opinion.

The prepared verification report and other supporting documents then undergo an internal quality control before being submitted to the VCS executive board for issuance of credits as per VCS standard version 4.2.

Duration of Verification:

Verification Contract	18/02/2022
Remote audit	09/04/2022 (Zoom)
Findings raised	13/04/2022
Draft Verification Report	17/05/2022
Final Verification Report	04/08/2022

2.2 Document Review

The verification is performed primarily as a document review of the approved VCS PD and associated documents as stated in detail 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 Worldwide COVID-19 spread, Verification team could not conduct the site visit.
However, the verification team performed the Zoom remote interviews with the PP representatives/Stakeholders (identified randomly from nearby local village) and reviewed

documents to achieve a reasonable level of assurance in the verification. This is in line with Section 4.1.2 of the VCS Standard, v4.2 /03/ which does not explicitly mandate site visits as part of the validation and verification process, only that VVBs must achieve a reasonable level of assurance on all validations and verifications. No sampling procedures were adopted in document verification and all the document were cross checked to ensure conservative estimation of emission reduction. Kindly find below names of the persons interviewed (Zoom remote interview).

Location	The proposed project activity is located in Bakhli village, Pehowa Tehshil, Kurukshetra district of Haryana state of India.	
Dates	09/04/2022 (Zoom)	
Key points discussed	**Name of person, interviewed**	**Designation, Organization**
Project Implementation, Operational data, Calibration, Data collection, QA/QC, procedures, Calculation of ERs, VCS requirements	J N Saha	Vice President, Sainsons Paper Industries Limited
	Raj Kumar	General Manager, Sainsons Paper Industries Limited
	Phool Chand	PA Research & Consultants Pvt. Ltd.
	Nilanjana Roy	PA Research & Consultants Pvt. Ltd.
	Akhil A Nair	PA Research & Consultants Pvt. Ltd.
Sustainable development Impact, Complaints, Mode of communication, Environmental impact, any other concerns	Balvir Singh	Villager living near site
	Rakesh Sharma	Villager living near site

2.4 Site Inspections

Due to Worldwide COVID-19 spread, Verification team could not conduct the site visit.

However, the verification team performed the Zoom remote interviews with the PP representatives/Stakeholders and reviewed documents to achieve a reasonable level of assurance in the verification. This is in line with Section 4.1.2 of the VCS Standard, v4.2 /03/ which does not explicitly mandate site visits as part of the validation and verification process, only that VVBs must achieve a reasonable level of assurance on all validations and verifications.

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 Zoom remote interview. 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 4KES 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.

During the Verification process, total 05 CAR and 00 CL were raised and resolved satisfactorily. No FAR has been raised in the verification. The list of CARs/CLs/FARs raised and the response provided, the mean of validation, reasons for their closure and references to correction in the relevant documents are provided in Appendix II of this report.

2.5.1 Forward Action Requests

No FAR raised during this verification.

2.6 Eligibility for Validation Activities

4KES conducted the verification activity; the validation was performed by the other VVB. 4KES has a valid UNFCCC accreditation in the sectoral scope from UNFCCC. The accreditation scope can be checked from the below link: http://cdm.unfccc.int/DOE/list/DOE.html?entityCode=E-0069.

3 VALIDATION FINDINGS

3.1 Participation under Other GHG Programs

The project is registered in VCS only, verification team confirms that it has checked that there is no double counting associated with project activity being participation of other GHG programs.

3.2 Methodology Deviations

The verification team confirms that the registered PDD /05/ complies with the requirements in the applied monitoring methodology ACM0006, Version: 12.1.1 /07/. Therefore, no methodology deviations are applied during the current or previous monitoring periods.

3.3 Project Description Deviations

Description of the deviation along with the assessment is provided below.

Deviation: The project was not commissioned during registration of the project activity, the start date of crediting period was considered as expected commissioning date i.e. 01 October 2016 and crediting period from 01 October 2016 to 30 September 2026, however the actual commissioning further delayed and project commissioned on 01 January 2017, hence the actual crediting period starts from 01 January 2017 and crediting period is revised as 01 January 2017 to 31 December 2026, which is appropriate. The above deviation was taken in first monitoring period i.e. from 01 January 2017 to 30 September 2020. There is no deviation taken under current monitoring period.

Justification: Project description deviation applied during the previous monitoring period is mentioned under section 3.2.2 of the monitoring report /1.2/ and found OK. There is no deviation taken under current monitoring period.

The verification team is of the opinion that the approach followed by the PP is appropriately described and justified and the project remains in compliance with the VCS rules. The deviation does not overestimate the emission reduction.

3.4 Grouped Project

The project is not a grouped project. Therefore this section is not applicable.

4 VERIFICATION FINDINGS

4.1 Project Implementation Status

The project activity is in operation stage as evidenced by the remote inspection of the site. All the physical components and project boundary are in conformity with the description in registered VCS PD /05/. The capacity of project equipment's have been confirmed during the remote inspection, also through the technical specifications /09/ and found in-compliance with the registered VCS PD /05/.The project activity was commissioned on 01/01/2017 as per commissioning certificate /12/.

On the basis of the remote inspection and the reviewed project documentation like the technical specification/photographs/video of project equipments along with monitoring equipments /09/, single line diagram /10/, Electricity records /11/, commissioning certificate /12/, trainings records /13/, calibration certificates /14/ and invoices of biomass procured /15/, Plant logs /18/, Moisture content records /19/, NCV records /20/ etc., the verification team confirms that the project was implemented and operated as described in the registered VCS PD /05/.

Operation and maintenance of the project activity is taken care by the project activity as discussed during the remote interview.

During the process of verification, 4KES confirmed the capacity, power generation, technical specifications, date of commissioning, arrangements for Operation & Maintenance (O&M). List of documents reviewed during the course of verification is presented under Appendix I of this report.

The selected monitoring period i.e. 01/10/2020 to 31/12/2021 (both days included) is within the 1st crediting period i.e. 01/01/2017 to 31/12/2026 which is accepted to the verification team.

There was no major breakdown or shutdowns during the monitoring period which might affect the applicability of methodology or might cause material errors in emission reductions.

The assessment team confirmed that there is no proposed or actual change to the project design during this monitoring period. The project design as mentioned in the registered VCS PD & monitoring report submitted is implemented and thus the same is acceptable to the assessment team. All required monitoring equipment's and procedures as mentioned in the registered VCS PD & monitoring report are available and implemented in an appropriate manner.
The organisational role and responsibility as mentioned in the registered VCS PD /05/ & monitoring report /1.2/ is followed onsite. All the monitoring equipment was calibrated as per the specified interval in the registered VCS PD & monitoring report. All the emergency preparedness as mentioned in the registered VCS PD & monitoring report is followed onsite and no discrepancies were found regarding the same.
The assessment team found that the project is in line with the registered VCS PD, monitoring report, and no deviation on project design or monitoring plan is observed.

PP has declared that the project is not registered in other GHG programs, PP confirmed that the project will only be going forward with VCS registry, as declared in VCS-PD /05/. Thus emission reductions generated by project will be solely claimed by PP and PP has the right of use, which is acceptable. Net GHG emission reductions or removals generated by this project will not be used for compliance with an emissions trading program or to meet binding limits on GHG emissions as the host country i.e. India is not a participant in any emission trading programs or nor does it have any binding limits.
PP will not claim the environmental/carbon credits under any other GHG emission reduction scheme for the crediting period under VCS and PP has provided declaration on the same /22/. Hence, there is no possibility of double counting

Verification team has checked the supportive for the activities that result in the SD contributions from the project activity for each SDG.

SDG Target 13.0: The project, in the current reporting period has resulted in emission reduction of 29,664 tCO_2e. Verification team has checked the calculation from the monitoring report /1.2/ and the ER calculation sheet /2.2/ and found correct.

SDG Target 7.2: During the monitoring period, project activity has generated 35,198 MWh electricity. Verification team has verified the reported electricity data with the supportive document i.e. Electricity production bills/plant records /11/ and found consistent.

SDG Target 8.5: The project activity has provided employment to additional 21 individuals at site. While project has also generated 12 number of additional employments for supply chain of biomass. Verification team has verified the same during the remote audit and also from the employment /23/.

The implementation of project is providing employment to locals which assists in alleviation of poverty to certain extent by generating both direct and indirect employment in the area of skilled/unskilled jobs decent and secure work environment by reducing emissions otherwise

generated by the operation of fossil fuel based power plants and would lead to economy growth of the local people improves by selling biomass to the power plant and to encourage other entrepreneurs to participate in similar projects as well. Section 1.11 of the Monitoring report has been checked and found OK. The project activity contributes positively to sustainable development which has been verified from the Zoom interview of the Local people (Section 2.3 of this report) and supportive documents /23/.

The emission reduction achieved during the current monitoring period, i.e., from 1-October-2020 to 31-December-2021 is 16.70% lower than the ex-ante estimation for the same period, i.e. 35,611 tCO_2e. This is due to the lower production during the current monitoring period. As the actual emission reduction are less than the estimated emission reduction, hence no impact on the project activity

Opinion:

Assessment team concludes the following:

a) There is no material discrepancies between project implementation and the project description provided in the registered PD /05/.

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 is no material discrepancies between the actual monitoring system, and the monitoring plan set out in the project description and the applied methodology.

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.

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.

f) The project is registered under VCS only.

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

As the source of electricity generation is biomass residue, i.e., rice husk residue and there is no net GHG emission from the project activity and in the absence of the project the biomass would have decayed in land to generate CH_4. Hence there is no net harm from the project activity. Verification team has confirmed the PP claims during the remote interviews.

There was no harm identified from the proposed project activity. Hence verification team confirms that there are no significant impacts on air, water, soil quality and ambience due to the project activity.

The project activity doesn't cause negative socioeconomic impacts which is confirmed from the Zoom interview of the local people (refer section 2.3 of this report). The project activity creates positive socioeconomic impacts by providing jobs to local people as confirmed from the Zoom interview of the local people (refer section 2.3 of this report) and from the supportive documents /23/.

4.2.2 Local Stakeholder Consultation

The local stakeholder consultation meeting for the project activity has been conducted at project site on 18th Feb 2016. The PP has identified the stakeholders e.g. nearby villager, nodal agencies and NGO and sent invitation letters. The process was validated during the registration of project activity in VCS. VCS validation report verified to confirm the same. The PP had invited identified stakeholders well in advance with details of venue and time of meeting.

PP has a mechanism for on-going communication with local stakeholders which has been discussed during the remote interview. During the monitoring period (from 01/10/2020 to 31/12/2021), there are no comments received for the project activity.

4.3 AFOLU-Specific Safeguards

Not Applicable.

4.4 Accuracy of GHG Emission Reduction and Removal Calculations

The verification team was able to confirm that the monitoring plan contained in registered VCS-PD /05/ and MR /1.2/ is in accordance with the approved large scale methodology applied for the project activity i.e. "ACM0006 ver. 12.1.1 - Consolidated methodology for electricity and heat generation from biomass residues" /07/ and its applicable tools.

The parameter stated in the monitoring plan /05/ and the applied methodology /07/ have been fulfilled in the current monitoring period.

The GHG emission reductions were correctly calculated on the basis of the applied methodology ACM0006 Version 12.1.1 /07/, VCS-PD /05/ and the formulae given in the monitoring report /1.2/.

Parameter monitored:

During the verification, all relevant monitoring parameters of the registered monitoring plan have been verified with regard to the appropriateness of the verification method; the correctness of the values applied for ER calculation, the accuracy and applied QA/QC measures. All monitoring parameters have been measured / determined without material misstatements and are in line with all applicable standards and relevant requirements. It is confirmed that the monitoring mechanism is effective and reliable.

Verification team confirms through remote audit verification and from the document review, the actual monitoring system complies with the monitoring plan mentioned in the registered validated VCS-PD /05/. According to the monitoring plan in the registered VCS-PD, there are 16 monitoring parameters required to be monitored. Following are the details of monitoring in accordance with the monitoring plan of the registered VCS PD /05/:

		VVB Assessment
Data / Parameter	$BR_{PJ,n,y}$	The monitoring parameter, Unit, and descriptions are as per the registered VCS-PD /05/.
Data unit	Tonnes	
Description	Quantity of biomass residues of category n used in the project activity in year y (tonnes on dry-basis)	
Source of data	Onsite measurement	The source of the data is found consistent with the registered VCS PD /05/ which is also verified during the remote audit.
Description of measurement methods and procedures to be applied	The quantity of Rice Husk measured at the entrance-using weighbridge. Dry weight of all biomass residues subsequently determined using the biomass moisture content of the corresponding biomass type in internal laboratory and cross checked with test in third party laboratory.	The measurement method has been verified from the remote audit and from the supportive document /15/, /18/ and /19/ and found consistent with the registered VCD PD /05/.

Frequency of monitoring/recording	On each delivery and monthly aggregation	The frequency of the monitoring/recording has been verified during the remote audit and supportive document /15/ and /18/ and found consistent with the registered VCD PD /05/.
Value monitored	142,220.87	Verification team has verified the value from the records /15/, /18/ and found consistent with the ER sheet /2.2/.
Monitoring equipment	Weighbridge Please refer Appendix for weighbridge details and calibrations.	Monitoring equipment details have been verified from the remote audit. The monitoring equipment details along with calibration details have been mentioned under Appendix V of this report.
QA/QC procedures to be applied	The weighbridge calibrated annually.	Based on the Calibration certificates /14/, Verification team confirms that weighbridge calibrated annually. The calibration was undertaken by the government body. There was no delay in the calibration during this monitoring period. Verification team confirm that calibration meets the requirement of VCS PD /05/. Calibration detail is provided in Appendix V of this report.
Purpose of the data	Calculation of project emissions	Data has been used for the Calculation of project emissions which is in accordance with the VCS PD /05/.
Calculation method	The moisture content in order to determine the quantity of dry biomass is determined by reputed laboratory. Data monitored continuously and aggregated as appropriate, to calculate emissions	Verification team has verified the calculation method from the remote audit and from the supportive document /15/, /18/ and /19/ and found consistent

	reductions. The weight meters have been made in installations using international standards.	with the registered VCD PD /05/.
Comments	--	-

		VVB Assessment
Data / Parameter	$BR_{B4, n,y}$	The monitoring parameter, Unit, and descriptions are as per the registered VCS-PD /05/.
Data unit	Tonne	
Description	Quantity of biomass residues of category n used in the project activity in year y for which the baseline scenario is B4 (tonne on dry-basis)	
Source of data	Plant record	The source of the data is found consistent with the registered VCS PD /05/ which is also verified during the remote audit.
Description of measurement methods and procedures to be applied	Calculated ex ante as per the step 1.4 of baseline emission Calculation	Calculated ex ante as per the step 1.4 of baseline emission and found consistent with the registered VCD PD /05/.
Frequency of monitoring/recording	Monthly	The frequency of the monitoring/recording has been verified during the remote audit and found consistent with the registered VCD PD /05/.
Value monitored	142,220.87	Verification team through remote audit interviews confirms that the Quantity of biomass residues of category n used in the project activity in year y is 142,220.87. This is calculated ex-ante based on the baseline parameters. The calculation deems adequate by verification team. The ER sheet /2.2/ demonstrates the detailed calculation and found

		correct by the verification team
Monitoring equipment	--	--
QA/QC procedures to be applied	--	--
Purpose of the data	--	--
Calculation method	--	--
Comments	--	--

		VVB Assessment
Data / Parameter	$EF_{ff,y}$	The monitoring parameter, Unit, and descriptions are as per the registered VCS-PD /05/.
Data unit	tCO_2/GJ	
Description	CO_2 emission factor for fossil fuel type f in year y (t CO_2/GJ)	
Source of data	For the proposed project activity, the selected source is Table 1.4 of Chapter 1 of Vol. 2 (Energy) of the 2006 IPCC Guidelines on National GHG Inventories. To ensure conservativeness, the Project Proponent uses the values at the upper limit of the uncertainty at a 95% confidence interval.	The source of the data is found consistent with the registered VCS PD /05/.
Description of measurement methods and procedures to be applied	The Project Proponent uses IPCC default values	The measurement method has been checked and found consistent with the registered VCD PD /05/.
Frequency of monitoring/recording	The Project Proponent reviews the appropriateness of the data annually.	The frequency of the monitoring/recording has been checked and found consistent with the registered VCD PD /05/.
Value monitored	0.0748 (Diesel)	This value is sourced from IPCC, verification team checked the data source

		and found it adequately reported from the IPCC.
Monitoring equipment	--	-
QA/QC procedures to be applied	--	-
Purpose of the data	Calculation of project emissions	Data has been used for the Calculation of project emissions which is in accordance with the VCS PD /05/.
Calculation method	--	-
Comments	--	-

		VVB Assessment
Data / Parameter	$HC_{BL,y}$	The monitoring parameter, Unit, and descriptions are as per the registered VCS-PD /05/.
Data unit	GJ	
Description	Baseline process heat generation in year y (GJ)	
Source of data	Plant record	The source of the data is found consistent with the registered VCS PD /05/ which is also verified during the remote audit.
Description of measurement methods and procedures to be applied	The value is calculated based on steam generated, temperature and pressure.	The measurement method has been verified from the remote audit and ER sheet /2.2/ and found consistent with the registered VCD PD /05/.
Frequency of monitoring/recording	Determined ex-ante according to project configuration.	The frequency of the monitoring/recording has been verified during the remote audit and found consistent with the registered VCD PD /05/.

Value monitored	<table><tr><td>2020 (Oct- Dec)</td><td>2021</td></tr><tr><td>224,219</td><td>891,556</td></tr></table>	Verification team has verified the value from the ER sheet /2.2/ and found consistent. The root parameters to calculate the heat content i.e. temperature & pressures were monitored from the calibrated equipment. The supportive data has been verified from the plant logs /18/ and found consistent with the ER sheet /2.2/.
Monitoring equipment	Calculated	Calculated as observed by the verification team during the remote audit assessment and review of ER sheet /2.2/. The monitoring equipment details along with calibration details have been mentioned under Appendix V of this report.
QA/QC procedures to be applied	NA	Calibration detail is provided in Appendix V of this report.
Purpose of the data	To check energy balance	Data has been used for the energy balance and not used for the ER calculation directly.
Calculation method	This parameter determined as the difference of the enthalpy of the generated in the project activity minus the enthalpy of the feedwater, the boiler blow-down and any condensate return to the heat generators. The respective enthalpies determined based on the mass (or volume) flows, the temperatures and, in case of superheated steam, the pressure. Steam tables has been used to calculate the enthalpy as a function of temperature and pressure.	Verification team has verified the calculation method from the remote audit, ER sheet /2.2/ and found consistent with the registered VCD PD /05/.
Comments	--	-

		VVB Assessment
Data / Parameter	$EL_{Gross,y}$	The monitoring parameter, Unit, and descriptions are as per the registered VCS-PD /05/.
Data unit	MWh	
Description	Gross quantity of electricity generated in all power plants which are located at the project site and included in the project boundary in year y (MWh)	
Source of data	Plant record	The source of the data is found consistent with the registered VCS PD /05/ which is also verified during the remote audit.
Description of measurement methods and procedures to be applied	Calibrated electricity meters, Data is monitored continuously and aggregated as appropriate, to calculate emissions reductions. The proportion of data to be monitored is 100% and the data is archived electronically. The metering system is calibrated according to the manufacturer specifications.	The measurement method has been verified from the remote audit and from the Electricity production bills/plant records /11/ and found consistent with the registered VCD PD /05/.
Frequency of monitoring/recording	Continuous monitoring, monthly recording	The frequency of the monitoring/recording has been verified during the remote audit and from the Electricity production bills/plant records /11/ and found consistent with the registered VCD PD /05/.
Value monitored	72,044	Verification team has verified the value from the Electricity production bills/plant records /11/ and found consistent with the registered VCD PD /05/.
Monitoring equipment	Energy meter Serial No: XC548932	Monitoring equipment details have been verified from the remote audit. The monitoring equipment

	Please refer appendix for meter details and calibration	details along with calibration details have been mentioned under Appendix V of this report.
QA/QC procedures to be applied	The energy meter is calibrated annually or as per industry standard/manufacturer specification.	Based on the Calibration certificates /14/, Delay in calibration was observed on 18/12/2020 and also from 19/12/2021 to 18/03/2022. Hence maximum permissible error was applied in emission reduction calculation /2.2/ for the months of December 2020 and December 2021 which is conservative and hence accepted to the verification team. The calibration was undertaken by a competent authority. Calibration detail is provided in Appendix V of this report.
Purpose of the data	Calculation of baseline emissions	Data has been used for the Calculation of baseline emissions which is in accordance with the VCS PD /05/.
Calculation method	--	-
Comments	--	-

		VVB Assessment
Data / Parameter	$EL_{PJ,aux}$	The monitoring parameter, Unit, and descriptions are as per the registered VCS-PD /05/.
Data unit	MWh	
Description	Total auxiliary electricity consumption required for the operation of the power plants at the project site in year y (MWh)	
Source of data	Plant record	The source of the data is found consistent with the

		registered VCS PD /05/ which is also verified during the remote audit.
Description of measurement methods and procedures to be applied	The auxiliary consumption is monitored using trivector energy meter. The metering system is calibrated according to the manufacturer specifications.	The measurement method has been verified from the remote audit and from the Electricity production bills/plant records /11/ and found consistent with the registered VCD PD /05/.
Frequency of monitoring/recording	Continuous, monthly recording	The frequency of the monitoring/recording has been verified during the remote audit and from the Electricity production bills/plant records /11/ and found consistent with the registered VCD PD /05/.
Value monitored	7,146	Verification team has verified the value from the Electricity production bills/plant records /11/ and found consistent with the registered VCD PD /05/.
Monitoring equipment	Energy meter Serial No: 34163030581 Please refer appendix for meter details and calibration	Monitoring equipment details have been verified from the remote audit. The monitoring equipment details along with calibration details have been mentioned under Appendix V of this report.
QA/QC procedures to be applied	The energy meter is calibrated annually or as per industry standard/manufacturer specification	Based on the Calibration certificates /14/, Delay in calibration was observed on 18/12/2020 and also from 19/12/2021 to 18/03/2022. Hence maximum permissible error was applied in emission reduction calculation /2.2/ for the months of December

		2020 and December 2021 which is conservative and hence accepted to the verification team. The calibration was undertaken by a competent authority. Calibration detail is provided in Appendix V of this report.
Purpose of the data	Calculation of baseline emissions	Data has been used for the Calculation of baseline emissions which is in accordance with the VCS PD /05/.
Calculation method	--	-
Comments	--	-

		VVB Assessment
Data / Parameter	$NCV_{BR,n,y}$	The monitoring parameter, Unit, and descriptions are as per the registered VCS-PD /05/.
Data unit	GJ/Tonne	
Description	Net calorific value of biomass residue of category n in year y (GJ/tonne on dry-basis)	
Source of data	Onsite measurement	The source of the data is found consistent with the registered VCS PD /05/.
Description of measurement methods and procedures to be applied	Measurements carried out at reputed laboratories and according to relevant international standards. Measure the NCV on dry- basis.	The measurement method has been checked during the remote audit and from the monthly NCV reports from external laboratory /20/ and found consistent with the registered VCD PD /05/. Verification team confirm that measurements are carried out at reputed laboratories and according to relevant international standards. Measured the NCV on dry-

		basis.
Frequency of monitoring/recording	At least every six months, taking at least three samples for each measurement.	The frequency of the monitoring/recording has been checked during the remote audit and from the monthly NCV reports from external laboratory /20/ and found consistent with the registered VCD PD /05/.
Value monitored	<table><tr><td>2020 (Oct-Dec)</td><td>2021</td></tr><tr><td>13.43</td><td>13.75</td></tr></table>	This value is sourced from monthly NCV reports from external laboratory /20/. Verification team through remote audit interviews and monthly NCV reports from external laboratory /20/, confirm that Net calorific value of biomass residue of category n in year y is reported adequately by the PP.
Monitoring equipment	Not applicable	-
QA/QC procedures to be applied	Check the consistency of the measurements by comparing the measurement results with measurements from previous years, relevant data sources (e.g., values in the literature, values used in the national GHG inventory) and default values by the IPCC. If the measurement results differ significantly from previous measurements or other relevant data sources, conduct additional measurements. Ensure that the NCV is determined on the basis of dry biomass.	The verification team during the remote audit assessment confirmed that the NCV is determined on the basis of dry biomass. PP representative was interviewed to confirm the methodology/sample selection inter alia, VVB confirms that NCV was monitored in accordance with the standard procedures. Based on the sectoral expertise VVB confirms that the NCV results are reasonable in Indian context.
Purpose of the data	To check the energy balance	Data has been used for the energy balance.
Calculation method	--	-

Comments	--	-

		VVB Assessment
Data / Parameter	$h_{LOW,y}$ $h_{HIGH,y}$	The monitoring parameter, Unit, and descriptions are as per the registered VCS-PD /05/.
Data unit	GJ/Tonne	
Description	$h_{LOW,y}$ = Specific enthalpy of the heat carrier at the process heat demand side (GJ/tonnes) $h_{HIGH,y}$ = Specific enthalpy of the heat carrier at the heat generator side (GJ/tonnes)	
Source of data	Plant Record	The source of the data is found consistent with the registered VCS PD /05/ which is also verified during the remote audit.
Description of measurement methods and procedures to be applied	The specific enthalpies should be determined based on the temperatures and, in case of superheated steam, the pressure. Steam tables or appropriate thermodynamic equations may be used to calculate the enthalpy as a function of temperature and pressure	The measurement method has been verified from the remote audit and ER sheet /2.2/ and found consistent with the registered VCD PD /05/.
Frequency of monitoring/recording	Determined ex-ante according to project configuration.	The frequency of the monitoring/recording has been verified during the remote audit and found consistent with the registered VCD PD /05/.
Value monitored	<table><tr><td></td><td>2020 (Oct-Dec)</td><td>2021</td></tr><tr><td>$h_{LOW,y}$</td><td>8.06</td><td>8.16</td></tr><tr><td>$h_{high,y}$</td><td>2.14</td><td>2.17</td></tr></table>	VVB confirms that the enthalpy has been adequately reported by the PP corresponding to monitored temperature/pressure of outlet steam and input water.

		Verification team has verified the value from the ER sheet /2.2/ and found consistent. The root parameters i.e. temperature & pressures were monitored from the calibrated equipment. The supportive data has been verified from the plant logs /18/ and found consistent with the ER sheet /2.2/.
Monitoring equipment	Not applicable	Calculated as observed by the verification team during the remote audit assessment and review of ER sheet /2.2/. The monitoring equipment details along with calibration details have been mentioned under Appendix V of this report.
QA/QC procedures to be applied	--	Calibration detail is provided in Appendix V of this report.
Purpose of the data	--	Data has been used only for crosscheck purposes and not used for ER calculation directly.
Calculation method	The process heat demand side refers to where heat is finally used for heating purposes by end-users and the heat generator side refers to where heat is generated	Verification team has verified the calculation method from the remote audit, ER sheet /2.2/ and found consistent with the registered VCD PD /05/.
Comments	--	-

		VVB Assessment
Data / Parameter	**Moisture content of the biomass residues**	The monitoring

<table>
<tr><td>Data unit</td><td>%</td><td rowspan="2">parameter, Unit, and descriptions are as per the registered VCS-PD /05/.</td></tr>
<tr><td>Description</td><td>Moisture content of each biomass residues type k</td></tr>
<tr><td>Source of data</td><td>Onsite measurement</td><td>The source of the data is found consistent with the registered VCS PD /05/.</td></tr>
<tr><td>Description of measurement methods and procedures to be applied</td><td>The biomass residue moisture content is monitored and registered by taking periodic samples from each biomass type flow to the power boiler. Humidity content is calculated by evaporating the water of the samples and measuring the weight before and after the water has been evaporated. This process is carried out in dedicated scales.</td><td>The measurement method has been checked during the remote audit and found consistent with the registered VCD PD /05/.</td></tr>
<tr><td>Frequency of monitoring/recording</td><td>The moisture content should be monitored for each batch of biomass of homogeneous quality. The weighted average should be calculated for each monitoring period and used in the calculations</td><td>The frequency of the monitoring/recording has been checked during the remote audit, Moisture content measurement records /19/ and ER sheet /2.2/ and found consistent with the registered VCD PD /05/.</td></tr>
<tr><td>Value monitored</td><td><table><tr><td></td><td>2020 (Oct-Dec)</td><td>2021</td></tr><tr><td>Moisture Content</td><td>16.19</td><td>16.41</td></tr></table></td><td>Verification team through remote audit interviews, Moisture content measurement records /19/ and ER sheet /2.2/, confirms that Moisture content of each biomass residues type k is adequately sourced by the third party NCV reports.</td></tr>
<tr><td>Monitoring equipment</td><td>Not applicable. Moisture content is measured locally, in reputed laboratories.</td><td>-</td></tr>
</table>

QA/QC procedures to be applied	--	The in house team was trained /13/ and training records furnished to VVB.
Purpose of the data	To calculate dry basis weight of biomass	To calculate dry basis weight of biomass, as verified by the verification team through remote assessment and ER sheet /2.2/.
Calculation method	--	-
Comments	--	-

					VVB Assessment
Data / Parameter	LOC_y				The monitoring parameter, Unit, and descriptions are as per the registered VCS-PD /05/.
Data unit	Hour				
Description	Length of the operational campaign in year y (hour)				
Source of data	Plant record				The source of the data is found consistent with the registered VCS PD /05/.
Description of measurement methods and procedures to be applied	Record and sum the hours of operation of the project activity facilities during year y.				The measurement method has been checked during the remote audit and found consistent with the registered VCD PD /05/.
Frequency of monitoring/recording	Continuous, monthly recording				The frequency of the monitoring/recording has been checked during the remote audit, plants logs /18/ and ER sheet /2.2/ and found consistent with the registered VCD PD /05/.
Value monitored		2020 (Oct-Dec)	2021		Verification team through remote audit

	Operating hours | 2,185.00 | 8688.00	interviews, plants logs /18/ and ER sheet /2.2/, confirms that Length of the operational campaign in year y (hour) is adequately sourced from the plant logs.
Monitoring equipment	--	NA
QA/QC procedures to be applied	--	Calculated based on the daily operating hours, daily operation hours are recorded in log books by shift in charge, verified by the plant head as verified during the remote audit.
Purpose of the data	Calculation of baseline emissions and project emissions	Calculation of baseline emissions and project emissions, as verified by the verification team through remote assessment and ER sheet /2.2/.
Calculation method	This estimation is based on the total available hours per month in a year, considering maintenance outages both for internal and external reasons. As a result, the yearly operating plan considers 30 days of the power plant outage in a year.	Verification team has verified the calculation method from the remote audit, plants logs /18/ and ER sheet /2.2/ and found consistent with the registered VCD PD /05/.
Comments	--	-

		VVB Assessment
Data / Parameter	$FC_{i,j,y}$	The monitoring parameter, Unit, and descriptions are as per the registered VCS-PD /05/.
Data unit	Mass or volume unit per year (L/yr.)	
Description	Quantity of fuel type i combusted in process j	

<table>
<tr><td></td><td>during the year y.</td><td></td></tr>
<tr><td>Source of data</td><td>Plant record/logbook</td><td>The source of the data is found consistent with the registered VCS PD /05/.</td></tr>
<tr><td>Description of measurement methods and procedures to be applied</td><td>On-site fossil fuel consumption is calculated in this case.</td><td>The measurement method has been checked during the remote audit and from Diesel consumption records /17/ and found consistent with the registered VCD PD /05/.</td></tr>
<tr><td>Frequency of monitoring/recording</td><td>Continuously, monthly aggregation</td><td>The frequency of the monitoring/recording has been checked during the remote audit, from Diesel consumption records /17/ and ER sheet /2.2/ and found consistent with the registered VCD PD /05/.</td></tr>
<tr><td>Value monitored</td><td><table><tr><td></td><td>2020 (Oct-Dec)</td><td>2021</td></tr><tr><td>Diesel consumed</td><td>52</td><td>226</td></tr></table></td><td>Verification team through remote audit interviews, from Diesel consumption records /17/ and ER sheet /2.2/, confirms that Quantity of fuel type i combusted in process j during the year y is adequately reported by the PP.</td></tr>
<tr><td>Monitoring equipment</td><td>Volume measurement</td><td>Volume measurement, as confirmed by verification team through remote audit interviews, from Diesel consumption records /17/ and ER sheet /2.2/.</td></tr>
<tr><td>QA/QC procedures to be applied</td><td>The consistency of metered fuel consumption quantities should be cross-</td><td>The verification team through remote</td></tr>
</table>

	checked by an annual energy balance that is based on purchased quantities and stock changes. Where the purchased fuel invoices can be identified specifically for the emission reduction project, the metered fuel consumption quantities should also be cross-checked with available purchase invoices from the financial records.	assessment confirms that the consistency of metered fuel consumption quantities are cross-checked by an annual energy balance that is based on purchased quantities and stock changes.
Purpose of the data	Calculation of project emissions	Calculation of project emissions, as verified by the verification team through remote assessment and ER sheet /2.2/.
Calculation method	Diesel consumption in the power boiler: The consumption is determined by recording the purchases of diesel and the stock differences in the diesel tank level. Diesel consumption of the front loaders: The calculation is similar to the one described above.	Verification team has verified the calculation method from the remote audit, from Diesel consumption records /17/ and ER sheet /2.2/ and found consistent with the registered VCD PD /05/.
Comments	--	-

		VVB Assessment
Data / Parameter	$NCV_{i,y}$	The monitoring parameter, Unit, and descriptions are as per the registered VCS-PD /05/.
Data unit	GJ per mass or volume unit (e.g., GJ/m^3, GJ/ton)	
Description	Average net calorific value of fuel type i in year y.	
Source of data	IPCC default values at the upper limit of the uncertainty at a 95% confidence interval as provided in Table 1.2 of Chapter 1 of Vol. 2 (Energy) of the 2006 IPCC Guidelines on National GHG Inventories.	The source of the data is found consistent with the registered VCS PD /05/.

Description of measurement methods and procedures to be applied	option d) (IPCC default values) in this case	The selected option has been checked and found consistent with the registered VCD PD /05/.
Frequency of monitoring/recording	Any future revision of the IPCC Guidelines should be taken into account	The frequency of the monitoring/recording has been checked and found consistent with the registered VCD PD /05/.
Value monitored	Diesel: 43.3 GJ/ton	This value is sourced from IPCC, verification team checked the data source and found it adequately reported from the IPCC.
Monitoring equipment	--	-
QA/QC procedures to be applied	--	-
Purpose of the data	Calculation of project emissions	Data has been used for the Calculation of project emissions which is in accordance with the VCS PD /05/.
Calculation method	--	-
Comments	--	-

		VVB Assessment
Data / Parameter	$\rho_{i,y}$	The monitoring parameter, Unit, and descriptions are as per the registered VCS-PD /05/.
Data unit	Weighted average density of fuel type i in year y (Diesel)	
Description	Weighted average net calorific value of fuel type i in year y.	
Source of data	Bureau of Energy Efficiency, India Standard Value Ch-01.qxd (beeindia.gov.in)	The source of the data is found consistent with the registered VCS PD /05/.

Description of measurement methods and procedures to be applied	Not applicable, since the Project Proponent use data in line with national standard.	Not applicable, since the Project Proponent use data in line with national standard, as confirmed by the verification team
Frequency of monitoring/recording	Any future revision of the IPCC Guidelines should be taken into account.	The frequency of the monitoring/recording has been checked and found consistent with the registered VCD PD /05/.
Value monitored	Diesel: 0.87 kg/l	This value is sourced from IPCC, verification team checked the data source and found it adequately reported from the IPCC.
Monitoring equipment	--	-
QA/QC procedures to be applied	--	-
Purpose of the data	Calculation of project emissions	Data has been used for the Calculation of project emissions which is in accordance with the VCS PD /05/.
Calculation method	--	-
Comments	--	-

		VVB Assessment
Data / Parameter	$EF_{CO2,i}$	The monitoring parameter, Unit, and descriptions are as per the registered VCS-PD /05/.
Data unit	tCO_2/TJ	
Description	Weighted average CO_2 emission factor of fuel type i in year y.	
Source of data	IPCC default values at the upper limit of the uncertainty at a 95% confidence interval as provided in Table 1.2 of Chapter 1 of Vol. 2 (Energy) of the 2006 IPCC Guidelines on National GHG	The source of the data is found consistent with the registered VCS PD /05/.

	inventories	
Description of measurement methods and procedures to be applied	option d) IPCC default values chosen	The selected option has been checked and found consistent with the registered VCD PD /05/.
Frequency of monitoring/recording	Any future revision of the IPCC Guidelines should be taken into account.	The frequency of the monitoring/recording has been checked and found consistent with the registered VCD PD /05/.
Value monitored	74.8	This value is sourced from IPCC, verification team checked the data source and found it adequately reported from the IPCC.
Monitoring equipment	---	-
QA/QC procedures to be applied	--	-
Purpose of the data	Calculation of project emissions	Data has been used for the Calculation of project emissions which is in accordance with the VCS PD /05/.
Calculation method	--	-
Comments	--	-

		VVB Assessment
Data / Parameter	$D_{f,m}$	The monitoring parameter, Unit, and descriptions are as per the registered VCS-PD /05/.
Data unit	Kilometer	
Description	Return Distance between the origin and destination of freight transportation activity f in monitoring period m.	
Source of data	Records of vehicle operator and/or records by project participants.	The source of the data is found consistent with the registered

		VCS PD /05/.
Description of measurement methods and procedures to be applied	Determined once for each freight transportation activity f for a reference trip using the vehicle odometer or any other appropriate sources (e.g., on-line sources).	The measurement method has been checked during the remote audit and records /21/ and found consistent with the registered VCD PD /05/.
Frequency of monitoring/recording	To be updated whenever the road distance changes.	The frequency of the monitoring/recording has been checked during the remote audit, from records /21/ and ER sheet /2.2/ and found consistent with the registered VCD PD /05/.
Value monitored	100	Verified through remote audit interviews, from records /21/ and ER sheet /2.2/. All the suppliers are within the range of 50 KMs, as verified by the verification team through remote audit and desk review.
Monitoring equipment	--	NA
QA/QC procedures to be applied	All the suppliers are within the range of 50 KMs.	All the suppliers are within the range of 50 KMs, as verified by the verification team through remote audit and desk review.
Purpose of the data	Calculation of project emissions	Calculation of project emissions, as verified by the verification team through remote assessment and ER sheet /2.2/.
Calculation method	NA	NA
Comments	--	-

		VVB Assessment
Data / Parameter	$FR_{f,m}$	The monitoring parameter, Unit, and descriptions are as per the registered VCS-PD /05/.
Data unit	Tonnes	
Description	Total mass of freight transported in	

	freight transportation activity f in monitoring period m	
Source of data	Plant logbook	The source of the data is found consistent with the registered VCS PD /05/ which is also verified during the remote audit.
Description of measurement methods and procedures to be applied	The quantity of biomass transported measured using weighbridge installed at site on each delivery and record is maintained in log-book.	The measurement method has been verified from the remote audit and from the supportive document /15/, /18/ and found consistent with the registered VCD PD /05/.
Frequency of monitoring/recording	On each delivery	The frequency of the monitoring/recording has been verified during the remote audit and supportive document /15/ and /18/ and found consistent with the registered VCD PD /05/.
Value monitored	170,137.00	Verification team has verified the value from the records /15/, /18/ and found consistent with the ER sheet /2.2/.
Monitoring equipment	Weighbridge Please refer to appendix for details and calibrations.	Monitoring equipment details have been verified from the remote audit. The monitoring equipment details along with calibration details have been mentioned under Appendix V of this report.
QA/QC procedures to be applied	The weighbridge calibrated on annual basis.	Based on the Calibration certificates /14/, Verification team confirms that weighbridge calibrated annually. The calibration was undertaken by the government body. There was no delay in the calibration during this monitoring period. Verification team confirm that calibration meets the

		requirement of VCS PD /05/. Calibration detail is provided in Appendix V of this report.
Purpose of the data	Calculation of project emissions	Data has been used for the Calculation of project emissions which is in accordance with the VCS PD /05/.
Calculation method	Biomass residues from third parties are measured (weighted) using dedicated weighbridges at the entrance of the biomass power plant.	Verification team has verified the calculation method from the remote audit and from the supportive document /15/, /18/ and found consistent with the registered VCD PD /05/.
Comments	--	-

Opinion: The verification team confirms;

- The monitoring plan has been implemented as per the registered PD /05/;
- The monitoring complies with the requirement of the applied methodology /07/;
- The information inflow (from data generation, aggregation, to recording, calculation and reporting) is included above under each parameters and confirms to the requirement of the PD;
- The values included in the monitoring report and corresponding emission reduction sheets are verified and included under each monitoring parameter, wherever appropriate;

Parameters not monitored/ex-ante:

The following are the ex-ante parameters used in the ER calculation which are in compliance with registered VCS PD /05/:

Data / Parameter	Data Unit	Description	Value applied	Justification
Biomass categories and quantities used for the selection of the baseline scenario selection and	tonnes on dry-basis	The biomass quantities provided in the VCS PDD were determined ex- ante internally.	108,000 (tonnes of Rice husk)	The value is used in the calculation of the Baseline emission. The value was determined by calculation of the new cogeneration plant. Also the estimation of ex-ante of the biomass types and quantities is assessed. Value is as per the

assessment of additionality				registered VCS PD /05/ and hence accepted to the verification team.
$HC_{BR, CG/PO,x,i/j}$ ($HC_{BR,CG,x,1}$, $HC_{BR,CG,x,2}$)	GJ	Quantity of process heat extracted from the heat engine i/j in year x (GJ)	$HC_{BR, CG, x,1}$= 605 (3 years average) $HC_{BR, CG, x,2}$= 300 (3 years average)	The value is used in the calculation of the Baseline emission. The value of the parameter is calculated according to Case 1 of the Step 1.5 for the calculation of baseline emissions of the methodology ACM0006 Version 12.1.1, which has been checked. Hence it is confirmed that the ex-ante details presented on the ex-ante parameter is found appropriate. Value is as per the registered VCS PD /05/ and hence accepted to the verification team.
$EL_{BR, CG/PO,x,i/j}$	MWh	Quantity of electricity generated in heat engine i/j in year x (MWh)	23,760	The value is used in the calculation of the Baseline emission. The value of the parameter is calculated according to Case 1 of the Step 1.5 for the calculation of baseline emissions of the methodology ACM0006 Version 12.1.1, which has been checked. Hence it is confirmed that the ex-ante details presented on the ex-ante parameter is found appropriate. Value is as per the registered VCS PD /05/ and hence accepted to the verification team.
$CAP_{HG,h}$	GJ/hour	Baseline capacity of	271.7	The value is used in the calculation of the Baseline

		heat generator h (GJ/h)		emission and reflects the design maximum heat generation capacity (in GJ/h) of the baseline heat generation h. The value of the parameter is based on baseline plant design parameters, which has been checked. Hence it is confirmed that the ex-ante details presented on the ex-ante parameter is found appropriate. Value is as per the registered VCS PD /05/ and hence accepted to the verification team.
$CAP_{EG,CG,i}$	MW	Baseline electricity generation capacity of heat engine i (MW) (Cogeneration Mode)	3	The value is used in the calculation of project emissions. It is the design maximum electricity generation capacity (in MW) of the baseline heat engines (Turbine) and is based on the installed capacity of the heat engine. The ex-ante details presented on the ex-ante parameter is found appropriate. Value is as per the registered VCS PD /05/ and hence accepted to the verification team.
$LFC_{HG,h}$	Ratio	Baseline load factor of heat generator h (ratio)	1	The value is used in the calculation of project emissions, it reflect the maximum load factor. As per methodology, this parameter should reflect the maximum load factor. PP has chosen the maximum value possible

				i.e., 1. Hence conservative. Value is as per the registered VCS PD /05/ and hence accepted to the verification team.
$HPR_{BL,i}$	Ratio	Baseline heat-to-power ratio of the heat engine i (ratio)	12.1	The value is used in the calculation of project emissions. The values have been calculated according to Step 1.5 of baseline emission calculation of the methodology ACM0006 based in reference plant parameters. Value is as per the registered VCS PD /05/ and hence accepted to the verification team.
$LFC_{EG,CG,i}$	Ratio	Baseline load factor of heat engine i (ratio) (cogeneration Mode)	0.8	The value is based on 3 years historical data, which has been checked. Hence it is confirmed that the ex-ante details presented on the ex-ante parameter is found appropriate This parameter reflects the maximum load factor (i.e. the ratio between the "actual electricity generation" of the heat engine and its "design maximum electricity generation"). Value is as per the registered VCS PD /05/ and hence accepted to the verification team.
$EF_{EG,GR,y}$	tCO_2/MWh	Combined margin CO_2 emission	0.9613	The value is used for calculation of baseline emissions and is calculated from Baseline CO_2 Emission

		factor for grid connected power generation in year y.		Database, Version 11.0, which has been checked. Hence it is confirmed that the ex-ante details presented on the ex-ante parameter is found appropriate. Value is as per the registered VCS PD /05/ and hence accepted to the verification team.

Opinion:

In the opinion of assessment team, ex-ante parameter values that were applied in the emission reduction calculations is consistent with registered PD /05/ and correctly applied in MR /1.2/, emission reductions spreadsheet /2.2/ and justified.

Assessment of Data and Calculation of GHG emission reductions:

The verification team has reviewed the emission reduction (ER) spread sheet /2.2/ and checked all the formulae and verified them to be correct and in line with the monitoring plan of the registered VCS PD /05/ and the applied monitoring methodology /07/.

All the monitored parameters are described above in this section. All the ex-ante parameters which are used in the calculation of emission reduction are also presented in this section transparently. It is confirmed that all the ex-ante parameters have been correctly used in the emission reduction calculation.

According to the approved methodology ACM0006, Version 12.1.1, Emission Reductions are calculated as follows:

Baseline Emissions:

Step 1 Determine biomass availability, generation and capacity constraints, efficiencies and power emission factors in the baseline

Step 1.1: Determine total baseline process heat generation

The amount of process heat that would be generated in the baseline in the year 2020 (October to December) and 2021 ($HC_{BL,y}$) is determined as the difference of the enthalpy of the process heat (steam or hot water) supplied to process heat loads in the project activity minus the enthalpy of the feed-water, the boiler blow-down and any condensate return to the heat

generators. The respective enthalpies have been determined based on the mass (or volume) flows, the temperatures and, in case of superheated steam, the pressure. Steam table has been used to calculate the enthalpy as a function of temperature and pressure.

Period	01/10/2020-31/12/2020	01/01/2021-31/12/2021
$HC_{BL,y}$ = Total baseline process heat generation.	224,219	891,556

Verification team has checked the calculation under the ER sheet /2.2/ and found correct.

Step 1.2: Determine total baseline electricity generation

According to ACM0006, the amount of electricity that would be generated in the baseline in year y is calculated as follows:

$EL_{BL,y} = EL_{PJ,gross,y} + EL_{PJ,imp\ y} - EL_{PJ,aux,y}$

As there was no electricity imported from the grid $EL_{PJ,imp,y}$ was zero.

Period	$EL_{PJ,gross,y}$ (MWh)	$EL_{PJ,aux,y}$ (MWh)	$EL_{BL,y}$ (MWh)
01/10/2020-31/12/2020	13,234	1,239	11,995
01/01/2021-31/12/2021	58,810	5,907	52,903

Verification team has checked the calculation under the ER sheet /2.2/ and found correct

Step 1.3: Determine baseline capacity of electricity generation

The total capacity of electricity generation available in the baseline has been calculated using the equation below. The heat engines i and j obtained from the baseline scenario identified using the "Selection of the baseline scenario and demonstration of additionality".

$CAP_{EG,total,y} = LOC_y * \sum CAP_{EG,CG,i} * LFC_{EG,CG,i}$

Period	$CAP_{EG,total,y}$ (MWh)
01/10/2020-31/12/2020	5,940

01/01/2021-31/12/2021	23,760

Verification team has checked the calculation under the ER sheet /2.2/ and found correct

Step 1.4: Determine the baseline availability of biomass residues

Where the baseline scenario includes the use of rice husk for the generation of power and/or heat, the amount of rice husk that would be available in the baseline in year y ($BR_{B4,n,y}$) has to be determined.

The determination of this parameter is based on the monitored amounts of biomass residues used for power and/or heat generation in the project.

Period	$BR_{B4,n,y}$ (Tonnes)
01/10/2020-31/12/2020	27,832.367
01/01/2021-31/12/2021	114,388.507

Verification team has checked the calculation under the ER sheet /2.2/ and found correct

Step 1.5: Determine the efficiencies of heat generators, and efficiencies and heat-to-power ratio of heat engines

The values under this step are ex-ante and hence the values are same as in the registered PD.

Therefore, $HP_{RBL,CG}$ =12.1.

Step 1.6: Determine the emission factor of on-site electricity generation with fossil fuels

As no fossil fuel based power generation was identified as part of the baseline scenario, therefore, as per ACM0006, $EF_{EG,FF,y} = EF_{EG,GR,y}$.

Step 1.7: Determination of the emission factor of grid electricity generation

The value is fixed ex-ante.

$EF_{EG,GR,y}$ = 0.9613 tCO_2/MWh

Kindly refer to registered PD for detailed calculation.

Step 2: Determine the minimum baseline electricity generation in the grid

The calculation of the minimum amount of electricity that would be generated in the grid in the baseline is based on the assumption that the amount of electricity generated on-site in the baseline cannot be higher than the installed capacity of power generation available in the baseline scenario. Therefore, the following equation should be used:

$EL_{BL,GR,y} = \max(0, EL_{BL,y} - CAP_{EG,total,y})$

Data	Value	Source
$EL_{BL,2020\ (Oct-\ Dec)}$ = Baseline electricity generation in the year 2020 (Oct-Dec) (MWh)	11,995	See step 1.2
$EL_{BL,2021}$= Baseline electricity generation in the year 2021 (MWh)	52,903	See step 1.2
$CAP_{EG,total,2020\ (Oct-Dec)}$ = Baseline electricity generation capacity in the year 2020 (Oct-Dec) (MWh)	5,940	See step 1.3
$CAP_{EG,total,2021}$ = Baseline electricity generation capacity in the year 2021 (MWh)	23,760	See step 1.3
$EL_{BR,GR,2020\ (Oct-Dec)}$ = Baseline minimum electricity generation in grid in the year 2020 (Oct-Dec) (MWh)	6,055	Calculated
$EL_{BR,GR,2021}$= Baseline minimum electricity generation in grid in the year 2021 (MWh)	29,143	Calculated

Verification team has checked the calculation under the ER sheet /2.2/ and found correct

Step 3: Determine the baseline biomass-based heat and power generation

Step 3.1: Determine the baseline biomass-based heat generation

It is assumed that the use of biomass residues for which scenario B4 has been identified as the baseline scenario ($BR_{B4,n,y}$) would be prioritized over the use of any fossil fuels in the baseline.

From that assumption, the equivalent amount of heat that would be generated with biomass residues ($HG_{BL,BR,y}$) should be determined.

As per this step all biomass based heat was used and there still remains process heat demand to be met. This process heat demand would be met by using recovery boiler there would be no provision that heat demand would be met by using fossil fuels in the baseline. Therefore step 4 is not applicable and this is conservative from emission reduction point of view.

The equivalent amount of heat energy that would be generated with biomass residues ($HG_{BL,BR,y}$) is determined as:

Parameter	Value (GJ)
$HG_{bl,BR,2020\ (Oct\text{-}Dec)}$	373,702.738
$HG_{bl,BR,2021}$	1,570,765.44

Verification team has checked the calculation under the ER sheet /2.2/ and found correct

Step 5: Determine the baseline emissions due to uncontrolled burning or decay of biomass residues

According to the methodology (ACM006, v.12.1), this step is optional and the project proponent can decide whether to include it or not.

The PP has decided not to apply this section which is found OK.

Step 6: Calculate baseline emissions

$BE_y = EL_{BL,GR,y} * EF_{EG,GR,y}$

Period	Baseline Electricity generation (MWh)	Baseline electricity generation capacity (MWh)	Baseline minimum electricity generation in the grid (MWh)	Emission factor (tCO_2e/MWh)	Total baseline emission (tCO_2e)
	$EL_{BL,\ 2020(Oct\text{-}Dec),2021}$	$CAP_{EG,total,2020\ (Oct\text{-}Dec),\ 2021}$	$EL_{BL,GR,\ 2020(Oct\text{-}Dec),\ 2021}$	$EF_{CM,grid}$	BE_y
01/10/2020-31/12/2020	11,995	5,940	6,055	0.9613	5,820
01/01/2021-31/12/2021	52,903	23,760	29,143	0.9613	28,015

Verification team has checked the calculation under the ER sheet /2.2/ and found correct.

Project Emissions:

For the purpose of determining GHG emissions of the project activity, project participant should include the following emissions sources:

$PE_y = PE_{FF,y} + PE_{GR\ 1,\ y} + PE_{GR2,\ y} + PE_{TR,y} + PE_{BR,y} + P_{WW,y} + PE_{BG2\ ,\ y} + PE_{BC,\ y}$

Of the above parameters $PE_{GR1, y}$, $PE_{GR2, y}$, $PE_{BR,y}$, $PE_{WW,y}$,$PE_{BG2 , y}$, $PE_{BC, y}$ are not considered in the project emission as per the registered PD /05/.

1. $PE_{FF,y}$ = Project Emissions due to fossil fuel consumption at the project site.

Project Emission due to fossil fuel consumption at the project site $PE_{FF,y}$			
Period	**Total diesel burnt (L)**	**Emission factor (tCO_2e/GJ)**	**Project emission (tCO2e)**
01/10/2020-31/12/2020	52	0.0748	01
01/01/2021-31/12/2021	226	0.0748	01
	278		**02**

2. $PE_{TR,y}$ = Project Emission due to transport of the biomass residues to the project plant.

Period	**Biomass procured (Tonnes)**	**Return trip distance (km)**	**CO_2 Emission factor ($gCO_2e/km/t$)**	**$PE_{TR,Y}$ (tCO_2e)**
01/10/2020-31/12/2020	33,218.00	100	245	814
01/01/2021-31/12/2021	136,919.00	100	245	3,355
	170,137.00	**200**		**4,169.00**

.

Verification team has checked the calculation under the ER sheet /2.2/ and found correct.

Leakage:

As per registered PD /05/, the most likely baseline scenario is that the biomass residues are dumped or left to decay without utilizing them for energy purposes, the leakage of the project activity is zero.

Emission reductions

The net GHG emission reduction calculated as per equation below

$ER_y = BE_y - PE_y - LE_y$

Where,

BE_y = Baseline emissions (tCO_{2e})

PE_y = Project emissions (tCO_{2e})

LE_y = Leakage emissions (tCO_{2e})

The results of the emission reduction are shown in the table below:

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})
2020	5,820	815	0	5,005
2021	28,015	3,356	0	24,659
Total	33,835	4,171	0	29,664

According to the applied methodology /07/, the conservativeness of the achieved emission reduction was checked and the detailed emission reduction calculation has been transparently provided in the ER sheet /2.2/. All the formulae and the calculation procedure were checked by the verification team. In the opinion of verification team, the assumptions, emission factors and default values that were applied in the calculations have been justified. Also, the verification team confirms that there were no manual transposition errors between the data sets in the ER Sheet /2.2/ during the current monitoring period.

Opinion:

The verification team confirms that

- The complete data set for the identified and required parameters for the operational days in the current monitoring period was available;
- The reported data has been cross checked with available records, as indicated in the section 4.4 above under each monitored data, wherever appropriate;
- The baseline, project and leakage emissions have been determined in accordance with the requirement of the applied methodologies, as contained in the final monitoring report and corresponding emission reductions spreadsheet;
- The assumptions, emission factors and default values used are justified, as indicated in the section 4.4 above

4.5 Quality of Evidence to Determine GHG Emission Reductions and Removals

All relevant documents were checked to assess the correctness and quality of data submitted by the project participants, which are used to determine emission reductions.

All records needed for monitoring are archived in line with the requirements of the registered monitoring plan /05/. No significant lack of evidence and missing data were detected during desk review, remote audit discussion and video inspection. 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 monitoring parameters have been measured / determined without material misstatements and is in line with all applicable standards and relevant requirements. The information inflow (from data generation, aggregation, to recording, calculation and reporting) is included in section 4.4 under each parameter and confirms to the requirement of the PD /05/. The export and import data measured by the electricity meters and monitored continuously. The data is then reported annually on the VCS Monitoring Report as verified by the verification team through remote assessment.

It was also verified through remote audit inspection that the plant's team involved in the monitoring of project activity is well experienced. Hence, the verification team concludes that competent staff is employed by the project proponent to carry out the relevant tasks with sufficient accuracy. Furthermore, it was confirmed during remote audit discussion that internal training program for the monitoring staff are conducted on regular basis.

Evidences (Documents/Zoom interviews) referred for verification of individual monitoring parameter and fixed parameter are defined under section 4.4. We further confirm that, sufficient evidence covering the entire monitoring period and at the required frequency were available. A list of referred documents for verification is also included in Appendix 1 of this report.

4.6 Non-Permanence Risk Analysis

Not applicable.

5 VERIFICATION CONCLUSION

4K Earth Science Pvt. Ltd (4KES), contracted by 'PA Research & Consultants Pvt. Ltd.', has performed the independent verification of the emission reductions for the VCS project activity (VCS ID - 1547) "5MW biomass based cogeneration project at Sainsons" in India for the monitoring period 01-October-2020 to 31-December-2021 as reported in the Monitoring Report Version 05 dated 04/08/2022. Sainsons Paper Industries Limited are 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.

4KES commenced the verification on the basis of the baseline and monitoring methodology ACM0006 - Version 12.1.1, the monitoring plan contained in the registered VCS PD /05/ and Monitoring Report (Version 05 dated 04/08/2022) as per the process described under Section 2 of this report.

4KES 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. 4KES planned and performed the verification by obtaining evidence and other information and explanations that 4KES 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-October-2020 to 31-December-2021 are fairly stated in the Monitoring Report Version 05 dated 04/08/2022. The GHG emission reductions were calculated correctly on the basis of the approved baseline and monitoring methodology ACM0006 - Version 12.1.1 and the VCS standard.

Verification period: From 01-October-2020 to 31-December-2021

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)
01 October-2020 to 31 December 2020	5,820	815	0	5,005
01 January 2021 to 31 December 2021	28,015	3,356	0	24,659
Total	**33,835**	**4,171**	**0**	**29,664**

Approved by

Chandrakala R.
Director
4K Earth Science Private Limited

Date: 04-August2022
Place: Bangalore, India

APPENDIX I: LIST OF DOCUMENTS

/1/	/1.1/ Monitoring Report, Version 01, dated 09/03/2022 (Initial Version) /1.2/ Monitoring Report, Version 05, dated 04/08/2022 (Final Version)
/2/	/2.1/ Draft Emission Reduction Calculation sheet (corresponding to initial Version of VCS MR) /2.2/ Final Emission Reduction Calculation Sheet (corresponding to final Version of VCS MR)
/3/	VCS Standard Version v4.2 https://verra.org/project/vcs-program/rules-and-requirements/
/4/	VCS Program Guide, v4.1 https://verra.org/project/vcs-program/rules-and-requirements/
/5/	Registered VCS-PD version 3 dated 09/09/2016 Validation report dated 12/09/2016
/6/	Web-Link for the Registered project activity https://registry.verra.org/app/projectDetail/VCS/1547
/7/	Approved monitoring methodology: ACM0006 ver. 12.1.1 - Consolidated methodology for electricity and heat generation from biomass residues
/8/	Websites referred: http://www.itouchmap.com/latlong.html(Latitude-Longitude location finder)
/9/	Technical specifications/photographs/video of main equipment, electricity meters, weighbridge etc.
/10/	Single line diagram and meter location / Layout
/11/	Electricity production bills/plant records
/12/	Commissioning Certificate
/13/	Trainings conducted
/14/	Calibration Certificates for main meter and check meter and other equipments
/15/	Invoices of biomass procured during the monitoring period Excel sheet for biomass generation and consumption
/16/	Organization structure/chart

/17/	Diesel consumption records
/18/	Plant Logs for biomass use, tempeatrure/pressure of steam, steam generation, operational hours etc.
/19/	Moisture content measurement records internal laboratory and third party laboratory
/20/	Measurements carried out at reputed laboratories and according to relevant international standards. Measure the NCV on dry- basis.
/21/	Record for «Return Distance between the origin and destination of freight transportation activity f in monitoring period m.»
/22/	Decalartion for double counting
/23/	Employement details

APPENDIX II: VERIFICATION FINDINGS

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

This is the 2nd periodic verification of the project activity. There is no remaining FAR from Validation and/or 1st Verification.

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

Table 2. CL from this verification

No CL raised during this verification.

~~CL ID~~	~~xx~~	~~Section no.~~		~~Date: DD/MM/YYYY~~
~~Description of CL~~				
~~Project participant response~~				~~Date: DD/MM/YYYY~~

~~Documentation provided by project participant~~
~~DOE assessment~~ ~~Date: DD/MM/YYYY~~

Table 3. CAR from this verification

CAR ID	01	Section no.	4.1	Date: 13/04/2022
Description of CAR				
1. On page 1 of the Monitoring report, the title of the project is not consistent. 2. Under section 1.6 of the Monitoring report, the end date of the crediting period is not correct. 3. Under section 1.8 of the Monitoring report, the link for the applied methodology is not working.				
Project participant response				Date: 24/04/2022
1. There was a typo Error. The same has be corrected in the revised MR. 2. There was a typo Error. The same has be corrected in the revised MR. 3. There was a typo Error. The same has be corrected in the revised MR.				
Documentation provided by project participant				
Revised Monitoring report				
DOE assessment				Date: 17/05/2022
1. Correction has been done in the revised Monitoring report /1.2/ and found OK. Hence this part of CAR is closed. 2. Correction has been done in the revised Monitoring report /1.2/ and found OK. Hence this part of CAR is closed. 3. Correction has been done in the revised Monitoring report /1.2/ and found OK. Hence this part of CAR is closed.				

CAR ID	02	Section no.	4.1	Date: 13/04/2022
Description of CAR				

Under column "Contributions Over Project Lifetime" (Section 1.11 of the Monitoring report), PP need to report total contribution till end of 2nd MP including 1st MP.	
Project participant response	**Date:** 24/04/2022
Total contributions till the end of the 2nd MP has been incorporated in the revised MR	
Documentation provided by project participant	
Revised Monitoring Report	
DOE assessment	**Date:** 17/05/2022
Correction has been done in the revised Monitoring report /1.2/ and found OK. Hence this CAR is closed.	

CAR ID	03	**Section no.**	4.2.2	**Date:** 13/04/2022
Description of CAR				
Under section 2.2 of the monitoring report, PP need to Describe the process for, and the outcomes from, ongoing communication with local stakeholders conducted prior to verification. Include details on the following: • 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 mechanism for on-going communication with local stakeholders.				
Project participant response				**Date:** 24/04/2022
PP has well established grievance mechanism, wherein any stakeholder can make complain or provide feedback in writing or via direct contact with concerned person at site. A grievance register is placed at the project site to raise any concern or any suggestion. The same has been updated in the revised monitoring report. There were no concerns raised by stakeholders during the current monitoring period.				
Documentation provided by project participant				
Revised Monitoring Report				
DOE assessment				**Date:** 17/05/2022
Correction has been done in the revised Monitoring report /1.2/ and found OK. The same was also verified during the remote interview of PP representative/stakeholder. Hence this CAR is closed.				

CAR ID	04	Section no.	3.3	Date: 13/04/2022
Description of CAR				
Under section 3.2.2 of the Monitoring report, PP need to mention the deviation regarding the change in crediting period.				
Project participant response				Date: 24/04/2022
The crediting period of the project activity was expected to start from 01/01/2016. However, the crediting period actually started from 01/01/2017, the same has been reported in first periodic verification and in revised MR for current monitoring period as well.				
Documentation provided by project participant				
Revised Monitoring report				
DOE assessment				Date: 17/05/2022
Correction has been done in the revised Monitoring report /1.2/ and found OK. Hence this CAR is closed.				

CAR ID	05	Section no.	4.4	Date: 13/04/2022
Description of CAR				
Under Appendix 1 of the Monitoring report, the calibration details of the energy meters for year 2020 are not consistent with the submitted calibration certificates.				
Project participant response				Date: 24/04/2022
There was a typo error. The same has been corrected in the revised Monitoring report				
Documentation provided by project participant				
Revised Monitoring report				
DOE assessment				Date: 17/05/2022
Correction has been done in the revised Monitoring report /1.2/ and found consistent with the submitted Calibration certificates /14/. Hence this CAR is closed.				

Table 4. FAR from this verification

No FAR raised during this verification.

~~FAR ID~~	~~xx~~	~~Section no.~~		~~Date: DD/MM/YYYY~~
~~Description of CAR~~				

~~NA~~	
~~Project participant response~~	~~Date: DD/MM/YYYY~~
~~Documentation provided by project participant~~	
~~DOE assessment~~	~~Date: DD/MM/YYYY~~

APPENDIX III: TEAM COMPETENCE

Certificate of Competence							
Name	☒ Mr. ☐ Ms.	**Chetan Swaroop Sharma**					
Qualification Procedure		*Fulfils the requirement as per the appointment of personnel procedure of 4KES for Validation and Verification of CDM/VCS/GS/GHG Projects.*					
Appointed to work as:							
		CDM Validator/Verifier	**Team Leader**	**Team Member**	**Technical Expert**	**Technical Reviewer**	**Financial Expert**
Appointed		Yes	Yes	Yes	Yes	Yes	No
Appointed Date		27-04-2021					
Authorized to work as Technical Expert for:							
Authorized Technical Area		**Sectoral Scope**		**TA Code**		**Technical Area within the scope**	
		Energy industries (renewable - / non-renewable sources)		1.1		Thermal energy generation	
		Energy industries (renewable - / non-renewable sources)		1.2		Renewables	
		Energy distribution		2.1		Energy distribution	
		Energy demand		3.1		Energy demand	
		Waste handling and disposal		13.1		Solid waste and wastewater	
		Waste handling and disposal		13.2		Manure	

Authorized to work as Local Expert for:	
Country/Countries	India
Compliance check by: Anand S. R.	

Certificate of Competence							
Name	☒ Mr. ☐ Ms.	**Ma Paa Puratchikkanal**					
Qualification Procedure		*Fulfils the requirement as per the appointment of personnel procedure of 4KES for Validation and Verification of CDM/VCS/GS/GHG Projects.*					
Appointed to work as:							
		CDM Validator/Verifier	**Team Leader**	**Team Member**	**Technical Expert**	**Technical Reviewer**	**Financial Expert**
Appointed		Yes	Yes	Yes	Yes	Yes	No
Appointed Date		27-04-2021					
Authorized to work as Technical Expert for:							
Authorized Technical Area		**Sectoral Scope**		**TA Code**	**Technical Area within the scope**		
		Energy industries (renewable - / non-renewable sources)		1.1	Thermal energy generation		
		Energy industries (renewable - / non-renewable sources)		1.2	Renewables		
		Energy demand		3.1	Energy demand		
		Construction		6.1	Construction		
		Waste handling and disposal		13.1	Solid waste and wastewater		
		Waste handling and disposal		13.2	Manure		
		Agriculture		15.1	Agriculture		

Authorized to work as Local Expert for:			
Country/Countries	India and Sri Lanka		
Compliance check by: Anand S. R.			

APPENDIX IV: ABBREVIATIONS

CAR	Corrective Action Request
CDM	Clean Development Mechanism
CL	Clarification Request
EB	Executive Board
EIA	Environmental Impact Assessment
ER	Emission Reductions
FAR	Forward Action Request
GHG	Greenhouse Gases
IPCC	Intergovernmental Panel for Climate Change
MP	Monitoring Period
MR	Monitoring Report
MW	Mega Watt
MWh	Mega Watt hour
O&M	Operation & Maintenance
PD	Project Description
PP	Project proponent
QA/QC	Quality Assurance/Quality Control
tCO_2	Tonnes of Carbon Dioxide
UNFCCC	United Nations Framework Convention on Climate Change
VCS	Verified Carbon Standard

VCSA	Verified Carbon Standard Association
VCU	Verified Carbon Unit

APPENDIX V: CALIBRATION DETAILS

Steam temperature transmitter Range: 0-1200°C Resolution: 0.1°C Accuracy: ±0.2% Make: Yokogava Type: K type Serial No.: C2S101681	**DATE OF CALIBRATION:** 26/09/2020, 03/01/2022 Frequency of calibration: annual Validity of calibration: 1 year
The calibration was due on 25 September 2021 and same was calibrated dated 03 January 2022, a delay in calibration was observed during current monitoring period from 26 September 2021 to 31 December 2021. However, the same has no impact on the emission reduction calculation as emission reduction calculation is performed based on electricity generation.	
Feed water temperature gauge Range: 0-300°C Resolution: 5°C Accuracy: ±1% Make: General Serial No.: BG19013237	**DATE OF CALIBRATION:** 26/09/2020, 03/01/2022 Frequency of calibration: annual Validity of calibration: 1 year
The calibration was due on 25 September 2021 and same was calibrated dated 03 January 2022, a delay in calibration was observed during current monitoring period from 26 September 2021 to 31 December 2021. However, the same has no impact on the emission reduction calculation as emission reduction calculation is performed based on electricity generation.	
Stem temperature indicator with sensor Range: 0-1200°C Resolution: 0.01°C Accuracy: ±0.05%	**DATE OF CALIBRATION:** 26/09/2020, 03/01/2022 Frequency of calibration: annual Validity of calibration: 1 year

Make: Yokogava Type: K type Serial No.: T1L619073	
The calibration was due on 25 September 2021 and same was calibrated dated 03 January 2022, a delay in calibration was observed during current monitoring period from 26 September 2021 to 31 December 2021. However, the same has no impact on the emission reduction calculation as emission reduction calculation is performed based on electricity generation.	
Pressure Gauge (Steam) Range: 0-160kg/cm^2 Resolution: 5 kg/cm^2 Make: General Serial No.: 13121260	**DATE OF CALIBRATION:** 26/09/2020, 03/01/2022 Frequency of calibration: annual Validity of calibration: 1 year
The calibration was due on 25 September 2021 and same was calibrated dated 03 January 2022, a delay in calibration was observed during current monitoring period from 26 September 2021 to 31 December 2021. However, the same has no impact on the emission reduction calculation as emission reduction calculation is performed based on electricity generation.	
Steam flow totalizer Range: 0-60 TPH Resolution: 0.01 TPH Make: Masibus Model No.: 1006 Serial No: 10118151	**DATE OF CALIBRATION:** 26/09/2020, 03/01/2022 Frequency of calibration: annual Validity of calibration: 1 year
The calibration was due on 25 September 2021 and same was calibrated dated 03 January 2022, a delay in calibration was observed during current monitoring period from 26 September 2021 to 31 December 2021. However, the same has no impact on the emission reduction calculation as emission reduction calculation is performed based on electricity generation.	
Energy meter Make: Schneider Electric Accuracy: 0.2s	**DATE OF CALIBRATION:** 18/12/2019, 19/12/2020 and 19/03/2022 Frequency of calibration: annual

Model: EM6436 Serial No.: 34163030581	Validity of calibration: 1 year
The calibration was due on 17 December 2020 and same was calibrated dated 19 December 2020, further the calibration was due on 18 December 2021, which was calibrated on 19 March 2022, a delay in calibration was observed during current monitoring period from 17 December 2020 to 18 December 2020 and 18 December 2021 to 31 December 2021. However the latest calibration resuly concludes that meter was operational within permissible error. Hence maximum permissible error was applied in emission reduction calculation for the complete month of December 2020 and December 2021 which is conservative.	
Energy meter Make: Secure meter Accuracy: 0.2s Model: E3M024 Serial No.: XC548932	**DATE OF CALIBRATION:** 18/12/2019. 19/12/2020 and 19/03/2022 Frequency of calibration: annual Validity of calibration: 1 year
The calibration was due on 17 December 2020 and same was calibrated dated 19 December 2020, further the calibration was due on 18 December 2021, which was calibrated on 19 March 2022, a delay in calibration was observed during current monitoring period from 17 December 2020 to 18 December 2020 and 18 December 2021 to 31 December 2021. However the latest calibration resuly concludes that meter was operational within permissible error. Hence maximum permissible error was applied in emission reduction calculation for the complete month of December 2020 and December 2021 which is conservative.	
Weighbridge Make: Multi Weigh India Pvt. Ltd. Serial No.: IND/2003/294	**DATE OF CALIBRATION:** 13/02/2020, 12/02/2021 Frequency of calibration: annual Validity of calibration: 1 year