VERIFICATION REPORT FOR

"24.45 MW BIOMASS BASED PROJECT IN PUNJAB"

Document Prepared by Earthood Services Private Limited

Project Title	24.45 MW Biomass based project in Punjab
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Summary:

Earthood Services Private Limited (hereafter referred to as ESPL) has been contracted by Satia Industries Limited to conduct the verification of the project - "24.45 MW Biomass based project in Punjab", VCS ID 1920 regarding the relevant requirements of VCS programme guidelines and standard (VCS standard version 4.1/14/, & VCS program guide version 04.0/15/). Relevant requirements of the UNFCCC for CDM project activities, as well as criteria for consistent project operations, monitoring and reporting has been applied for verification.

The monitoring period covers under this verification are from 15/09/2017 to 31/12/2020 (both days included).

The verification includes confirming the implementation of the monitoring plan of the registered VCS PD/01/ Version 2.0 dated 12/09/2019 and the application of the monitoring methodology "ACM0006: Electricity and heat generation from biomass --- Version 14.0, dated 29/11/2018/9/.

The project activity involves the installation of a 24.45 MW (10.45 MW + 14 MW) biomass (rice husk) based cogeneration system to meet the in-house process steam requirements and displace the electricity that would otherwise being procured from the Indian grid. The project activity is not intended to supply/export the power to the grid. The project activity thus reduces GHG emissions by displacing the fossil fuel dominated Indian grid by generating electricity using renewable sources.

Thus, project activity displaces the equivalent amount of electricity from the grid which is predominantly generated through fossil fuel-based power plant. The project activity results in reductions of greenhouse gas (GHG) emissions that are real, measurable, and verifiable and plays beneficial role in the mitigation of climate change.

The project proponent has applied the baseline and monitoring methodology ACM0006: "Electricity and heat generation from biomass", Version 14.0". dated 29/11/2018/9/.

The project activity involves installation of a new cogeneration unit consisting of a 125 TPH (50 TPH +75 TPH) boiler and a 24.45 MW (10.45+14) steam turbine in existing facility to generate both steam and power. Project activity to be commissioned in two phases, first phase (10.45 MW) was commissioned on 15/09/2017 & second phase was commissioned on 22/12/2020. The same was verified against the commissioning certificates/07/.

The project activity is an Expansion of the paper mill and shall result in an estimated GHG emission reduction of 208,613 tCO2e annually and a total of 2,086,130 tCO2e over 10 years of the crediting period. The power generated by the project will be replacing the equivalent amount of electricity from the Grid system of India, which is dominated by fossil fuel-based grid connected power plants.

A risk-based approach has been followed to perform this verification. In the course of verification, 03 Corrective Action request (CARs), 00 Forward Action request (FARs), and 01 Clarification request (CLs) were raised and successfully closed.

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

ESPL confirms that the project is implemented in accordance with the registered VCS PD/01/. The monitoring system is in place and the emission reductions are calculated without material misstatements. Our opinion relates to the project's GHG emissions, and the resulting GHG emission reductions reported and related to the valid and registered project baseline and monitoring and its associated documents. Based on the information seen and evaluated we confirm that the emission reductions from the project activity "24.45 MW Biomass based project in Punjab" during the period 15/09/2017 to 31/12/2020 (including both days) amount to 157,173 tons of CO_2e.

Verification Conclusion: -

The conclusion of this report shows that the project, as it was described in the project documentation, is in line with all criteria applicable for the verification. This verification is based on the information made available to ESPL and the engagement conditions are detailed in this report. No restrictions or uncertainties were identified related to the verification.

ESPL confirms that the project is implemented in accordance with the validated VCS PD. The monitoring system

is in place and the emission reductions are calculated without material misstatements. Our opinion relates to the projects GHG emissions, and the resulting GHG emission reductions reported and related to the verification and registered project baseline and monitoring and its associated documents.

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INTRODUCTION

1.2 Objective

Earthood Services Private Limited (ESPL) has been contracted by Satia Industries Limited, to undertake the verification of the project titled "24.45 MW Biomass based project in Punjab" (VCS ID-1920)/12/ The verifiers have reviewed the GHG data collected to date for the monitoring period from 15/09/2017 to 31/12/2020 (both days included) covered in this verification. The objective of this verification is a thorough and independent assessment of registered project activities against the applicable VCS requirement by the VVB. The verification process shall determine whether the proposed project activity complies with the requirements of latest VCS guidelines, applicability conditions of the selected methodology, relevant host country regulations and guidance issued by the VCS Board.

1.3 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 4.1/14/, 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.

1.4 Level of Assurance

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

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

The evidence used to achieve a reasonable level of assurance is specified in section 2.3 and 2.4

of this report.

1.5 Summary Description of the Project

The project activity involves the installation of 24.45 MW turbo - generator along with 125 TPH (50 TPH +75 TPH) biomass-based boilers as new power plant to meet increased electricity and process heat demand for the paper mill.

The project activity is located in Satia Industries Limited (SIL), one of the mills in India. It is situated in Village Rupana, District - Muktsar, State – Punjab. The geographical co-ordinates of the project are Latitude: 30° 25'43'' N and longitude as 74° 31' 22'' E.

The capacity of paper mill has expanded from 300 TPD to 685 TPD /36/. The paper mill was meeting the power and process heat requirement from existing boilers and turbines. There were 4 boilers of 45 TPH, 20 TPH, 50 TPH and 75 TPH each. The boiler for 20 TPH and 50 TPH are Chemical Recovery Boilers (CRP). There were 3 turbines one of 5 MW Condensing another 5 MW based on CRP while a 12.5 MW that were connected to the steam system. The generated steam and electricity are used to meet the captive demand of paper plant. In the baseline, the electricity requirement (which is currently met by generation from the project) would have been met through import from the grid.

The project aims to displace electricity that would have been otherwise imported within the project facility produced by power plants connected to the NEWNE grid (now integrated as Indian grid). The grid mix is dominated by fossil fuel as could be verified from the grid emission factor of NEWNE grid (now integrated as Indian grid) of India. Therefore, the project reduces greenhouse gas emissions. The verification team confirms that the total emission reductions achieved during the reported monitoring period (15/09/2017 to 31/12/2020) is 157,173 tCO_2e.

The commissioning date of each phase is verified through the commissioning certificates/11/.

Sr. No	Capacity	Phase	Commissioning date
1	10.45 MW	Phase - 1	15/09/2017
2	14 MW	Phase - 2	22/12/2020

The verification team has also verified the latest photographs/16/ of all the equipment's (Boiler, Turbines) installed at site and which was submitted by the project proponent. The project activity

is undergoing first verification and description of project activity was also verified during validation/02/ through physical site visit by other VVB (ESPL) on 23/08/2019. Based on the assessment of the documents, the assessment team can confirm that the project activity is fully functional and implemented as described in the registered VCS PD.

VERIFICATION PROCESS

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

1.6 Method and Criteria

The verification approach consists of two phases.

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

- Activities associated with all the sources contributing to the project emissions and emission reductions, including leakage if relevant;
- Protocols used to estimate or measure GHG emissions from these sources.
- Collection and handling of data;
- Controls on the collection and handling of data;
- Means of verifying reported data; and
- Compilation of the Monitoring Report.

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

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

1.7 Document Review

The verification is performed primarily as a document review of the registered VCS PD/01/, Validation report/02/ and associated documents as stated in detail in appendix 1 of this document. The assessment is performed by a verification team using protocol. The cross checks

between information provided in the Monitoring report, registered 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.

1.8 Interviews

During the current verification, on-site inspection has not been performed by the assessment team. However, the representatives of the PP were virtually interviewed on 26/08/2021 i.e., personnel responsible for monitoring of the project activity, data collection and management, and QA/QC procedure. The details of the people interviewed are mentioned in the table below:

Name	Organization	Topic covered
Mr. Deepak Sharma	Satia Industries Limited (Project Representative)	Project implementation, start date as per the VCS requirements. Plant Records (monthly statements, Invoices) Reliability & accuracy of readings considered for emission reduction calculations, Monitoring and measuring system Collection of measurements Observations of established practices Data Verification of monitoring parameters QA/QC procedures, data management, internal audits to maintain data quality & reliability, maintenance Practices.
Mr. Akash Joshi	Executive – Operation (Infinite Solutions)	Consideration of monitoring period, monitoring methodology, project documentation and emission reduction calculations. Monitoring and measuring system

		Collection of measurements Observations of established practices Data Verification of monitoring parameters QA/QC procedures, data management, internal audits to maintain data quality & reliability, maintenance Practices.

1.9 Site Inspections

Due to the current situation with the global COVID-19 pandemic scenario physical site inspection is not done for the current verification. It is to be noted that the ESPL team has physically visited the project site on 23/08/2019 ,during the validation of the project activity.

Although domestic travel has resumed in India, it is still not recommended until necessary and considering health and safety a top priority, physical site visit for verification audit is not conducted. Furthermore, as per the Section 4.1.2 of the VCS Standard, v4.1/14/, it is not mandatory to conduct the on-site visit by VVB for validation/verification). However, to achieve a reasonable level of assurance, the assessment team has followed the alternative means to substantiate the verification criteria as described in the below table:

Assessment Criteria	Means of verification/source documents	Assessment opinion
Description of project activity	Commissioning certificates /11/ VCS Validation report/02/. Virtual interview with site personnel on 26/08/2021.	The information's with reference to project capacity, technology, plant equipment's and commissioning dates as provided in section 1.1 of MR are found consistent with the documents.
Compliance of the project implementation with the registered project design document	Plant logbooks, inventories, purchase records or similar data sources/08/.	A cross-check between information provided in the monitoring report and data from other sources such as plant

	Geographical co-ordinates of project activity verified through Google Map[1] Photograph of equipment's installed at site and screen shots of equipment's/16/. Commissioning certificates /11/ Virtual interview with site personnel on 26/08/2021.	logbooks, inventories, purchase records or similar data sources. Identification of equipment's, capacity of project and name of project participant through commissioning certificates & photographs. Location of project is verified through GPS Map and found consistent with registered VCS PD. Photograph of equipment's and screen shots are verified to check the operational status of project activity. All the information's regarding the project implementation as discuss above are further verified through VCS PD/01/ and found consistent.
Compliance of the registered monitoring plan with applied methodologies and standardized baselines	Virtual interview with site personnel on 26/08/2021 Plant logbooksinventories, purchase records or similar data sources;/08/.	The organizational structure, responsibilities and competencies of the personnel confirmed through virtual interview. Frequency of monitoring of parameters listed under approved monitoring plan is verified through Plant logbooks/Invoices.

[1]https://www.google.co.in/maps

		The methods used for measuring, recording, storing, aggregating, and reporting the data on monitored parameters are verified though virtual conversations with site personnel. Procedure for data uncertainty, emergency preparedness, roles and responsibility, operational and management structure are mentioned in the MR is confirmed through quality policy documents and found satisfactory.
Assessment of data and calculation of emission reductions or net removals	Plant logbooks, inventories, purchase records or similar data sources;/08/. CEA CO_2 Baseline Database for the Indian Power Sector /10/ VCS Validation report/02/.	Monthly values of monitoring parameter used in ER calculation are verified through Plant logbooks and cross verified with the invoices. Methods, formulae, and emission factor for calculating baseline emissions have been followed are in accordance with the applied methodology and as described in the approved VCS validation report /02/.

It is noteworthy that no sampling plan for verification is applied as 100% data is verified for the current monitoring period. Most of the reference document referred by the assessment team (above table).

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

1.10 Resolution of Findings

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

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

a) 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.

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

c) Mistakes have been made in applying assumptions, data or calculations of emission reductions that will impact the quantity of emission reductions;

d) Issues identified in a FAR during validation to be verified during verification or previous verification(s) have not been resolved by the project participants.

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

FAR (Forward Action Request) is raised during verification if the monitoring and reporting require attention and/or adjustment for the next verification period. During the current verification, 03 Corrective Action request (CARs), 00 Forward Action request (FARs), and 01 Clarification request (CLs) were raised and successfully closed. All the findings that are raised and communicated to project participant during the verification are included under Appendix 3. The section also includes the response, if provided, by the project participants and an assessment by the verification team if it was closed out or otherwise.

1.10.1 Forward Action Requests

The project activity is undergoing first verification in VCS; there were no FARs raised during the

validation /02/.

1.11 Eligibility for Validation Activities

This section is not applicable for present verification.

VALIDATION FINDINGS

1.12 Participation under Other GHG Programs

The project capacity is registered under VCS program only (VCS ID-1920). The project activity is not registered under REC mechanism and the same is confirmed through the REC web site (https://recregistryindia.nic.in/).

The PP has submitted the declaration/13/ which states that the net GHG emission reductions generated by the project activity will not be used for compliance with any other emissions trading program or to meet binding limits on GHG emissions for the same monitoring period.

1.13 Methodology Deviations

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

1.14 Project Description Deviations

No project description deviation identified during the current monitoring period.

1.15 Grouped Project

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

VERIFICATION FINDINGS

1.16 Project Implementation Status

The project activity is the implementation of a biomass-based cogeneration unit with a purpose to meet the partial heat and power demand of paper plant within the facility. The project activity comprises of 125 TPH (50TPH + 75TPH) biomass-based boiler and a 24.45 MW (10.45 MW + 14 MW) turbine generator (TG) which is operational along with the existing boilers and TGs (Pre-Project

Scenario). Based on review of registered VCS PD /01/ and during remote site visit/Photograph, the verification team confirms that the technical aspects of the project activity were found to be in accordance with the registered VCS PD /01/. The project activity was commissioned in two phases i.e., 15/09/2017, 22/12/2020 as confirmed by reviewing the commissioning certificates/11/. Based on review of documents of validation and plant logbooks /08/ during this verification, it can be confirmed that the project activity is in continuous operation since commissioning.

The monitoring plan mentioned in section 4.3 of MR is following the applied methodology ACM0006, version 14.0/09/. The monitoring plan allows accurate and correct measurement of emission reductions achieved over the crediting period. The description about the monitoring parameters fixed ex-ante and ex-post are reported in section 4.1 & 4.2 of the MR has been checked and was found in accordance with the project scenario. The data was well calculated and was traceable and credible.

The assessment team has conducted the virtual site visit and based on the interview with the operation and maintenance personal and based on the local and sectoral expertise; the assessment team confirms that monitoring arrangements described in the monitoring plan are feasible within the project design and the project participant deputed the competent personal to execute the monitoring approach and to follow the monitoring plan.

The role & responsibilities and institutional arrangements for data collection and archiving included in the MR. The uncertainty levels, methods, and the associated accuracy level of measuring instruments to be used for various parameters and variables are included.

The assessment team has verified the latest photographs of project site (including monitoring equipment's)/16/, Plant Records/Invoices/07,08/ and it is observed that, calculation procedures are transparently described in the monitoring plan to enable accurate determination of emission reductions achieved by the project activity.

Assessment team concludes the following:

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

- 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.

- There are no material discrepancies between the actual monitoring system, and the monitoring plan set out in the project description and the applied methodology/09/.

- 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/13/.

- 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/02/.

- The project is registered under VCS only.

- The project activity is complying with indicators for sustainable development in the interim approval guidelines for Clean Development Mechanism (CDM) projects from India as discussed under section 1.11 of MR.

Further the GHG emission reductions generated by the project activity has not been included by any other emissions trading program or any other mechanism that includes GHG allowance trading. Also, the project has not received any other form of environmental credit and has not been participated/rejected under any other GHG programs. It was verified through independent review by assessment team from freely available data on respective websites of various carbon offsetting programs.

Further the project has been implemented as described in the project description. The total emission reductions achieved in this monitoring period i.e., from 15/09/2017 to 31/12/2020 are 157,173 tCO_2e.

1.17 Safeguards

1.17.1 No Net Harm

There is no negative impact to any socio-economic conditions of the region due to the project activity. No adverse environmental impact has been envisaged in the project activity, still all the necessary clearances from the state pollution control board, state forest department as well the Ministry of Environment, Forest and Climate Change has been obtained.

The project proponent has mentioned in the PD/01/ that the present project activity does not require EIA to be carried out because as per the schedule 1 of Ministry of Environment and Forest notification dated 14/09/2006 http://envfor.nic.in/legis/eia/so1533.pdf and further notification

number 3067 from MoEF & CC dated 01/12/2009 http://moef.nic.in/downloads/rules-and-regulations/3067.pdf , activities are required to undertake environmental impact assessment studies. The project activity does not fall under the listed categories and hence not required an EIA to be done. The project participant has nevertheless submitted a No Objection Certificates from state nodal agency/18/.

The verification team is of the opinion that the project complies with environmental regulations in India.

1.17.2 Local Stakeholder Consultation

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

The project proponent has implemented mechanism for ongoing communication with local stakeholders to allow stakeholders to raise concerns about potential negative impacts during implementation and operation of the project activity. The project proponent has placed a grievance register and a grievance box at site office/17/, where the local villagers can register their concerns. The assessment team has checked the copy of grievance register maintained at site office/17/ and confirmed that no formal complaints were received during the current monitoring period.

1.18 AFOLU-Specific Safeguards

Not applicable to the project activity.

1.19 Accuracy of GHG Emission Reduction and Removal Calculations

The project monitoring has been carried out in accordance with the registered VCS PD/01/. The monitoring plan laid in the registered VCS PD is being followed at the site. The assessment team has verified the information flow (from data generation, aggregation, to recording, calculation and reporting for these parameters including the values) in the MR/04/.

The emission reductions are based on the net electricity supplied by the project activity that would have been otherwise supplied by the grid. Emission reductions have been calculated in accordance with the applied methodology ACM0006 version 14.0 /09/ and VCS PD /01/. The PP has used monitored data and ex-ante fixed data including default values as mandated/permitted by the applied methodology. The values used for calculation of GHG emission reductions have been thoroughly checked by the verification team and was found

appropriate and correct. The spreadsheet submitted by the PP clearly and transparently mentions values of the data parameters used for calculation of emission reductions. The calculations are traceable and follow logical steps. The input values have been verified from the reliable and authentic sources including plant logbooks /07/, /08/ and applied methodology /09/. The emission reductions calculated were compared with the emission reduction spread sheet /05/, /06/ and found to be correct. No significant reporting risks have been identified for the data reported.

1.20 Quality of Evidence to Determine GHG Emission Reductions and Removals

The below tables describe how each parameter, which is to be measured according to the monitoring plan, has been verified to confirm that the actual monitoring complies with the monitoring plan, monitoring data has been thoroughly assessed and that the calibration requirements are met.

The following parameter has been verified for current monitoring period:

Parameter: Biomass residues categories and quantities used in the project activity, $BR_{PJ,n,y}$, Tonnes (dry)

Means of verification	Criteria/Requirements	Assessment/Observation
	Measuring /Reading /Recording frequency	The parameter is monitored and recorded on continuous basis.
	Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes. The measuring and reporting frequency is in line with the monitoring plan as outlined in the registered PD/01/ and monitoring methodology/09/.
	Monitoring equipment	Weighbridge S/N 0610002
	Is accuracy of the monitoring equipment as stated in the monitoring plan? If the monitoring plan does not specify the	The weighbridge is designed to measure up-to 60 ton of weight, which is adequate for measurement of weight of biomass along with the vehicle weight. The accuracy of the weighbridge is appropriate and regularly calibrated by the Weigh and measures department, Government of Punjab.

	accuracy of the monitoring equipment, does the accuracy of the monitoring equipment comply with local/national standards, or as per the manufacturer's specification?	
	Calibration frequency /interval:	The weighbridge is calibrated annually /20/.
	Is the calibration interval in line with the monitoring plan and/or methodology? If the monitoring plan does not specify the frequency of calibration, is the selected frequency in accordance with the local/national standards, pending untill the findings are closed or as per the manufacturer's specifications?	Yes
	Is the calibration of measuring equipment carried out by an accredited person or institution?	Yes
	Is(are) calibration(s) valid for the whole reporting period?	Yes, the testing is applicable for whole monitoring period . **Weighbridge meter details during monitoring period** **Calibration date** / **Calibration due date** 24/05/2017 / 24/05/2018 24/05/2018 / 24/05/2019 20/05/2019 / 20/05/2020 20/05/2020 / 20/05/2021 The calibration records/20/ for whole monitoring period have been submitted by PP & found ok.

	How were the values in the monitoring report verified?	The verified value of total biomass consumption are: 15/09/2017 to 31/12/2017: 44,406 tonnes 01/01/2018 to 31/12/2018: 187,039 tonnes 01/01/2019 to 31/12/2019: 194,685 tonnes 01/01/2020 to 31/12/2020: 193,127 tonnes Total – 619,257 tonnes The measurement of each biomass truck is recorded in the daily logbooks. The logbook entries /08/ were checked to verify the figure and found acceptable
	If applicable, has the reported data been cross-checked with other available data?	Yes
	Does the data management ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	Yes, the data ensure correct transfer of data and reporting of emission reductions management. QA/QC processes are in place.
	In case project participants have temporarily not monitored the parameter, has either i) a deviation been approved by the CDM EB or ii) has the parameter been estimated as stipulated by Appendix 1 to the CDM Project Standard?	Not Applicable
Findings	CAR #1 was raised and resolved.	
Conclusion	The parameter has been monitored appropriately in accordance with the registered monitoring plan/01/ and applied methodology/09/. The monitored data was recorded consistently as per the approved frequency in monitoring plan/01/. Since 100% data has been monitored and verified, the verification team can ascertain that the values used for calculation of emission reduction are free from material errors. Implementation of the project is as per the registered monitoring plan/01/.	

Parameter: Quantity of Rice Husk on dry basis ($BR_{PJ,n,y}$)

Means of verification	

Criteria/Requirements	Assessment/Observation
Measuring /Reading /Recording frequency	The entire Rice Husk will be measured at the entrance using dedicated weight bridges. The external biomass residues was measured using dedicated weight-bridges. Dry weight of all biomass residues will be subsequently determined using the biomass moisture content of the corresponding biomass type in reputed laboratory.
Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes. The reporting frequency is in line with the monitoring plan as outlined in the registered PD/01/ and monitoring methodology/09/.
Monitoring equipment	Weighbridge S/N 0610002 The weight meter is electronic with accuracy between 0.25% - 1.0%.
Is accuracy of the monitoring equipment as stated in the monitoring plan? If the monitoring plan does not specify the accuracy of the monitoring equipment, does the accuracy of the monitoring equipment comply with local/national standards, or as per the manufacturer's specification?	The weighbridge is designed to measure up-to 60 ton of weight, which is adequate for measurement of weight of biomass along with the vehicle weight. The accuracy of the weighbridge is appropriate and regularly calibrated by the Weigh and measures department, Government of Punjab.
Calibration frequency /interval:	The weighbridge is calibrated annually /20/.
Is the calibration interval in line with the monitoring plan and/or methodology? If the monitoring plan does not specify the frequency of calibration, is the	Yes

<table>
<tr><td>selected frequency in accordance with the local/national standards, pending untill the findings are closed or as per the manufacturer's specifications?</td><td></td></tr>
<tr><td>Is the calibration of measuring equipment carried out by an accredited person or institution?</td><td>Yes</td></tr>
<tr><td>Is(are) calibration(s) valid for the whole reporting period?</td><td>Yes
<table><tr><th colspan="2">Weighbridge meter details during monitoring period</th></tr><tr><th>Calibration date</th><th>Calibration due date</th></tr><tr><td>24/05/2017</td><td>24/05/2018</td></tr><tr><td>24/05/2018</td><td>24/05/2019</td></tr><tr><td>20/05/2019</td><td>20/05/2020</td></tr><tr><td>20/05/2020</td><td>20/05/2021</td></tr></table>
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<tr><td>How were the values in the monitoring report verified?</td><td>The verified value of total rice husk on dry basis are:
15/09/2017 to 31/12/2017: 44,406 tonnes
01/01/2018 to 31/12/2018: 187,039 tonnes
01/01/2019 to 31/12/2019: 194,685 tonnes
01/01/2020 to 31/12/2020: 193,127 tonnes
Total – 619,257 tonnes of dry rice husk
The quantity and the moisture of each biomass truck are recorded in the daily logbooks/08/. The logbook entries were checked to verify the figures and found acceptable.</td></tr>
<tr><td>If applicable, has the reported data been cross-checked with other available data?</td><td>Yes. The reported data has been cross-checked with the documentary evidence provided by project proponent.</td></tr>
<tr><td>Does the data management ensure correct transfer of data and reporting of emission reductions</td><td>Yes, the data ensure correct transfer of data and reporting of emission reductions management. QA/QC processes are in place.</td></tr>
</table>

	and are necessary QA/QC processes in place?	
	In case project participants have temporarily not monitored the parameter, has either i) a deviation been approved by the CDM EB or ii) has the parameter been estimated as stipulated by Appendix 1 to the CDM Project Standard?	Not Applicable
Findings	CAR #1 was raised and resolved.	
Conclusion	The parameter has been monitored appropriately in accordance with the registered monitoring plan/01/ and applied methodology/09/. The monitored data was recorded consistently as per the approved frequency in monitoring plan/01/. Since 100% data has been monitored and verified, the verification team can ascertain that the values used for calculation of emission reduction are free from material errors. Implementation of the project is as per the registered monitoring plan/01/.	

Parameter: Quantity of biomass residue of category n used in the project activity in year y for which baseline scenario is B4(tonne on dry basis) ($BR_{B4,n,y}$)

Means of verification		
	Criteria/Requirements	**Assessment/Observation**
	Measuring /Reading /Recording frequency	Quantity of biomass residue of category n used in the project activity in year y for which baseline scenario is B4(tonne on dry basis)
	Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes. The reporting frequency is in line with the monitoring plan as outlined in the registered PD/01/ and monitoring methodology/09/.
	Monitoring equipment	Not applicable in this case.

		Is accuracy of the monitoring equipment as stated in the monitoring plan? If the monitoring plan does not specify the accuracy of the monitoring equipment, does the accuracy of the monitoring equipment comply with local/national standards, or as per the manufacturer's specification?	Not applicable in this case. .
		Calibration frequency /interval:	Not applicable in this case.
		Is the calibration interval in line with the monitoring plan and/or methodology? If the monitoring plan does not specify the frequency of calibration, is the selected frequency in accordance with the local/national standards, pending untill the findings are closed or as per the manufacturer's specifications?	Not applicable in this case.
		Is the calibration of measuring equipment carried out by an accredited person or institution?	Not applicable in this case.
		Is(are) calibration(s) valid for the whole reporting period?	Not applicable in this case.

	How were the values in the monitoring report verified?	$BR_{B4,n,y}$ = 194,685 tonnes on dry basis during monitoring period.
	If applicable, has the reported data been cross-checked with other available data?	Yes. The reported data has been cross-checked with the documentary evidence provided by project proponent.
	Does the data management ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	Yes, the data ensure correct transfer of data and reporting of emission reductions management. QA/QC processes are in place.
	In case project participants have temporarily not monitored the parameter, has either i) a deviation been approved by the CDM EB or ii) has the parameter been estimated as stipulated by Appendix 1 to the CDM Project Standard?	Not Applicable
Findings	CAR #1 was raised and resolved.	
Conclusion	The parameter has been monitored appropriately in accordance with the registered monitoring plan/01/ and applied methodology/09/. The monitored data was recorded consistently as per the approved frequency in monitoring plan/01/. Since 100% data has been monitored and verified, the verification team can ascertain that the values used for calculation of emission reduction are free from material errors. Implementation of the project is as per the registered monitoring plan/01/.	

Parameter: Gross quantity of electricity generated by the power plants at the project facility included in the project boundary ($EL_{PJ,gross,y}$)

Means of verification	

Criteria/Requirements	Assessment/Observation
Measuring /Reading /Recording frequency	The measurement of quantity of electricity is performed on continuous basis
Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes. The reporting frequency is in line with the monitoring plan as outlined in the registered PD/01/ and monitoring methodology/09/.
Monitoring equipment	Turbine#TG1: • S/N: 126221/25231 • Make: Conzerv Turbine#TG2: • S/N: 72074/8373 • Make: Conzerv Turbine#TG4: • S/N: 34121430685 • Make: Schneider Turbine#TG5: • S/N: MC 7351/3/2/17 • Make: Mehru
Is accuracy of the monitoring equipment as stated in the monitoring plan? If the monitoring plan does not specify the accuracy of the monitoring equipment, does the accuracy of the monitoring equipment comply with local/national standards, or as per the manufacturer's specification?	All the electricity meters are of accuracy class +/- 1% & 2 % which is acceptable as per the monitoring plan and national regulations.
Calibration frequency /interval:	The metering system will be calibrated according to CEA regulations which specifies Electricity meters to be calibrated once in 5 years.

<table>
<tr><td></td><td></td><td></td><td>The calibration agency – Indiana Pvt. Ltd., which is NABL accredited lab.</td></tr>
<tr><td></td><td></td><td>Is the calibration interval in line with the monitoring plan and/or methodology? If the monitoring plan does not specify the frequency of calibration, is the selected frequency in accordance with the local/national standards, pending untill the findings are closed or as per the manufacturer's specifications?</td><td>Yes

<table>
<tr><th>Turbine No</th><th>Sr. No</th><th>Calibration date</th><th>Calibration due date</th></tr>
<tr><td>TG 1</td><td>126221/25231</td><td>20/01/2016</td><td>19/01/2021</td></tr>
<tr><td>TG 2</td><td>72074/8373</td><td>20/01/2016</td><td>19/01/2021</td></tr>
<tr><td>TG 4</td><td>34121430685</td><td>20/01/2016</td><td>19/01/2021</td></tr>
<tr><td>TG 5</td><td>MC 7351/3/2/17</td><td>22/12/2020</td><td>21/12/2025</td></tr>
</table></td></tr>
<tr><td></td><td></td><td>Is the calibration of measuring equipment carried out by an accredited person or institution?</td><td>Yes</td></tr>
<tr><td></td><td></td><td>Is(are) calibration(s) valid for the whole reporting period?</td><td>Yes</td></tr>
<tr><td></td><td></td><td>How were the values in the monitoring report verified?</td><td>15/09/2017 to 31/12/2017: 36,661 MWh
01/01/2018 to 31/12/2018: 151,385 MWh
01/01/2019 to 31/12/2019: 167,595 MWh
01/01/2020 to 31/12/2020: 156,466 MWh
Total – 512,107 MWh</td></tr>
<tr><td></td><td></td><td>If applicable, has the reported data been cross-checked with other available data?</td><td>The reported data has been cross-checked with the invoices issued to the PP.</td></tr>
</table>

	Does the data management ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	The daily initial and final reading of each energy meter is reported in the daily logbook /07/, /08/. All the energy meters are equipped with totalizer to enable continuous measurement of electricity. The gross generation from each turbine was verified from the logbooks /07/, /08/.
	In case project participants have temporarily not monitored the parameter, has either i) a deviation been approved by the CDM EB or ii) has the parameter been estimated as stipulated by Appendix 1 to the CDM Project Standard?	Not Applicable
Findings	CAR #1 & #3 was raised and resolved.	
Conclusion	The parameter has been monitored appropriately in accordance with the registered monitoring plan/01/ and applied methodology/09/. The monitored data was recorded consistently as per the approved frequency in monitoring plan/01/. Since 100% data has been monitored and verified, the verification team can ascertain that the values used for calculation of emission reduction are free from material errors. Implementation of the project is as per the registered monitoring plan/01/.	

Parameters: Total auxiliary electricity consumption of power plants at the facility, ($EL_{PJ,aux,y}$)

Means of verification	**Criteria/Requirements**	**Assessment/Observation**
	Measuring /Reading /Recording frequency	The measurement of quantity of electricity is performed on continuous basis.
	Is measuring and reporting frequency in accordance with the monitoring plan and	Yes. The reporting frequency is in line with the monitoring plan as outlined in the registered PD/01/ and monitoring methodology/09/.

<table>
<tr><td></td><td>monitoring methodology? (Yes / No)</td><td></td></tr>
<tr><td></td><td>Monitoring equipment</td><td>Turbine#TG1 Energy Meter:
• S/N: 110255/19607
• Make: Conzerv
Turbine#TG2 Energy Meter:
• S/N: 156228/32602-3008,
• Make: Conzerv
Turbine#TG4 Energy Meter:
• S/N: 213447/18720-2311,
• Make: Schneider
Turbine#TG5 Energy Meter:
• S/N: PBB50238
• Make: Secure</td></tr>
<tr><td></td><td>Is accuracy of the monitoring equipment as stated in the monitoring plan? If the monitoring plan does not specify the accuracy of the monitoring equipment, does the accuracy of the monitoring equipment comply with local/national standards, or as per the manufacturer's specification?</td><td>All the electricity meters are of accuracy class +/- 1% & 2 % which is acceptable as per the monitoring plan and national regulations.</td></tr>
<tr><td></td><td>Calibration frequency /interval:</td><td>The metering system will be calibrated according to CEA regulations which specifies Electricity meters to be calibrated once in 5 years.
The calibration agency – Indiana Pvt. Ltd., which is NABL accredited lab.</td></tr>
<tr><td></td><td>Is the calibration interval in line with the monitoring plan and/or methodology? If the monitoring plan does not specify the frequency of calibration, is the selected frequency in accordance with the</td><td>Yes
<table>
<tr><th>Turbine No</th><th>Sr. No</th><th>Calibration date</th><th>Calibration due date</th></tr>
<tr><td>TG 1</td><td>110255/19607</td><td>20/01/2016</td><td>19/01/2021</td></tr>
<tr><td>TG 2</td><td>156228/32602-3008</td><td>20/01/2016</td><td>19/01/2021</td></tr>
<tr><td>TG 4</td><td>213447/18720-2311</td><td>20/01/2016</td><td>19/01/2021</td></tr>
<tr><td>TG 5</td><td>PBB50238</td><td>22/12/2020</td><td>21/12/2025</td></tr>
</table></td></tr>
</table>

	local/national standards, pending untill the findings are closed or as per the manufacturer's specifications?	
	Is the calibration of measuring equipment carried out by an accredited person or institution?	Yes
	Is(are) calibration(s) valid for the whole reporting period?	Yes
	How were the values in the monitoring report verified?	15/09/2017 to 31/12/2017: 3,666 MWh 01/01/2018 to 31/12/2018: 15,138 MWh 01/01/2019 to 31/12/2019: 16,759 MWh 01/01/2020 to 31/12/2020: 15,647 MWh Total – 51,211 MWh
	If applicable, has the reported data been cross-checked with other available data?	Yes. The reported data has been cross-checked with the documentary evidence provided by PP.
	Does the data management ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	The daily initial and final reading of each energy meter is reported in the daily logbook /07/. The auxiliary consumption of each turbine was verified from the logbooks /07/.
	In case project participants have temporarily not monitored the parameter, has either i) a deviation been approved by the CDM EB or ii) has the parameter been estimated as stipulated by Appendix	Not Applicable

	1 to the CDM Project Standard?	
Findings	CAR #1 & 3 was raised and resolved.	
Conclusion	The parameter has been monitored appropriately in accordance with the registered monitoring plan/01/ and applied methodology/09/. The monitored data was recorded consistently as per the approved frequency in monitoring plan/01/. Since 100% data has been monitored and verified, the verification team can ascertain that the values used for calculation of emission reduction are free from material errors. Implementation of the project is as per the registered monitoring plan/01/.	

Parameters: Net calorific value of biomass residue ($NCV_{BR,n,y}$)

Means of verification	**Criteria/Requirements**	**Assessment/Observation**
	Measuring /Reading /Recording frequency	Rice Husk is the only fuel used during the monitoring period.
	Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes. The reporting frequency is in line with the monitoring plan as outlined in the registered PD/01/ and monitoring methodology/09/.
	Monitoring equipment	Third Party Testing
	Is accuracy of the monitoring equipment as stated in the monitoring plan? If the monitoring plan does not specify the accuracy of the monitoring equipment, does the accuracy of the monitoring equipment comply with local/national standards, or as per the manufacturer's specification?	No Calibration Required.

	Calibration frequency /interval:	No Calibration Required.
	Is the calibration interval in line with the monitoring plan and/or methodology? If the monitoring plan does not specify the frequency of calibration, is the selected frequency in accordance with the local/national standards, pending untill the findings are closed or as per the manufacturer's specifications?	No Calibration Required.
	Is the calibration of measuring equipment carried out by an accredited person or institution?	Not Applicable
	Is(are) calibration(s) valid for the whole reporting period?	Not Applicable
	How were the values in the monitoring report verified?	15/09/2017 to 31/12/2017: 15.71 GJ/ton-dry matter 01/01/2018 to 31/12/2018: 17.1 GJ/ton-dry matter 01/01/2019 to 31/12/2019: 19.06 GJ/ton-dry matter 01/01/2020 to 31/12/2020: 17.72 GJ/ton-dry matter The third party NCV reports /08/ were reviewed to verify the reported values and were found to be consistent
	If applicable, has the reported data been cross-checked with other available data?	Yes
	Does the data management ensure correct transfer of data and reporting of emission reductions	Yes

	and are necessary QA/QC processes in place?	
	In case project participants have temporarily not monitored the parameter, has either i) a deviation been approved by the CDM EB or ii) has the parameter been estimated as stipulated by Appendix 1 to the CDM Project Standard?	Not Applicable
Findings	CAR #2 was raised and resolved.	
Conclusion	The parameter has been monitored appropriately in accordance with the registered monitoring plan/01/ and applied methodology/09/. The monitored data was recorded consistently as per the approved frequency in monitoring plan/01/. Since 100% data has been monitored and verified, the verification team can ascertain that the values used for calculation of emission reduction are free from material errors. Implementation of the project is as per the registered monitoring plan/01/.	

Parameters:

$h_{LOW,y}$ = 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)

Means of verification		
	Criteria/Requirements	**Assessment/Observation**
	Measuring /Reading /Recording frequency	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.
	Is measuring and reporting frequency in accordance with the	Yes. The reporting frequency is in line with the monitoring plan as outlined in the registered PD/01/ and monitoring methodology/09/.

	monitoring plan and monitoring methodology? (Yes / No)	
	Monitoring equipment	Determined ex-ante according to project configuration.
	Is accuracy of the monitoring equipment as stated in the monitoring plan? If the monitoring plan does not specify the accuracy of the monitoring equipment, does the accuracy of the monitoring equipment comply with local/national standards, or as per the manufacturer's specification?	No Calibration Required.
	Calibration frequency /interval:	No Calibration Required.
	Is the calibration interval in line with the monitoring plan and/or methodology? If the monitoring plan does not specify the frequency of calibration, is the selected frequency in accordance with the local/national standards, pending untill the findings are closed or as per the manufacturer's specifications?	No Calibration Required.
	Is the calibration of measuring equipment carried out by an accredited person or institution?	Not Applicable

	Is(are) calibration(s) valid for the whole reporting period?	Not Applicable
	How were the values in the monitoring report verified?	$h_{LOW,y}$ = 3.22 (GJ/Year) $h_{MEDIUM,y}$ = 3.39 (GJ/Year)
	If applicable, has the reported data been cross-checked with other available data?	Yes
	Does the data management ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	Yes
	In case project participants have temporarily not monitored the parameter, has either i) a deviation been approved by the CDM EB or ii) has the parameter been estimated as stipulated by Appendix 1 to the CDM Project Standard?	Not Applicable
Findings	No findings	
Conclusion	The parameter has been monitored appropriately in accordance with the registered monitoring plan/01/ and applied methodology/09/. The monitored data was recorded consistently as per the approved frequency in monitoring plan/01/. Since 100% data has been monitored and verified, the verification team can ascertain that the values used for calculation of emission reduction are free from material errors. Implementation of the project is as per the registered monitoring plan/01/.	

Parameters: Moisture content of the biomass residue (%)

Means of verification	Criteria/Requirements	Assessment/Observation
	Measuring /Reading /Recording frequency	The measurement of moisture content in rice husk is performed On-site. It is measured and recorded for each batch of biomass within the facility in the local lab
	Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes. The reporting frequency is in line with the monitoring plan as outlined in the registered PD/01/ and monitoring methodology/09/.
	Monitoring equipment	On Site Measurement
	Is accuracy of the monitoring equipment as stated in the monitoring plan? If the monitoring plan does not specify the accuracy of the monitoring equipment, does the accuracy of the monitoring equipment comply with local/national standards, or as per the manufacturer's specification?	No Calibration Required.
	Calibration frequency /interval:	No Calibration Required.
	Is the calibration interval in line with the monitoring plan and/or methodology? If the monitoring plan does not specify the frequency of calibration, is the selected frequency in	No Calibration Required.

	accordance with the local/national standards, pending untill the findings are closed or as per the manufacturer's specifications?	
	Is the calibration of measuring equipment carried out by an accredited person or institution?	Not applicable
	Is(are) calibration(s) valid for the whole reporting period?	Not applicable
	How were the values in the monitoring report verified?	15/09/2017 to 31/12/2017: 10.85 % 01/01/2018 to 31/12/2018: 9.69 % 01/01/2019 to 31/12/2019: 11.27 % 01/01/2020 to 31/12/2020: 13.77 % The quantity and the moisture of each biomass truck is recorded in the daily logbooks /08/. The logbook /14/ entries were checked to verify the figures and found acceptable
	If applicable, has the reported data been cross-checked with other available data?	Yes
	Does the data management ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	
	In case project participants have temporarily not monitored the parameter, has either i) a deviation been	Not Applicable

	approved by the CDM EB or ii) has the parameter been estimated as stipulated by Appendix 1 to the CDM Project Standard?	
Findings	CAR #1 was raised and resolved.	
Conclusion	The parameter has been monitored appropriately in accordance with the registered monitoring plan/01/ and applied methodology/09/. The monitored data was recorded consistently as per the approved frequency in monitoring plan/01/. Since 100% data has been monitored and verified, the verification team can ascertain that the values used for calculation of emission reduction are free from material errors. Implementation of the project is as per the registered monitoring plan/01/.	

Parameter: - Length of the Operational Campaign, LOC_y

Means of verification		
	Criteria/Requirements	**Assessment/Observation**
	Measuring /Reading /Recording frequency	The measurement of operational period is performed on continuous basis.
	Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes. The reporting frequency is in line with the monitoring plan as outlined in the registered PD/01/ and monitoring methodology/09/.
	Monitoring equipment	Plant Records
	Is accuracy of the monitoring equipment as stated in the monitoring plan? If the monitoring plan does not specify the accuracy of the monitoring equipment, does the accuracy of the monitoring equipment comply with local/national	The plant records are maintained manually and hence no accuracy class is defined.

		standards, or as per the manufacturer's specification?	
		Calibration frequency /interval:	Not applicable
		Is the calibration interval in line with the monitoring plan and/or methodology? If the monitoring plan does not specify the frequency of calibration, is the selected frequency in accordance with the local/national standards, pending untill the findings are closed or as per the manufacturer's specifications?	Not applicable
		Is the calibration of measuring equipment carried out by an accredited person or institution?	Not applicable
		Is(are) calibration(s) valid for the whole reporting period?	Not applicable
		How were the values in the monitoring report verified?	The reported values for the parameter were: 15/09/2017 to 31/12/2017: 5,532 hrs 01/01/2018 to 31/12/2018: 25,194 hrs 01/01/2019 to 31/12/2019: 25,837 hrs 01/01/2020 to 31/12/2020: 24,251 hrs Total – 80,814 hrs The reported values were verified from the plant records which are initially recorded in daily logbooks /07/ and later transferred to excel sheets.

	If applicable, has the reported data been cross-checked with other available data?	The reported data has been cross-checked with the invoices issued to the PP.
	Does the data management ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	The length of the operational campaign is also crosschecked with the operation period of the individual machine. The posting of data is reviewed by the DGM (Electrical). Therefore, robustness of the reported data is ensured.
	In case project participants have temporarily not monitored the parameter, has either i) a deviation been approved by the CDM EB or ii) has the parameter been estimated as stipulated by Appendix 1 to the CDM Project Standard?	Not Applicable
Findings	CAR #1 was raised and resolved.	
Conclusion	The parameter has been monitored appropriately in accordance with the registered monitoring plan/01/ and applied methodology/09/. The monitored data was recorded consistently as per the approved frequency in monitoring plan/01/. Since 100% data has been monitored and verified, the verification team can ascertain that the values used for calculation of emission reduction are free from material errors. Implementation of the project is as per the registered monitoring plan/01/.	

Parameters: - Quantity of diesel combusted in plant, ($FC_{i,j,y}$)

Means of verification		
	Criteria/Requirements	**Assessment/Observation**
	Measuring /Reading /Recording frequency	The measurement of diesel quantity is performed on continuous basis.
	Is measuring and reporting frequency in accordance with the monitoring plan and	Yes. The reporting frequency is in line with the monitoring plan as outlined in the registered PD/01/ and monitoring methodology/09/.

	monitoring methodology? (Yes / No)	
	Monitoring equipment	
	Is accuracy of the monitoring equipment as stated in the monitoring plan? If the monitoring plan does not specify the accuracy of the monitoring equipment, does the accuracy of the monitoring equipment comply with local/national standards, or as per the manufacturer's specification?	Not applicable
	Calibration frequency /interval:	Not applicable
	Is the calibration interval in line with the monitoring plan and/or methodology? If the monitoring plan does not specify the frequency of calibration, is the selected frequency in accordance with the local/national standards, pending untill the findings are closed or as per the manufacturer's specifications?	Not applicable
	Is the calibration of measuring equipment carried out by an accredited person or institution?	Not applicable

	Is(are) calibration(s) valid for the whole reporting period?	Not applicable
	How were the values in the monitoring report verified?	No crosscheck is applied since there was no diesel consumption as verified from logbook. /08/
	If applicable, has the reported data been cross-checked with other available data?	Not applicable
	Does the data management ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	Not applicable
	In case project participants have temporarily not monitored the parameter, has either i) a deviation been approved by the CDM EB or ii) has the parameter been estimated as stipulated by Appendix 1 to the CDM Project Standard?	Not Applicable
Findings	CAR #1 was raised and resolved.	
Conclusion	The parameter has been monitored appropriately in accordance with the registered monitoring plan/01/ and applied methodology/09/. The monitored data was recorded consistently as per the approved frequency in monitoring plan/01/. Since 100% data has been monitored and verified, the verification team can ascertain that the values used for calculation of emission reduction are free from material errors. Implementation of the project is as per the registered monitoring plan/01/.	

Parameters: - Quantity of diesel combusted in plant, ($FC_{i,j,y}$)

Means of verification	Criteria/Requirements	Assessment/Observation
	Measuring /Reading /Recording frequency	The measurement of diesel quantity is performed on continuous basis.
	Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes. The reporting frequency is in line with the monitoring plan as outlined in the registered PD/01/ and monitoring methodology/09/.
	Monitoring equipment	
	Is accuracy of the monitoring equipment as stated in the monitoring plan? If the monitoring plan does not specify the accuracy of the monitoring equipment, does the accuracy of the monitoring equipment comply with local/national standards, or as per the manufacturer's specification?	Not applicable
	Calibration frequency /interval:	Not applicable
	Is the calibration interval in line with the monitoring plan and/or methodology? If the monitoring plan does not specify the frequency of calibration, is the selected frequency in accordance with the local/national	Not applicable

	standards, pending untill the findings are closed or as per the manufacturer's specifications?	
	Is the calibration of measuring equipment carried out by an accredited person or institution?	Not applicable
	Is(are) calibration(s) valid for the whole reporting period?	Not applicable
	How were the values in the monitoring report verified?	No crosscheck is applied since there was no diesel consumption as verified from logbook. /08/
	If applicable, has the reported data been cross-checked with other available data?	Not applicable
	Does the data management ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	Not applicable
	In case project participants have temporarily not monitored the parameter, has either i) a deviation been approved by the CDM EB or ii) has the parameter been estimated as stipulated by Appendix 1 to the CDM Project Standard?	Not Applicable

Findings	CAR #1 was raised and resolved.
Conclusion	The parameter has been monitored appropriately in accordance with the registered monitoring plan/01/ and applied methodology/09/. The monitored data was recorded consistently as per the approved frequency in monitoring plan/01/. Since 100% data has been monitored and verified, the verification team can ascertain that the values used for calculation of emission reduction are free from material errors. Implementation of the project is as per the registered monitoring plan/01/.

Parameter: - Weighted average net calorific value of fuel type , $NCV_{i,y}$

Means of verification

Criteria/Requirements	Assessment/Observation
Measuring /Reading /Recording frequency	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 2006/2019 IPCC Guidelines on National GHG Inventories.
Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes. The reporting frequency is in line with the monitoring plan as outlined in the registered PD/01/ and monitoring methodology/09/.
Monitoring equipment	IPCC (2019) default values
Is accuracy of the monitoring equipment as stated in the monitoring plan? If the monitoring plan does not specify the accuracy of the monitoring equipment, does the accuracy of the monitoring equipment comply with local/national standards, or as per the manufacturer's specification?	Not applicable
Calibration frequency /interval:	Not applicable

		Is the calibration interval in line with the monitoring plan and/or methodology? If the monitoring plan does not specify the frequency of calibration, is the selected frequency in accordance with the local/national standards, pending untill the findings are closed or as per the manufacturer's specifications?	Not applicable
		Is the calibration of measuring equipment carried out by an accredited person or institution?	Not applicable
		Is(are) calibration(s) valid for the whole reporting period?	Not applicable
		How were the values in the monitoring report verified?	Diesel: 43.3 GJ/ton
		If applicable, has the reported data been cross-checked with other available data?	Not Applicable
		Does the data management ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	Not Applicable

	In case project participants have temporarily not monitored the parameter, has either i) a deviation been approved by the CDM EB or ii) has the parameter been estimated as stipulated by Appendix 1 to the CDM Project Standard?	Not Applicable
Findings	No findings	
Conclusion	The parameter has been monitored appropriately in accordance with the registered monitoring plan/01/ and applied methodology/09/. The monitored data was recorded consistently as per the approved frequency in monitoring plan/01/. Since 100% data has been monitored and verified, the verification team can ascertain that the values used for calculation of emission reduction are free from material errors. Implementation of the project is as per the registered monitoring plan/01/.	

Parameter: - Weighted average CO_2 emission factor of fuel type I in year y ($EF_{CO2,I}$)

Means of verification		
	Criteria/Requirements	**Assessment/Observation**
	Measuring /Reading /Recording frequency	The parameter is monitored from the source website at least once during monitoring period for any revision in the IPCC guideline regarding the value or application of default CO_2 emission factor (diesel).
	Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes. The reporting frequency is in line with the monitoring plan as outlined in the registered PD/01/ and monitoring methodology/09/.
	Monitoring equipment	Manual Review of the IPCC Website.
	Is accuracy of the monitoring equipment as stated in the monitoring plan? If the monitoring plan does not specify the accuracy	Not applicable

	of the monitoring equipment, does the accuracy of the monitoring equipment comply with local/national standards, or as per the manufacturer's specification?	
	Calibration frequency /interval:	Not applicable
	Is the calibration interval in line with the monitoring plan and/or methodology? If the monitoring plan does not specify the frequency of calibration, is the selected frequency in accordance with the local/national standards, pending untill the findings are closed or as per the manufacturer's specifications?	Not applicable
	Is the calibration of measuring equipment carried out by an accredited person or institution?	Not applicable
	Is(are) calibration(s) valid for the whole reporting period?	Not applicable
	How were the values in the monitoring report verified?	0.0748 tCO2/GJ The review of source website was conducted by the verification team, and it was confirmed that there is no revision of guidelines by the IPCC for the value and application of default CO_2e emission factor (diesel).
	If applicable, has the reported data been	No crosscheck was required, as the IPCC data is considered authentic.

	cross-checked with other available data?	
	Does the data management ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	Not Applicable
	In case project participants have temporarily not monitored the parameter, has either i) a deviation been approved by the CDM EB or ii) has the parameter been estimated as stipulated by Appendix 1 to the CDM Project Standard?	Not Applicable
Findings	No findings	
Conclusion	The parameter has been monitored appropriately in accordance with the registered monitoring plan/01/ and applied methodology/09/. The monitored data was recorded consistently as per the approved frequency in monitoring plan/01/. Since 100% data has been monitored and verified, the verification team can ascertain that the values used for calculation of emission reduction are free from material errors. Implementation of the project is as per the registered monitoring plan/01/.	

Parameter: - Return Distance between the origin and destination of freight transportation activity f in monitoring period m ($D_{f,m}$)

Means of verification

Criteria/Requirements	Assessment/Observation
Measuring /Reading /Recording frequency	The parameter is monitored for each batch of biomass procurement of requesting a declaration from the biomass suppliers that they will provide biomass from the source located within the distance of 30 km from the project facility.
Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes. The reporting frequency is in line with the monitoring plan as outlined in the registered PD/01/ and monitoring methodology/09/.
Monitoring equipment	No monitoring equipment is used for this parameter.
Is accuracy of the monitoring equipment as stated in the monitoring plan? If the monitoring plan does not specify the accuracy of the monitoring equipment, does the accuracy of the monitoring equipment comply with local/national standards, or as per the manufacturer's specification?	No monitoring equipment is used for this parameter.
Calibration frequency /interval:	No monitoring equipment is used for this parameter.
Is the calibration interval in line with the monitoring plan and/or methodology? If the monitoring plan does	No monitoring equipment is used for this parameter.

	not specify the frequency of calibration, is the selected frequency in accordance with the local/national standards, pending untill the findings are closed or as per the manufacturer's specifications?	
	Is the calibration of measuring equipment carried out by an accredited person or institution?	Not applicable
	Is(are) calibration(s) valid for the whole reporting period?	Not applicable
	How were the values in the monitoring report verified?	480 KM during current monitoring period.
	If applicable, has the reported data been cross-checked with other available data?	The declaration letter from the biomass (rice husk) suppliers were reviewed by the verification team and found to be authentic /21/.
	Does the data management ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	Yes
	In case project participants have temporarily not monitored the parameter, has either i) a deviation been	Not Applicable

	approved by the CDM EB or ii) has the parameter been estimated as stipulated by Appendix 1 to the CDM Project Standard?	
Findings	CAR #2 was raised and resolved.	
Conclusion	The parameter has been monitored appropriately in accordance with the registered monitoring plan/01/ and applied methodology/09/. The monitored data was recorded consistently as per the approved frequency in monitoring plan/01/. Since 100% data has been monitored and verified, the verification team can ascertain that the values used for calculation of emission reduction are free from material errors. Implementation of the project is as per the registered monitoring plan/01/.	

Parameter: - Total mass of freight transported in freight transportation activity fin monitoring period m ($FR_{f,m}$)

Means of verification		
	Criteria/Requirements	**Assessment/Observation**
	Measuring /Reading /Recording frequency	The parameter is monitored on continuous basis for all freight entering the project facility by means of calibrated weighbridge.
	Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes. The reporting frequency is in line with the monitoring plan as outlined in the registered PD/01/ and monitoring methodology/09/.
	Monitoring equipment	The weighbridge is designed to measure up to 60 ton of weight, which is adequate for measurement of weight of all kind of freight. The accuracy of the weighbridge is appropriate and regularly calibrated by the relevant agency i.e., weight & measures department, Govt. of Punjab /20/.

	Is accuracy of the monitoring equipment as stated in the monitoring plan? If the monitoring plan does not specify the accuracy of the monitoring equipment, does the accuracy of the monitoring equipment comply with local/national standards, or as per the manufacturer's specification?	Yes
	Calibration frequency /interval:	The weighbridge is calibrated annually /20/.
	Is the calibration interval in line with the monitoring plan and/or methodology? If the monitoring plan does not specify the frequency of calibration, is the selected frequency in accordance with the local/national standards, pending untill the findings are closed or as per the manufacturer's specifications?	Yes
	Is the calibration of measuring equipment carried out by an accredited person or institution?	Yes
	Is(are) calibration(s) valid for the whole reporting period?	Yes

	How were the values in the monitoring report verified?	The verified value of total rice husk on dry basis are: 15/09/2017 to 31/12/2017: 44,406 tonnes 01/01/2018 to 31/12/2018: 187,039 tonnes 01/01/2019 to 31/12/2019: 194,685 tonnes 01/01/2020 to 31/12/2020: 193,127 tonnes Total – 619,257 tonnes of dry rice husk The measurement of quantity of goods in each freight truck is done at weighbridge and recorded in the logbooks /08/.
	If applicable, has the reported data been cross-checked with other available data?	Yes, this monitoring parameter is used to crosscheck the procurement of biomass within the project facility. There is no crosscheck performed for this parameter.
	Does the data management ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	Yes
	In case project participants have temporarily not monitored the parameter, has either i) a deviation been approved by the CDM EB or ii) has the parameter been estimated as stipulated by Appendix 1 to the CDM Project Standard?	Not Applicable
Findings	CAR #1 was raised and resolved.	
Conclusion	The parameter has been monitored appropriately in accordance with the registered monitoring plan/01/ and applied methodology/09/. The monitored data was recorded consistently as per the approved frequency in monitoring plan/01/. Since 100% data has been monitored and verified, the verification team can ascertain that the values used for calculation of emission reduction are free from material errors. Implementation of the project is as per the registered monitoring plan/01/.	

Parameters fixed ex ante:

Sr. No	Parameters available at validation	Assessment
1	$EF_{EG,GR,y}$	The emission factors are consistent with Tool to calculate emission factor for an electricity system (Version 7.0). The validated value is 0.9127 tCO_2/MWh as per CO_2 Baseline Database Version 14. The value mentioned in MR is found to be consistent with the registered PD (page 67).
2	$HG_{BR,CG/PO,x,l,j}$	This parameter has been determined as the difference of the enthalpy of the process heat (steam or hot water) generated by the heat generators(s)minus the enthalpy of the feedwater, the boiler blow- down and any condensate return. The validated value is 2,745,503.64 GJ based on the designed conditions. The value mentioned in the MR is found to be consistent with the registered PD (P.64).
3	$HC_{BR,CG/PO,x,i/j}$ ($HC_{BR,CG,x,2}$, $HC_{BR,CG,x,3}$)	For heat engines with a minimum three-year operational history prior to the start date of crediting period (year 2015, 2014 and 2013), the heat- to-power ratio is determined as per the design conditions of the plant, for the configuration identified as baseline scenario. $HC_{BR,CG,1}$ = 606,322 (2015) $HC_{BR,CG,1}$ = 257,900 (2014) $HC_{BR,CG,1}$ = 219,906 (2013) $HC_{BR,CG,2}$ = 489,102 (2015) $HC_{BR,CG,2}$ = 424,397 (2014) $HC_{BR,CG,2}$ = 339,517 (2013) $HC_{BR,CG,3}$ = 1,314,589 (2015) $HC_{BR,CG,3}$ = 1,343,237 (2014) $HC_{BR,CG,3}$ = 1,296,388 (2013) The values reported in MR are found consistent with the registered PD (P.64 & 65).
4	$EL_{BR,CG/PO,x,i/j}$ ($EL_{BR,CG,x2}$, $EL_{BR,CG,x,3}$)	The ex-ante value has been determined for heat engines with a minimum three-year operational history prior to the start date of crediting period (year 2015, 2014 and 2013).

Parameter	Value (MWh)	Year
$EL_{BR,CG,1}$	4,904	2015

		$EL_{BR,CG,1}$ 19,910 2014 $EL_{BR,CG,1}$ 12,563 2013 $EL_{BR,CG,2}$ 17,553 2015 $EL_{BR,CG,2}$ 18,991 2014 $EL_{BR,CG,2}$ 12,245 2013 $EL_{BR,CG,3}$ 68,602 2015 $EL_{BR,CG,3}$ 68,702 2014 $EL_{BR,CG,3}$ 63,932 2013 The values reported in MR are found to be consistent with the registered PD (P.65).
5	$CAP_{HG,h}$	This parameter reflects the design maximum heat generation capacity (in GJ/h) of the baseline heat generation h. The validated value is 821.96 GJ/h. The value mentioned in MR is found consistent with the registered PD (P.66).
6	$CAP_{EG,CG,I}$ ($CAP_{EG,CG,2}$, $CAP_{EG,CG,3}$, $CAP_{EG,CG,1}$)	This parameter is the design maximum electricity generation capacity (in MW) of the baseline heat engines (Turbine 2,3,1). $CAP_{EG,CG,1}$, = 5 $CAP_{EG,CG,2}$, = 5 $CAP_{EG,CG,3}$ = 12.5 The values mentioned in MR and ER calculations sheet are found consistent with the registered PD(P.66).
7	$HPR_{BL,i}$	The values have been calculated according to Step 1.5 of baseline emission calculation of the methodology ACM0006. $HPR_{BL,CG,1}$ = 34.34 (Cogeneration Mode – Turbine 1) $HPR_{BL,CG,2}$ = 7.74 (Cogeneration Mode – Turbine 2) $HPR_{BL,CG,3}$ = 5.63 (Cogeneration Mode – Turbine 3) The values mentioned in MR are found consistent with the registered PD (P.66).
8	$LFC_{EG,CG,I}$, ($LFC_{EG,CG,1}$, $LFC_{EG,CG,2}$, $LFC_{EG,CG,3}$)	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') of the baseline heat engine 2,3 and 1. $LFC_{EG,CG,1}$ = 0.46 $LFC_{EG,CG,2}$ = 0.44 $LFC_{EG,CG,3}$ = 0.64 The values mentioned in MR are found consistent with the registered PD (P.66).

9	$NCV_{BR,n,x}$	Value of this parameter was determined as 14.80 GJ/tonnes on dry basis (Rice Husk). This parameter measured.at regular interval from an authorized lab (Shriram institute for Industrial Research lab).
10	Biomass categories and quantities used for the selection of the baseline scenario selection and assessment of additionality	This parameter was determined based on the on-site assessment of biomass residues categories and quantities according to project characteristics. The category of biomass available through retailers for the project activity was "Rice husk" and the ex-ante value determined as 246,767 tones.

GHG Calculations: -

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:

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

Where:

$EL_{BL,y}$ = Baseline electricity generation in year y (MWh)

$EL_{PJ,gross,y}$ = 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)

$EL_{PJ,imp,y}$ = Project electricity imports from the grid in year y (MWh)

$EL_{PJ,aux,y}$ = Total auxiliary electricity consumption required for the operation of the power plants at the project site in year y (MWh)

y = Year of the crediting period

	$EL_{BL,y}$ Baseline electricity generation in year y (MWh)
2017	33,850
2018	139,864
2019	153,058
2020	142,175
Total	468,947

Determine baseline capacity of electricity generation

The total capacity of electricity generation available in the baseline is to be calculated using the equation below. The heat engines i and j should be obtained from the baseline scenario identified using the "Selection of the baseline scenario and demonstration of additionally" and the load factors should take into account seasonal operational constrain as well as other technical constraints in the system (e.g., availability of heat to drive heat engines).

$$CAP_{EG,total,y} = LOC_y \cdot \left[\sum_i \left(CAP_{EG,CG,i} \cdot LFC_{EG,CG,i} \right) + \sum_j \left(CAP_{EG,PO,j} \cdot LFC_{EG,PO,j} \right) \right]$$

Where,

$CAP_{EG,total,y}$ - Baseline electricity generation capacity in year *y* (MWh)

$CAP_{EG,CG,I}$ - Baseline electricity generation capacity of heat engine *i* (MW)

$CAP_{EG,PO,j}$ - Baseline electricity generation capacity of heat engine *j* (MW)

$LFC_{EG,CG,I}$ - Baseline load factor of heat engine *i* (ratio)

$LFC_{EG,PO,j}$ - Baseline load factor of heat engine *j* (ratio)

LOCy - Length of the operational campaign in year *y* (hour)

I - Cogeneration-type heat engine in the baseline scenario

J - Power-only-type heat engine in the baseline scenario

Y - Year of the crediting period

	$CAP_{EG,total,y}$ - Baseline electricity generation capacity in year *y* (MWh)
2017	20,186
2018	85,764
2019	88,443
2020	82,399
Total	276,792

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	$BR_{B4,n,y}$ (Tones)
15-Sep-17 : 31-Dec-17	44,406
01-Jan-18 : 31-Dec-18	187,039
01-Jan-19 : 31-Dec-19	194,685
01-Jan-20 : 31-Dec-20	193,127

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.

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, $EF_{EG,FF,y} = EF_{EG,GR,y}$.

Determination of the emission factor of grid electricity generation

The value is fixed ex-ante.

$EF_{EG,GR,y}$ = 0.9127 tCO_2/MWh

Kindly refer to registered PD for detailed calculation.

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 assumes 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:

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

Year	$EL_{BL,GR,y}$ = Baseline minimum electricity generation in the grid in year y (MWh)
2017	13,665
2018	54,100
2019	64,615
2020	59,775
Total	192,155

Baseline emissions during monitoring period

$$BE_y = EL_{BL,GR,y} \cdot EF_{EG,GR,y} + EL_{BL,FF/GR,y} \cdot \min(EF_{EG,GR,y}, EF_{EG,FF,y})$$

Where,

$EL_{BL,GR,y}$ - Baseline minimum electricity generation in the grid in year *y* (MWh)

$EL_{BL,y}$ - Baseline electricity generation in year *y* (MWh)

$CAP_{EG,total,y}$ - Baseline electricity generation capacity in year *y* (MWh)

Y - Year of the crediting period

Year	Total Baseline Emissions (tCO_2)
2017	12,472
2018	49,377
2019	58,974
2020	54,557
Total	175,380

Project Emissions: -

The following equation is used to calculate the total project emissions of the project for the purpose of determining GHG emissions of the project activity, project participant include the following emissions sources:

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

Where:

PE_y = Project emission in year y (tCO2e)

$PE_{FF,y}$ = Emissions during the year y due to fossil fuel consumption at the project site (tCO2e)

$PE_{GR1,y}$ = Emissions during the year y due to grid electricity imports to the project site (tCO2e)

$PE_{GR2,y}$ = Emissions due to a reduction in electricity generation at the project site as compared to the baseline scenario in year y (tCO2e)

$PE_{TR,y}$ = Emissions during the year y due to transport of biomass to the project plant (tCO2e)

$PE_{BR,y}$ = Emissions from the combustion of biomass during the year y (tCO2e)

$PE_{WW,y}$ = Emissions from wastewater generated from the treatment of biomass in year y (tCO2e)

$PE_{BG2,y}$ = Emissions from the production of biogas in year y (tCO2e)

$PE_{BC,y}$ = Project emissions associated with the cultivation of land to produce biomass year y (tCO2e)

Project Emission Calculation	**2017**	**2018**	**2019**	**2020**
Amount of biomass procured from Other Suppliers, ($FR_{F,m}$), MT	44,406	187,039	194,685	193,127
Return Trip Distance (Df,m), KM	120	120	120	120
(EFCO2, f), gCO2/t km (From Tool)	245	245	245	245
$PE_{TR,y}$	1,306	5,499	5,724	5,678
Total Project Emissions (tCO_2e)	**18,206**			

The verification team confirms that appropriate methods and formulae for calculating baseline emissions have been followed. The assumptions, emission factors and default values that were applied in the calculations are justified. The actual emission reduction achieved during the current monitoring period are 16% lower than the estimated amount of emission reductions at the time of validation.

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

1.21 Non-Permanence Risk Analysis

Not applicable for the project activity.

VERIFICATION CONCLUSION

Earthood Services Private Limited (ESPL) contracted by Satia Industries Limited, to perform the independent verification of the emission reductions for the VCS project activity "24.45 MW Biomass based project in Punjab" (VCS ID- 1920) in India for the monitoring period 15/09/2017 – 31/12/2020 as reported in the Monitoring Report Version 03 dated 19/05/2022. The Satia Industries Limited is responsible for the collection of data in accordance with the monitoring plan and the reporting of GHG emissions reductions from the project activity.

It is our responsibility to express an independent verification statement on the reported GHG emission reductions from the project activity. ESPL commenced the verification on the basis of the baseline and monitoring methodology ACM0006 – "Electricity and heat generation from biomass" Version 14.0, the monitoring plan contained in the registered VCS PD Version 02, dated 12/09/2019 and VCS guidelines version 4.1, Monitoring Report Version 03 dated 19/05/2022 as per the process described under Section 2 of this report. ESPL verification approach is based on the understanding of the risks associated with reporting of GHG emission data and the controls in place to mitigate these. ESPL planned and performed the verification by obtaining evidence and other information and explanations that ESPL considered necessary to give reasonable assurance that reported GHG emission reductions are fairly stated.

In our opinion the GHG emissions reductions reported for the project activity for the period 15/09/2017 – 31/12/2020 (both days included) are fairly stated in the Monitoring Report Version 03 dated 19/05/2022. The GHG emission reductions were calculated correctly based on the approved baseline and monitoring methodology ACM0006 – "Electricity and heat generation from biomass" Version 14.0.

Verification period: From 15/09/2017 – 31/12/2020 (including both days)

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

Year	Baseline emissions or removals (tCO_2e)	Project emissions or removals (tCO_2e)	Leakage emissions (tCO_2e)	Net GHG emission reductions or

				removals (tCO_2e)
2017(15-Sept-17 to 31-Dec-17)	12,472	1,306	0	11,166
2018(01-Jan-18 to 31-Dec-18)	49,377	5,499	0	43,878
2019(01-Jan-19 to 31-Dec-19)	58,974	5,724	0	53,250
2020(01-Jan-20 to 31-Dec-20)	54,557	5,678	0	48,879
Total	**175,380**	**18,206**	**0**	**157,174**

Approved by

Dr. Kaviraj Singh

Managing Director

Earthood Services Privated Limited

Date: 06-06-2022

Place: Gurugram, Haryana

APPENDIX 1: DOCUMENT REFERENCES

S. No	Title of Document	Version	Date
1.	VCS PD	Version 2.0	12/09/2019
2.	VCS Validation Report	Version 2.0	14/09/2019
3.	VCS Monitoring Report	Version 1.0	20/07/2021
4.	VCS Monitoring Report (Final)	Version 3.0	19/05/2022
5.	ER spread sheet	Version 1.0	20/07/2021
6.	ER spread sheet (corresponding to the final monitoring report)	Version 2.0	20/11/2021
7.	Invoices Issued by PP	For the period 15/09/2017 to 31/12/2020	-
8.	Plant Records Issued by PP	For the period 15/09/2017 to 31/12/2020	-
9.	Approved Consolidated Methodology ACM0006	Version 14.0	29/11/2018
10.	CEA Database	Version 14.0	December 2018
11.	Commissioning certificate		15/07/2017 22/12/2020
12.	VCS webpage for the project, VCS ID 1920; https://registry.verra.org/app/projectDetail/VCS/1920		
13.	Letter of declaration dated from PP regarding not having created or sought any other form of environmental credit for the same period	-	09/08/2021
14.	VCS Standard	Version 4.1	22/04/2021
15.	VCS Program Guide	Version 4.0	19/09/2019
16.	Latest photographs of equipment's installed at project site	-	-
17.	Grievance register/suggestion box placed at site office		
18.	NOC/Approvals by state pollutions control board		
19	Third party Laboratory report (Indiana) during monitoring period	For the period 15/09/2017 to 31/12/2020	
20	Calibration Certificates during the monitoring period	For the period 15/09/2017 to 31/12/2020	
21	The declaration letter from the biomass (rice husk) suppliers were reviewed by the verification team and found to be authentic.	For the period 15/09/2017 to 31/12/2020	

APPENDIX 2: ABBREVIATIONS

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

VCUs	Voluntary Carbon Units

APPENDIX 3: FINDINGS OVERVIEW

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

FAR ID		**Section no.**	NA	**Date :**DD/MM/YYYY
Description of FAR				
N/A				
Project participant response				**Date :**DD/MM/YYYY
Documentation provided by project participant				
DOE assessment				**Date:** DD/MM/YYYY

Table 2. CL from this verification

CL ID	01	**Section no.**	4.3	**Date : 20/09/2021**
Description of CL				
1. Please submit the commissioning certificate for the project activity. 2. Please submit declaration confirming that the GHG Emission reductions or removals generated by the project activity will not be used for compliance with an emission trading program or to meet binding limits on GHG Emissions.				
Project participant response				**Date :** 25/11/2021
1. The commissioning certificate for the project activity will be submitted along with these submissions. 2. The declaration confirming that the GHG Emission reductions or removals generated by the project activity will not be used for compliance with an emission trading program or to meet binding limits on GHG Emissions is submitted herewith.				
Documentation provided by project participant				
Commissioning certificates No double counting Declaration				
DOE assessment				**Date:** 29/11/2021
1. The PP has submitted the requested documents and found to be satisfactory, hence accepted. 2. The PP has submitted the declaration confirming that the GHG Emission reductions or removals generated by the project activity will not be used for compliance with an emission trading program or to meet binding limits on GHG Emissions, found to be satisfactory, hence accepted. CL # 1 is closed.				

Table 3. CAR from this verification

CAR ID	01	**Section no.**	4.1	**Date : 20/09/2021**
Description of CAR				
Section 3.1 of MR: it is stated that “The project activity has been in operation continuously (with outages – forced & planned) since its commissioning”, however in the same section it is declared that is no major shutdown observed during the current monitoring period in the project activity. Kindly clarify the ambiguity and submit the outage details for the monitoring period. Please submit the records for the biomass (rice husk) consumed during the monitoring parameter and clarify how the moisture content is determined in line with the applied methodology. Please submit the plant records of gross electricity and auxiliary consumption during the current monitoring period.				
Project participant response				**Date :** 25/11/2021

The section 3.1 of MR has been revised & breakdown details/outage details for the current monitoring period has been submitting along with this submission to the assessment team. The records for the biomass (rice husk) consumed during the monitoring period has been submitting along with this submission to the assessment team. The moisture content is measured in line with the applied methodology during the monitoring period. The following method has been described below to monitor the parameters: - The moisture content should be monitored on a random sample basis to ensure homogeneous quality. The weighted average should be calculated for each monitoring period and used in the calculations. Sample to be taken once every month. The Moisture content will be measured locally, in reputed laboratories. The supporting documents for Moisture content are hereby submitting along with this submission. The plant records of gross electricity and auxiliary consumption during the current monitoring period is hereby submitting along with this submission to the assessment team.
Documentation provided by project participant
Outage details/Breakdown details Laboratory reports (Moisture content) Plant records Revised MR Version 2.0
DOE assessment **Date:** 29/11/2021
PP has revised the section 3.1 of MR report & outage/breakdown details during the current monitoring period has been submitted & found ok. The supporting evidence for the below following parameters are submitted & found satisfactory. 1. Records for the biomass (rice husk) 2. Moisture content 3. Gross electricity and auxiliary consumption CAR #1 is closed.

CAR ID	02	**Section no.**	4.4	**Date : 20/09/2021**
Description of CAR				
Please clarify how the NCV of biomass is measured in line with the provisions as outlined under the applied methodology and submit the relevant records. As per the registered return distance between the origin and destination of freight transportation activity f in monitoring period m was estimated as 100km, however the same is reported in the MR as 250km. Also in the MR, it is stated that all the suppliers are within the range of 30 km. The PP is requested to clarify how this parameter is determined and submit the relevant records.				
Project participant response				**Date :** 25/11/2021

The NCV of biomass is measured in line with the applied methodology during the monitoring period. **Cross check mechanism: -** Net calorific values have been measured locally, in reputed laboratories. The NCV is determined based on dry biomass. **Frequency** – at least once in a year The supporting documents for the same has been submitting along with this submission to the assessment team. The parameter (Return Distance between the origin and destination of freight transportation activity f in monitoring period m ($D_{f,m}$)) is monitored for each batch of biomass procurement. The declaration from biomass supplier for biomass procurement from the source located within the distance of 60 km from the project facility is submitting along with this submission to the assessment team. The same has been revised in the monitoring report & hence Revised MR Version 2.0.
Documentation provided by project participant
Laboratory Reports Declaration from Biomass suppliers Revised MR Version 2.0
DOE assessment **Date:** 29/11/2021
PP has submitted the relevant records for NCV biomass & also explained the measured process for the relevant parameter & found ok. PP has provided the declaration from biomass supplier for biomass procurement from the source located within the distance of 60 km from the project facility during the monitoring report has been submitted & revised the monitoring report Version 2.0 & found satisfactory. CAR #2 is closed.

CAR ID	03	**Section no.**	4.5	**Date : 20/09/2021**
Description of CAR				
Please clarify why the calibration details of the equipment's (energy meters, weighbridge) is not reported in the monitoring report. The PP is requested to submit the valid calibration records for all the equipment's used in the project activity.				
Project participant response				**Date :** 25/11/2021
The Calibration details of the equipment's is now reported in the monitoring period. Hence Revised Monitoring report. The valid calibration records for all the equipment's used in the project activity will be submitting along with this submission to the assessment team.				
Documentation provided by project participant				
Calibration certificates during the monitoring period Revised MR Version 2.0 dated 20/10/2021				
DOE assessment				**Date:** 29/11/2021
The PP has reported the calibration details in the revised monitoring period & submitted the calibration records as well & found ok. CAR #3 is closed.				

Table 4. FAR from this verification

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

APPENDIX 4: COMPETENCY STATEMENTS

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

Name	Shreya Garg
Country	India
Education	M.Sc. (Climate Science & Policy), TERI University
Experience	6 Years +
Field	Climate Change
Approved Roles	

Team Leader	YES		
Validator	YES		
Verifier	YES		
Methodology Expert	AMS.I.A., AMS.I.C., AMS.I.D., AMS.I.F., AMS.II.D., AMS.II.G., AMS.II.J., AMS.III.AV., ACM0002, ACM0012		
Local expert	YES (India)		
Financial Expert	NO		
Technical Reviewer	YES		
TA Expert	YES (TA 1.2, TA 3.1)		
Reviewed by	Abhishek Mahawar	**Date**	01/03/2018
Approved by	Ashok Gautam	**Date**	01/03/2018