



**Verification and certification report form for
CDM project activities
(Version 04.0)**

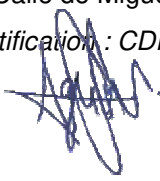
Complete this form in accordance with the instructions attached at the end of this form.

BASIC INFORMATION

Title and UNFCCC reference number of the project activity	Biomass based power plant in Mahendargarh, Haryana UNFCCC Reference number – 9973 ¹		
Scale of the project activity	<input type="checkbox"/> Large-scale <input checked="" type="checkbox"/> Small-scale		
Version number of the verification and certification report	02		
Completion date of the verification and certification report	17/08/2021		
Monitoring period number and duration of this monitoring period	Monitoring period No. : 02 Monitoring period Duration: 01/04/2016 to 31/10/2020 (inclusive of both dates)		
Version number of the monitoring report to which this report applies	02		
Crediting period of the project activity corresponding to this monitoring period	10/07/2014 to 09/07/2024 (inclusive of both dates)		
Project participants	India: M/s Star Wire (India) Vidyut Pvt. Ltd.(SWIVPL) Australia: EKI Energy Services Limited		
Host Party	India		
Applied methodologies and standardized baselines	AMS I.D. "Grid connected renewable electricity generation" version 17.0 ² Standardized Methodology: Not Applicable		
Mandatory sectoral scopes	Sectoral Scope : 01 Energy Industries (Renewable/ Non-Renewable Sources)		
Conditional sectoral scopes, if applicable	NA		
Estimated amount of GHG emission reductions or GHG removals for this monitoring duration in the registered PDD	240,709 tCO ₂ e		
Certified amount of GHG emission reductions or GHG removals for this monitoring period	Amount before 1 January 2013	Amount from 1 January 2013 until 31 December 2020	Amount from 1 January 2021
	0 tCO ₂ e	249,471 tCO ₂ e	0 tCO ₂ e
Name and UNFCCC reference number of the DOE	LGAI Technological Center, S.A. (Applus+ Certification) UNFCCC Ref. No.: E-0032		

¹ <https://cdm.unfccc.int/Projects/DB/SGS-UKL1403254354.2/view>

² https://cdm.unfccc.int/filestorage/V/9/L/V9LRSXKP24Q7YT6HZDUBO3C0ING8AJ.1/EB61_repan17_Revision_AMS-I.D_ver17.pdf?t=b098cXd4cnMzfDD9tVkGJ9F1ikvkY6X1engT

Name, position and signature of the approver of the verification and certification report	<p>Mr. Agustin Calle de Miguel</p> <p><i>Applus+ Certification : CDM Technical Manager</i></p> <p>Signature: </p>
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SECTION A. Executive summary

The project activity was envisaged for the installation of a Greenfield 10³ MW biomass based power plant in village Khurawata of Mahendargarh District in Haryana, India by M/s Star Wire (India) Vidyut Pvt. Ltd. (SWIVPL). The generated power from the project activity will be exported to Indian national grid.

The project activity involves use of biomass, which is a carbon neutral fuel, for the electricity generation thus resulting electricity is a clean electricity which is being fed to national electricity grid and thereby displacing an equivalent amount of electricity which otherwise would have been supplied by fossil fuel dominant grid. The main purpose of the project activity is electricity generation by the mean of clean fuel available in the nearby area like mustard crop residue, Julia Flora and paddy waste. The electricity thus produced is being exported to fossil fuel dominant grid which helps in bridging the GHG emissions reduction of grid mix.

The project activity was commissioned on 03/05/2013 and started to power. The total emission reduction achieved by the project activity during the monitoring period 01/04/2016 to 31/10/2020 (inclusive of both dates) is 249,471 tCO₂e. During the current monitoring period, the plant underwent continued operation, except scheduled maintenance or breakdown.

1. Verification Scope:

The verification scope encompasses an independent and objective review and ex-post determination of the monitored reductions in GHG emissions by the DOE. The verification is based on the submitted monitoring report, the validated and registered PDD, the applied monitoring methodology, relevant decisions, clarifications and guidance from the CMP and the EB and any other information and references relevant to the project activity's resulting emission reductions. These documents are reviewed against the requirements of the Kyoto Protocol, the CDM Modalities and Procedures and related rules and guidance. Based on the requirements in the "CDM validation and verification standard for project activities, Version 02", Applus+ Certification has applied a rule-based approach for the verification of the project. The principles of accuracy, completeness, relevance, reliability and credibility were combined with a conservative approach to establish a traceable and transparent verification opinion. The verification considers both quantitative and qualitative information on emission reductions. The verification is not meant to provide any consultancy towards the client. However, stated requests for clarifications, corrective and/or forward actions may provide input for improvement of the monitoring activities.

2. Methodology:

LGAI Technological Center, S.A. (Applus+ Certification) – Hereinafter referred as Applus+ Certification - approach to the verification is a two-stage process.

In the 1st stage, Applus+ Certification completed a strategic review and risk assessment of the projects activities and processes in order to gain a full understanding of:

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

Applus+ Certification used a Periodical Verification Checklist which, based on the risk-based assessment of the parameters and data collection and handling processes for each of those parameters, describes the verification approach and the sampling plan.

3. Desk Review

³ The consent to establish was also awarded for 10 MW by the State Pollution Control Board (SPCB). However, Haryana Renewable Energy Development Authority (HAREDA) has provided an approval of 9.9 MW based on the assessment of biomass available in the area for the project activity.

In the 2nd stage, using the Verification Checklist, Applus+ Certification verified the implementation of the monitoring plan and the data presented in the Monitoring Report for the period in question. This involved a site visit and a desk review of the Monitoring Report. This Verification Report describes the findings of this assessment.

The Monitoring Report version 01 submitted by the PP was made publicly available on the UNFCCC website before the verification activities started. The published MR was assessed based on all the relevant documents. The aim of the assessment in the desk review was to:

- Verify the completeness of the data and the information presented in the MR;
- Check the compliance of the MR with respect to the monitoring plan depicted in the registered PDD and verify that the applied methodology was carried out. Particular attention to the frequency of measurements, the quality of the metering equipment including calibration requirements, and the quality assurance and quality control procedures was paid;
- Evaluate the data management and the quality assurance and quality control system in the context of their influence on the generation and reporting of emission reductions.

4. Assessment team

According to the sectoral scope / technical area and experience in the sectoral or national business environment, LGAI Technological Center, S.A. (Applus+ Certification) has composed a project assessment team in accordance with the appointment rules in the internal Quality Management System of LGAI Technological Center, S.A. (Applus+ Certification).

The composition of audit team shall be approved by the LGAI Technological Center, S.A. (Applus+ Certification) ensuring that the required skills are covered by the team.

The four qualification levels for team members that are assigned by formal appointment rules are as presented below:

- Lead Auditor (LA).
- Auditor (A) / Auditor in Training (AiT).
- Technical Expert (TE)
- Technical Reviewer (TR).

The sectoral scope / technical area knowledge linked to the applied methodology/ies shall be covered by the assessment team

Name	Role	SS Coverage	TA Coverage	Financial aspect
Mr. Pankaj Kumar	LA/TE	YES	YES	NA
Mr. Denny Xue	TR	YES	YES	NA

The curriculum vitae of the DOE's Verification team members are provided in Appendix 2 of this report.

5. Review of Documentation:

The Monitoring Report version 01 submitted by the PP was made publicly available on the UNFCCC website before the verification activities started. The published MR was assessed based on all the relevant documents. A cross-check between information provided and information from other sources has been done. A complete list of documents reviewed is available in Appendix 3 of this report.

6. On-site Assessment and follow-up Interviews:

As a part of the verification, the on-site inspection has been performed by the assessment team.

The objective of the on-site assessment is to:

Confirm the implementation and operation of the project;

Review the data flow for generating, aggregating and reporting the monitoring parameters;

- Confirm the correct implementation of procedures for operations and data collection;

- Cross-check the information provided in the MR documentation with other sources;
- Check the monitoring equipment against the requirements of the PDD and the approved methodology, including calibrations, maintenance, etc.
- Review the calculations and assumptions used to obtain the GHG data and ER;
- Identify if the quality control and quality assurance procedures are in place to prevent or correct errors or omissions in the reported parameters.

The details are mentioned in section D.2 of this report.

7. Quality of Evidences

Sufficient evidence covering the full verification period in the required frequency is available to verify the figures stated in the final MR. The source of the evidences will be discussed in Appendix 3 of this report. Specific cross-checks have been done in cases that further sources were available. The monitoring report's figures were checked by the assessment team against the raw data. The data collection system meets the requirements of the monitoring plan as per the methodology.

8. Reporting of Findings

As an outcome of the verification process, the assessment team can raise different types of findings.

Where a non-conformance arises the assessment team shall raise a Corrective Action Request (CAR). A CAR is issued, where:

- Modifications to the implementation, operation and monitoring of the registered project activity has not been sufficiently documented by the project participants;
- Mistakes have been made in applying assumptions, data or calculations of emission reductions that will impact the quantity of emission reductions;
- Issues identified in a FAR during validation to be verified during verification or previous verification(s) have not been resolved by the project participants.

The assessment team shall raise a Clarification Request (CL) if information is insufficient or not clear enough to determine whether the applicable CDM requirements have been met.

All CARs and CLs raised during verification shall be resolved prior to submitting a request for issuance.

Forward Action Requests (FARs) may be raised during verification for actions where the monitoring and reporting require attention and/or adjustment for the next verification period. All the CARs/CLs/FARs are being discussed in Appendix 4 of this report.

9. Internal Quality Control

As a final step of verification, the final documentation including the verification report has to undergo an internal quality control by the Technical Reviewer. Each report has to be finally approved either by the DOE's Technical Manager or the Deputy. In case one of these two persons is part of the assessment team, the approval can only be given by the person who is not a part of the assessment team. If the documents have been satisfactorily approved, the request of issuance is submitted to CDM EB along with the requisite documents.

SECTION B. Verification team, technical reviewer and approver

Verification team member

No.	Role	Type of resource	Last name	First name	Affiliation (e.g. name of central or other office of DOE or outsourced entity)	Involvement in			
						Desk/document review	On-site inspection	Interviews	Verification findings

CDM-VCR-FORM

1.	Lead Auditor/ Technical Expert	O R	Das	Sukanta ⁴	True Quality Certifications Private Limited- Outsourced entity	Yes	Yes	Yes	Yes
2.	Lead Auditor/ Technical Expert	O R	Kumar	Pankaj	True Quality Certifications Private Limited- Outsourced entity	Yes	No	Yes	Yes

B.1. Technical reviewer and approver of the verification and certification report

No.	Role	Type of resource	Last name	First name	Affiliation (e.g. name of central or other office of DOE or outsourced entity)
1.	Technical reviewer	EI	Xue	Denny	Applus+ Certification
2.	Approver	IR	Calle de Miguel	Agustin	Applus+ Certification

SECTION C. Application of materiality
C.1. Consideration of materiality in planning the verification

No.	Risk that could lead to material errors, omissions or misstatements	Assessment of the risk		Response to the risk in the verification plan and/or sampling plan
		Risk level	Justification	
1.	Human errors: Readings from meters (if not automatic)	LOW	Human error is likely to occur if the monitoring personnel are not trained well or inexperienced in data recording procedures and monitoring processes.	All the personal are well trained to monitor and collect data and thus risk associated with Human error is minimized. Assessment team checked the training records to confirm that all the personal are well trained to handle the activities related to monitoring. Assessment team checked the training records for the complete monitoring period and confirm that the personal are well trained to monitor and collect data for the project activity.
2.	Error in transferring the recorded data to ER sheet	Medium	The procedure for transferring the recorded break-up sheet readings to the spreadsheet is manual in nature thus increasing the chances of error. However, PP has Implemented internal quality checks to ensure prevention of any such potential error in the prepared ER sheet.	All the monthly reported values in ER sheet were verified with JMR/plant logbooks.

⁴ Mr. Sukanta Das was TL for this project till June 2021. Mr. Pankaj Kumar took over the role of TL from July, 2021

3.	Human error: Quantification of emission reduction	LOW	Use of spread sheets without adequate data control, changes / updates, version tracking, traceability and security	All the JMR (Monthly meter report/Generation Report) sheets and the invoices/Obligation Reports for the complete monitoring period are checked and thus the assessment team confirms that the ER value is conservative and correct.
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C.2. Consideration of materiality in conducting the verification

In line with Guidelines for Application of materiality in verifications, the verification team has conducted a complete verification of all the information presented in the monitoring report and data monitored as presented in the emission reduction calculation spread sheet. There are no material errors, overestimation of ER, omission or misstatement.

SECTION D. Means of verification

D.1. Desk/document review

The verification was performed primarily based on the review of the monitoring report and the supporting documentation. This process included review of data and information presented to verify their completeness and review of the monitoring plan and monitoring methodology, paying particular attention to the frequency of measurements, the quality of metering equipment used including calibration requirements, and the QA/QC procedures, and an evaluation of data management and the QA/QC system in the context of their influence on the generation and reporting of emission reduction.

The initial MR Version 01 submitted by the project participant and additional background documents related to the emission reductions are reviewed as an initial step of the verification process. The subsequent step involved the identification of Corrective Action Requests, Clarification Requests and Forward Action Request (CAR, CL and FAR) which are presented in Appendix 4 of this report. As a result of these findings, the MR is revised to MR Version 02. A complete list of all documents and records reviewed is as attached in Appendix 3 of this report.

D.2. On-site inspection

Duration of on-site inspection: 04/03/2021				
No.	Activity performed on-site	Site location	Date	Team member
1.	1) an assessment of the implementation and operation of the CDM project activity as per the registered PDD 2) a review of information flows for generating, aggregating and reporting of the monitoring parameters 3) interviews with relevant personnel to confirm that the operational and data collection procedures are implemented in accordance with the Monitoring Plan 4) a cross-check between information provided in the MR and data from other sources 5) a check of the monitoring equipment including calibration performance, and observations of monitoring practices against the requirements of the PDD and the applied methodology 6) a review of calculations and assumptions made in determining the GHG data and ERs, and 7) an identification of QA/QC procedures in place to prevent, or identify and correct, any errors or omissions in the reported monitoring parameters	Khurawata village, district Mahendragarh, Haryana state, India	04/03/2021	Sukana Das ⁵

D.3. Interviews

No.	Interviewee			Date	Subject	Team member
	Last name	First name	Affiliation			
1.	Todi	Varun	PP representative	04/03/2021	As mentioned above in section D.2 of this report	Mr. Sukanta Das ⁶
2.	Dutta	Bhaskar	Consultant, EKIESL		As mentioned above in section D.2 of this report	
3.	Lal	Shyam	Local stakeholder		As mentioned above in section D.2 of this report	
4.	Meena	Hukum Singh	Local stakeholder		As mentioned above in section D.2 of this report	

D.4. Sampling approach

The verification team has reviewed all the documents like commissioning certificates, JMR (monthly reports) sheets, invoices/ Plant Logbooks, etc.

⁵ Site visit was conducted by Mr. Sukanta Das who was TL for this project activity till June 2021 and Mr. Pankaj Kumar took over the role of TL since July 2021 for verification of this project

⁶ Mr. Sukanta Das was TL for this project and attended OSV

D.5. Clarification requests (CLs), corrective action requests (CARs) and forward action requests (FARs) raised

Areas of verification findings	No. of CL	No. of CAR	No. of FAR
Compliance of the monitoring report with the monitoring report form	00	00	00
Compliance of the project implementation and operation with the registered PDD	00	02	00
Post-registration changes	00	00	00
Compliance of the registered monitoring plan with the methodologies including applicable tools and standardized baselines	00	00	00
Compliance of monitoring activities with the registered monitoring plan	00	00	00
Compliance with the calibration frequency requirements for measuring instruments	00	01	00
Assessment of data and calculation of emission reductions or net removals	00	02	00
Assessment of reported sustainable development co-benefits	00	00	00
Global stakeholder consultation	00	00	00
Others (please specify)	00	00	00
Total	00	05	00

SECTION E. Verification findings

E.1. Compliance of the monitoring report with the monitoring report form

Means of verification	The verification team has determined whether the monitoring report was completed using the valid version of the applicable monitoring report form. The verification team has checked whether all the sections of the monitoring report follows the guidelines provided in the template.
Findings	CAR 01 was raised during the verification process. Please refer Appendix 4 of this report for the complete closure of the CAR.
Conclusion	The MR was web hosted in version 08.0 of the MR form, which is the current and active version in the UN platform. The monitoring report has been prepared as per the instructions provided in the template. DOE had made, the version 01 dated 28/01/2021 of the monitoring report covering the monitoring period 01/04/2016 to 31/10/2020; (both the days included), publicly available through its dedicated interface on the UNFCCC CDM website on 01/02/2021 i.e. before undertaking the site visit for the verification. The verification team has concluded that the monitoring report was completed using the valid version of the applicable monitoring report form and is followed the guidelines contained in the template.

E.2. Remaining forward action requests from validation and/or previous verifications

This is 2nd periodic verification of the project activity. No FAR was raised during the validation and previous verification of the project activity.

E.3. Compliance of the project implementation and operation with the registered project design document

Means of verification	The verification team determined the conformity of the actual implemented project activity and its operation with the registered project design document. DOE has, by means of a desk review and an on-site visit, assessed whether all physical features of the CDM project activity proposed in the registered PDD are in place, and that the project participants have operated the CDM project activity as per the registered PDD
Findings	CAR 02 was raised during the verification process. Please refer Appendix 4 of this report for the complete closure of the CAR.

Conclusion

The project has commissioned 03/05/2013 with synchronizing with grid as confirmed through commissioning and synchronization certificate issued by Haryana Power Purchase Centre. The verification team has reviewed the commissioning certificate to conclude that the capacity of the project is same as mentioned in the monitoring report. PP was given awarded consent to establish for 10 MW by the State Pollution Control Board (SPCB). However, Haryana Renewable Energy Development Authority (HAREDA) has provided an approval of 9.9 MW based on the assessment of biomass available in the area for the project activity. Therefore, a turbine of 9.9 MW is installed in the project activity. The capacity has not changed after the registration of the project activity as confirmed by the assessment team during verification site visit. The verification team has confirmed the details from respective documents.

The project activity is located at village Khurawata in Block-Mahendargarh on Mahendargarh – Zerpur Road in the District of Mahendargarh, Haryana, India with geo-coordinates of the project as 28° 18' 39" N and 76° 05' 23" E.

The above details were checked by the assessment team during the verification site visit & review of commissioning certificates. Same are found in line with registered PDD. Further, latitude and longitude were also checked through Google earth and GPS meter during the site visit. The details also form the part of monitoring report and thus are acceptable to the assessment team.

The technical specifications of the major equipments are as below

Equipment	Capacity	Make
TG Set	9.9 MW	Siemens
Alternator	12500 KVA	TDPS
Boiler	47.5 TPH at 66 kg ,465±5 deg C.	ISGEC
ID Fan	42.50 m3/sec H 230MM	TLT engineering
FD Fan	14.70 m3/sec H 170 MM	TLT engineering
SA Fan	7.5 m3/sec H 760MM	TLT engineering
Boiler Feed Pumps	64.56 m3/hrs	KSB
ESP	Two fields operational	Thermax Ltd.
RO Plant	6 M3 in Signal Stage	Thermax Ltd.
D M Plant.	10 m³ / hr (20 hr at day)	Wipro
Fuel Storage	328 MT (35*25*7 MTRS)	Interach Ltd.
Fuel Handling	18 TPH Roller Belt conveyor	OSM Engineering Pneumatic Conveying Pvt. Ltd.
Ash Handling	1.5 TPH	OSM Engineering
Chimney	46 m high	ISGEC
Fire Fighting System	120 m³/hr	KSB

	D.C.S.	Allen Bradley	ABB
	Cooling Tower	3000 m ³ /hr	North street
	Air Compressors	127 CFM	IR & Chicago compressor
<p>The metering arrangement of the energy meter is provided in the MR and found in line with the site observations.</p> <p>The plant has undergone scheduled maintenance as per the manufacturer's specifications and no major unforeseen incidents were observed by the assessment team during the monitoring period. The details are checked by the assessment team from the plant log records and found correct.</p> <p>Based on the documentary evidence of commissioning certificates and physical verification DOE concludes that the project was implemented as per the registered PDD and monitoring report.</p>			

E.4. Post-registration changes

E.4.1. Temporary deviations from the registered monitoring plan, applied methodologies, standardized baselines or other methodological regulatory documents⁷

Not applicable for present monitoring period.

E.4.2. Corrections

Not applicable for present monitoring period.

E.4.3. Changes to the start date of the crediting period

Not applicable for present monitoring period.

E.4.4. Inclusion of a monitoring plan

Not applicable for present monitoring period

E.4.5. Permanent changes from registered monitoring plan, or permanent deviation of monitoring from the applied methodologies, standardized baselines or other methodological regulatory documents

Not applicable for present monitoring period

E.4.6. Changes to the project design

Not applicable for present monitoring period

E.4.7. Changes specific to afforestation and reforestation project activities

Not applicable being renewable energy project

⁷ Other standards, methodologies, methodological tools and guidelines (to be) applied in accordance with the applied (selected) methodologies are collectively referred to as, the other (applied) methodological regulatory documents.

E.5. Compliance of the registered monitoring plan with applied methodologies, applied standardized baselines, and other applied methodological regulatory documents

Means of verification	The verification team determined whether the registered monitoring plan is in accordance with the applied methodology AMS-I.D. "Grid connected renewable electricity generation" (version 17) including applicable tools.
Findings	No finding was raised on this section.
Conclusion	The verification team is able to confirm that the monitoring plan contained in the monitoring report is in accordance with the registered PDD, approved methodology applied by the project activity, i. e. AMS-I.D. "Grid connected renewable electricity generation" (version 17) and its applicable tools. The same is followed onsite and thus assessment team confirms that project activity comply with the requirement of approved methodology and registered PDD.

E.6. Compliance of monitoring activities with the registered monitoring plan

E.6.1. Data and parameters fixed ex ante or at renewal of crediting period

Means of verification	The assessment team checked the registered PDD to confirm the ex-ante fixed parameter mentioned in the current monitoring report. Assessment team also interviewed the personal onsite to check further regarding the ex-ante values used for emission reduction calculation.
Findings	No finding was raised on this section.
Conclusion	<p>$EF_{CO_2,y}$, $SFC_{biomass,i}$, Demonstration of Surplus Biomass, $M_{biomass}$ are mentioned as ex-ante fixed parameters. Assessment team checked the values, source of data, choice of data, purpose of the data mentioned in the MR from the registered PDD and confirms that the same approach was followed for the current monitoring period also.</p> <p>The value for EF_{CO_2} was calculated using 'Tool to calculate Emission Factor for an Electricity System', version 2.2.1 with values considered from CO₂ Baseline Database for the Indian Power Sector version 5.0 Published by Central Electricity Authority (CEA). The default value as mentioned in the registered PDD and MR are same i.e. 0.8401 tCO₂/MWh.</p> <p>Further, assessment team checked the ex-ante values of $SFC_{biomass,i}$ (1.36 tons/MWh), $M_{biomass}$ (11.91%) and surplus availability of biomass as 207,109 MT i.e. more than 25% surplus availability within the region. The values of these parameters are found in line with the registered PDD.</p>

E.6.2. Data and parameters monitored

Means of verification	The assessment team checked the registered PDD to confirm the ex-post parameters mentioned in the current monitoring report. Assessment team also interviewed the personal onsite to check further regarding the ex-post parameter monitoring and confirms that the same is in line with the registered PDD. AMS-I.D., version 17.0 which was the applied methodology during the registration of the project is also checked to ensure that monitoring parameter as mentioned in the registered PDD and current MR are in compliance with the methodology.
Findings	CAR 03 was raised during the verification process. Please refer Appendix 4 of this report for the complete closure of the CAR.
Conclusion	<p>As per the registered monitoring plan and requirement of the registered methodology following parameters needs to be monitored:</p> <ol style="list-style-type: none"> 1. $EG_{gross,y}$: Gross electricity generated by project activity in year y Gross electricity produced is monitored through the energy meters installed at plant. Measured value of 325,777.26 MWh is verified from the electronic log sheets. 2. $EG_{gross,export,y}$: Gross electricity exported by project activity in year y Gross energy exported is monitored through energy meters installed at the plant. Measured value of 297,943.44 MWh is verified from the joint meter

readings between HVPNL and SWVPL maintained at the plant. However, value of 297,904.30 MWh is used for ER calculations after application of error factor. Further, the value was crosschecked with the invoices raised to HPPC during the monitoring period.

3. $EG_{gross,import,y}$: Gross electricity imported by project activity in year y
Gross energy imported is monitored through energy meters installed at the plant. Measured value of 914.88 MWh is verified from the joint meter readings between HVPNL and SWVPL maintained at the plant. However, value of 915.018 MWh is used for ER calculations after application of error factor. Further, the value was crosschecked with the invoices raised to HPPC during the monitoring period.

4. $EG_{facility,y}$: Net Electricity exported by project activity in year y
Net electricity exported is calculated using measured value of $EG_{gross,export,y}$ and $EG_{gross,import,y}$. These parameter values are verified from the joint meter readings between HVPNL and SWVPL maintained at the plant. Calculated value for net electricity export is 296,989.29 MWh after application of error factor for measured values.

5. $FC_{biomass,PJ,y}$: The quantity of biomass consumed in the project activity during the year y
Quantity of biomass fed into the boiler is measured using a conveyer belt equipped with load cells. Measured value of 435,810 MT is verified from daily plant records measured electronically through load cells and same value is used for ER calculations.

6. $NCV_{biomass,y}$: Net Calorific Value of biomass type k combusted during year y
NCV of the biomass used in project activity is being tested by a NABL accredited lab on dry basis once in quarter, by taking three samples, for the first year. The average value from the quarterly assessment of first year is used for the entire crediting period. Measured value 2,558 kCal/kg is verified from the lab reports and same value is used for ER calculations.

7. $FC_{FF,y}$: The quantity of fossil fuel consumed in year y
Quantity of fossil fuel fed into the boiler is measured using a weighbridge. For current monitoring period, measured value for fossil fuel is '0', same was verified through plant records.

8. $NCV_{FF,i,y}$: Net Calorific Value of fossil fuel type i combusted during year y
Net calorific value of fossil fuel is provided by the supplier and in case of non-availability of data from the supplier, IPCC default value is referred. Since, fossil fuel was not used during monitoring period NCV of fossil fuel is not recorded.

9. $EF_{Fossil\ Fuel,i,y}$: Weighted average CO₂ emission factor of fuel type i in year y
CO₂ emission factor of fossil fuel is sued from IPCC default values at the upper limit of the uncertainty at a 95% confidence interval as provided in table 1.4 of Chapter 1 of Vol. 2 (Energy) of the 2006 IPCC Guidelines on National GHG Inventories. Since, fossil fuel was not used during monitoring period, this parameter is not recorded.

Calibration of the energy meters is to be carried out once in a year as per the registered PDD. Details of calibration of monitoring meters are provided in Section E.7. Delayed calibration is observed for energy meters used. Delayed calibration is addressed in line with para 366 (a) of the "CDM validation and verification standard for project activities, Version 02" as the observed error of meters was within maximum permissible error. Value after application of maximum permissible error

	<p>has been used for emission reduction calculations.</p> <p>As weighbridge is used for measuring quantity of biomass residue / fossil fuel. Weighbridge load cells are also calibrated on annual basis by NABL accredited laboratory. A delay of few days is observed in annual calibration of weighbridge for year 2017, 2019 and 2020 but, emission reductions are calculated based on the electricity generation, hence there is no impact on emission reductions due to delay in weighbridge calibration.</p> <p>During the verification all relevant monitoring parameters (as listed in section B.7.1 of PDD) have been verified with regard to the appropriateness of the applied measurement / determination method, the correctness of the values applied for ER calculation, the accuracy, and applied QA/QC measures. The verification team identified that, the correct emission factor is reported under the section D.2 of the monitoring report. Based on above assessment the verification team confirms that requisite parameters are monitored in line with registered monitoring plan.</p>
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E.6.3. Implementation of sampling plan

Means of verification	The verification assessed whether the compliance of the sampling efforts and surveys with the registered sampling plan in accordance with the "Standard for sampling and surveys for CDM project activities and programme of activities" if PP had applied a sampling approach to determine data and parameters monitored.
Findings	There is no CAR/CL raised in this section.
Conclusion	PP did not apply sampling plan to determine data and parameters monitored during this monitoring period. The verification team has checked all the documents such as plant records, invoice etc. and hence sampling plan was not required. The verification team hereby confirms that all the documents are checked.

E.7. Compliance with the calibration frequency requirements for measuring instruments

Means of verification	The verification team determined whether the calibration of the measuring equipments that have an impact on the claimed emission reductions is conducted by the PP at a frequency specified in the registered monitoring plan				
Findings	CAR 05 was raised during the verification process and closed successfully. Please refer Appendix 4 of this report for the detail closure of the CAR.				
Conclusion	Gross electricity generation & auxiliary consumption is monitored continuously through Electronic meters installed at the project site.				
	Meter accuracy for the meters used was checked through on-site visit and interview with O&M personnel also confirms the same. The details of meter calibration are as follows:				
	Parameter	Meter Type	Sr No.	Accu racy Class	Calibration details (Calibration date – valid up to)
	EG _{gross,y}	Main Meter	OAE321100079	0.5s	27/03/2016 - 26/03/2017, 27/03/2017 - 26/03/2018, 27/03/2018 - 26/03/2019, 27/03/2019 - 26/03/2020, 27/03/2020 - 26/03/2021
		Check Meter	1111157544	0.5s	27/03/2016 - 26/03/2017, 27/03/2017 - 26/03/2018, 27/03/2018 - 26/03/2019, 27/03/2019 - 26/03/2020, 27/03/2020 - 26/03/2021
	EG _{gross,export,y}	Main Meter	HRT55955	0.2s	08/05/2015 – 07/05/2016, 25/05/2016 - 24/05/2017, 13/06/2017 - 12/06/2018, 20/06/2018 - 19/06/2019, 03/07/2019 - 02/07/2020, 25/07/2020 - 24/07/2021
		Check Meter	HVPN2344	0.2s	08/05/2015 – 07/05/2016, 25/05/2016 - 24/05/2017, 13/06/2017 - 12/06/2018, 20/06/2018 - 19/06/2019, 03/07/2019 - 02/07/2020, 25/07/2020 - 24/07/2021
	EG _{gross,import,y}	Main Meter	HRT55955	0.2s	08/05/2015 – 07/05/2016, 25/05/2016 - 24/05/2017, 13/06/2017 - 12/06/2018, 20/06/2018 - 19/06/2019, 03/07/2019 - 02/07/2020, 25/07/2020 - 24/07/2021
		Check Meter	HVPN2344	0.2s	08/05/2015 – 07/05/2016, 25/05/2016 - 24/05/2017, 13/06/2017 - 12/06/2018, 20/06/2018 - 19/06/2019, 03/07/2019 - 02/07/2020, 25/07/2020 - 24/07/2021
FC _{biomass,PJ,y}	Weigh Bridge	1712/13	0.5%	03/02/2016 - 02/02/2017, 06/02/2017 - 05/02/2018, 05/02/2018 - 04/02/2019, 06/02/2019 - 05/02/2020, 07/02/2020 - 06/02/2021	
FC _{FF,y}	Weigh Bridge	1712/13	0.5%	03/02/2016 - 02/02/2017, 06/02/2017 - 05/02/2018, 05/02/2018 - 04/02/2019, 06/02/2019 - 05/02/2020, 07/02/2020 - 06/02/2021	

	<p>Further, as per the registered PDD, calibration frequency of monitoring meters is once in a year. As per the calibration dates mentioned above, delayed calibration is observed for the energy meters. The delayed calibration is addressed in line with para 366 (a) of the “CDM validation and verification standard for project activities, version 02” as the observed error of meters was within maximum permissible error. Same is accepted by assessment team being conservative as, error factor was applied for the complete period and value after application of maximum permissible error has been used for emission reduction calculations. Further, a delay is also observed for weighbridge. As weighbridge is used for measuring quantity of biomass/coal and emission reductions are calculated based on the electricity generation, there is no impact on emission reductions due to delay in weighbridge calibration delay.</p>
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E.8. Assessment of data and calculation of emission reductions or net removals

E.8.1. Calculation of baseline GHG emissions or baseline net GHG removals by sinks

Means of verification	The verification team assessed the data and calculations of GHG emission reductions achieved resulting from the registered CDM project activity. The verification team has checked whether calculations of baseline GHG emissions have been carried out in accordance with the formulae and methods described in the registered monitoring plan.
Findings	CAR 04 was raised during the verification process. The description of the CAR and its closure is described below in Appendix 4 of this report.
Conclusion	<p>As per applied methodology, emission reductions of the small scale project activity are net electricity exported to the grid ($EG_{\text{facility},y}$) in MWh multiplied by the baseline emission factor ($EF_{\text{grid},CM,y}$) in tCO_2/MWh.</p> $BE_y = EG_{\text{facility},y} \times EF_{\text{grid},CM,y}$ $= 296,956.5 \times 0.8401$ $= 249,471 \text{ tCO}_2 \text{ (Rounded Down)}$ <p>Quantity of net electricity supplied to the grid was verified from plant data and found correct in ER sheet. In line with para 297 and 298 of VVS-PA. For the period where the calibration frequency was not followed by the PP for energy meters, maximum permissible error was applied to export values for delayed period. The delayed calibration is addressed in line with para 366 (a) of the “CDM validation and verification standard for project activities, Version 02” as the observed error of meters was within maximum permissible error. Same is accepted by assessment team being conservative as error factor was applied for the delayed period for Gross generation and auxiliary consumption. Value after application of maximum permissible error has been used for emission reduction calculations.</p> <p>Calculations of baseline GHG emissions have been carried out in accordance with the formulae and methods described in the registered monitoring plan.</p>

E.8.2. Calculation of project GHG emissions or actual net anthropogenic GHG removals by sinks

Means of verification	The verification team assessed whether the data and calculations of GHG emission reductions achieved resulting from the registered CDM project activity. The verification team has checked whether calculations of project GHG emissions have been carried out in accordance with the formulae and methods described in the registered monitoring plan.
Findings	No findings raised
Conclusion	It was assessed that the project activity during the monitoring period neither consumed fossil fuel for heat generation nor electricity was consumed from grid based / off grid fossil fuel based plants. Hence no project emissions are being accounted for current monitoring period. The project emissions are regarded as zero according to the applied methodology and registered PDD

E.8.3. Calculation of leakage GHG emissions

Means of verification	The verification team assessed whether the data and calculations of GHG emission reductions achieved resulting from the registered CDM project activity. The verification team has checked whether calculations of baseline GHG emissions, project GHG emissions and leakage GHG emissions have been carried out in accordance with the formulae and methods described in the registered monitoring plan.
Findings	No findings were raised.
Conclusion	Leakages emissions (LE_y) as per the methodology are to be considered if the energy generating equipment is transferred from another activity or if the existing equipment is transferred to another activity. The project activity since involves setting up of a new boiler and turbine, no leakages due to transfer of any equipment has been considered. The leakage due to competing biomass is also not applicable since risk husk is surplus available within 25 km radius and is sourced from PP owned milling operation. The leakage emissions are regarded as zero according to the applied methodology and registered PDD.

E.8.4. Summary calculation of GHG emission reductions or net anthropogenic GHG removals by sinks

Means of verification	The verification team assessed whether the data and calculations of GHG emission reductions achieved resulting from the registered CDM project activity. The verification team has checked whether calculations of baseline GHG emissions, project GHG emissions and leakage GHG emissions have been carried out in accordance with the formulae and methods described in the registered monitoring plan.
Findings	There is no CAR/CL raised in this section.
Conclusion	<p>Emission reductions for this monitoring period are: Total Baseline Emissions: 249,471 tCO_{2e} Total Project Emissions: 0 tCO_{2e} Total Leakages: 0 tCO_{2e} Total Emission Reductions: Emission reduction calculation is done based on following formula,</p> $\text{Emission reduction (ER}_y\text{)} = \text{Baseline Emission (BE}_y\text{)} - \text{Project Emission (PE}_y\text{)} - \text{Leakage Emission (L}_y\text{)}$ $= 249,471 \text{ tCO}_2\text{e} - 0 \text{ tCO}_2\text{e} - 0 \text{ tCO}_2\text{e}$ $= 249,471 \text{ tCO}_2\text{e}$

E.8.5. Comparison of actual GHG emission reductions or net anthropogenic GHG removals by sinks with estimates in registered PDD

Means of verification	The verification team has determined the emission reductions achieved during this monitoring period with the estimated value and reason for increase if any.
Findings	There is no CAR/CL raised in this section.
Conclusion	The Emission Reduction (ER) value in the monitoring period is 3.64% higher as compared to the value estimated in the registered PDD.

E.8.6. Remarks on difference from estimated value in registered PDD

Means of verification	The verification team has determined the emission reductions achieved during this monitoring period with the estimated value and reason for increase if any.
Findings	There is no CAR/CL raised in this section.
Conclusion	The Emission Reduction (ER) value in the monitoring period is 3.64% higher as compared to the value estimated in the registered PDD. This variation is not much significant hence, accepted by the assessment team. Verification team cross checked the impact of increase in PLF on additionality and found that the equity IRR of the project is well below the benchmark and hence deemed acceptable.

E.8.7. Actual GHG emission reductions or net anthropogenic GHG removals by sinks during the first commitment period and the period from 1 January 2013 onwards

Means of verification	The verification team has determined the CER achieved during first commitment period i.e. up to 31 December 2012 and second commitment period i.e. 01 January 2013 onwards.
Findings	There is no CAR/CL raised in this section.
Conclusion	The current monitoring period falls under first commitment period i.e. up to 31 December 2012 and second commitment period i.e. 01 January 2013 onwards. <ol style="list-style-type: none"> 1. GHG emission reductions or net GHG removals by sinks reported up to 31 December 2012: 0 tCO₂e 2. GHG emission reductions or net GHG removals by sinks reported from 01 January 2013 onwards: 249,471 tCO₂e

E.9. Assessment of reported sustainable development co-benefits

Means of verification	Not applicable for the present monitoring period
Findings	Not applicable for the present monitoring period
Conclusion	Not applicable for the present monitoring period

E.10. Global stakeholder consultation

Means of verification	Not applicable for the present monitoring period
Findings	Not applicable for the present monitoring period
Conclusion	Not applicable for the present monitoring period

SECTION F. Internal quality control

As a final step for verification, the final documentation, including the verification report, has to undergo an internal quality control by the Technical Reviewer(s) to be approved.

Details of the Technical Reviewer(s) are provided within the verification report in Section B.2. and Appendix 2 for further references of knowledge and capability to conduct the quality checking.

After the Technical Review process, the final documentation may undergo a final quality checking process called Administrative Review, done by the Applus+ Certification's Project Manager and/or Technical Support. For final approval, the final set of documents are prepared by the DOE's Technical Manager or its deputy and signed by the authorized signatory of the DOE.

In case any of the persons performing this final internal quality control approval process has acted as a part of the Assessment Team or Technical Review team, the approval can only be given by DOE's authorized personnel who are not part of those teams.

If the final set of documents has been satisfactorily approved, a Request for Issuance is submitted to the UNFCCC CDM EB along with the relevant documents.

SECTION G. Verification opinion

Applus+ Certification has been engaged by M/s Star Wire (India) Vidyut Pvt. Ltd.(SWIVPL) to perform the 2nd periodical verification of the "Biomass based power plant in Mahendargarh, Haryana" (UNFCCC Ref. No. 9973).

The management of M/s Star Wire (India) Vidyut Pvt. Ltd. is responsible for the preparation of the GHG emissions data and the reported GHG emissions reductions on the basis set out within the project's monitoring plan in the registered PDD version 14.0 dated 28/05/2014 and the applied methodology AMS-I.D Grid connected renewable electricity generation, version 17.0.

Our verification approach was based on the requirements as defined under the Kyoto Protocol, Marrakesh accord, as well as those defined by the CDM Executive Board. Our approach is risk-based, drawing on an understanding of the risks associated with reporting GHG emissions data and the controls in place to mitigate these. The verification can confirm that:

- the project is operated as planned and described in the project design document approved by the EB;
- the monitoring plan is as per the applied methodology;
- the monitoring in Monitoring Report is as per the PDD and the monitoring plan approved by the EB;

- the development and maintenance of records and reporting procedures are in accordance with the registered monitoring plan;
- the installed equipment being essential for generating emission reduction runs reliably, however, delay in calibration observed which is addressed in line with para 366 (a) of CDM validation and verification standard for project activities, version 02.0;
- the monitoring system is in place and generates GHG emission reductions data;
- the GHG emission reductions are calculated without material misstatements.

In our opinion, the GHG emission reductions for “Biomass based power plant in Mahendargarh, Haryana” for the monitoring period 01/04/2016 to 31/10/2020; as reported in monitoring report, prepared on the basis of the project’s monitoring plan are fairly stated.

Based on the information we have seen and evaluated, we confirm the following statement:

Reporting period: 01/04/2016 to 31/10/2020

Verified emissions in the above reporting period;

Leakage emissions	0 tCO ₂ equivalents
Project emissions	0 tCO ₂ equivalents
Baseline emissions	249,471 tCO ₂ equivalents
Emission reductions	249,471 tCO ₂ equivalents

SECTION H. Certification statement

Same as above

Appendix 1. Abbreviations

Abbreviations	Full texts
BM	Build Margin
CAR	Corrective Action Request
CER	Certified Emission Reduction(s)
CEA	Central Electricity Authority
CL	Clarification request
CM	Combined Margin
CO ₂	Carbon dioxide
CO ₂ e	Carbon dioxide equivalent
DNA	Designated National Authority
DOE	Designated Operational Entity
DR	Document Review
EF	Emission Factor
ER	Emission Reductions sheet
FAR	Forward Action Request
JMR	Joint Meter reading
GHG	Greenhouse gas(es)
GWP	Global Warming potential
PP	Project Participant
PPA	Power purchase agreement

Appendix 2. Competence of team members and technical reviewers

1. **Pankaj Kumar** worked as team leader – Bihar for South Asia Climate Proofing and Growth Development (CPGD) – Climate Change Innovation Programme (CCIP) supported by DFID that seeks to mainstream climate change resilience into planning and budgeting at the national and sub-national level in India, Pakistan, Nepal, and Afghanistan. Pankaj Kumar has worked previously with IL&FS Infrastructure Development Corporation and BUIDCO (Bihar Urban Infrastructure Development Corporation), Govt. Of Bihar as Environmental Specialist for WB & ADB funded projects. Prior to this, he worked with Carbon Check (UNFCCC accredited DoE), Johannesburg, RSA as Team Leader for validation, verification of around 100 GHG projects in Asia, Africa, USA, Asia Pacific & Americas. Pankaj is accredited Lead Auditor, Validator, Verifier and Technical Expert for Sectoral Scope/Technical Area – 1.1, 1.2, 3.1 & 13.1 by UNFCCC DoE (Designated Operational Entity), APPLUS, Spain. He is also member of task force on climate change & human health, Health Department, GoB and on roster of UNICEF's WASH experts.

He is an experienced, qualified and result oriented Environment Professional having more than 14 yrs. Of relevant experience in Climate Change (Mitigation & Adaptation), Environmental Due Diligence, Disaster Risk Reduction, Validation and Verification of GHG project under CDM, Verified Carbon Standard, Gold Standard & Social Carbon Standard, Brazil. He provides technical support for environmental investigative, consultative and remedial projects involving air, water and soil, Waste management, EIA, Environmental Compliance, ISO 14001, OHSAS 18001, GHG accounting (ISO 14064) and Carbon foot printing.

Pankaj Kumar is Masters in Environment Management from Forest Research Institute (University), I.C.F.R.E, Dehradun, which is Centre of Excellence in South East Asia for Forestry education & research and PGDEL from National Law School of India University, Bangalore (India)

2. **Mr. Denny Xue** (Master's Degree in Environmental Engineering, Bachelor's Degree in Thermal Engineering) is an Auditor appointed by Applus+ LGAI for the GHG project assessment, auditing and technical review. He has more than 6 years of work experience in CDM/GS4GG/VCS project assessment and technical review with Applus+. Before he joined Applus+ LGAI, he has been working for Shanghai Chuanji Investment and Management which is a CDM consultancy company as a project manager for CDM project development. Mr. Denny Xue is based in Shanghai, China. Mr. Denny Xue may participate in the project's technical review team.

Appendix 3. Documents reviewed or referenced

No.	Author	Title	References to the document	Provider
1.	NA	Commissioning certificates	Commissioning Certificates of the project activity	Project participant
2.	NA	Contract of the project participant with the DOE	Contract document signed between PP and DOE	Project participant
3.	NA	CDM Project standard-version 02	CDM validation and verification standard for project activities, Version 02	UNFCCC
4.	NA	Logbooks	Plant records for Gross electricity generation, auxiliary consumption, biomass coal consumption, NCV test reports, biomass purchase invoices etc.	Project participant
5.	NA	MR version 01 MR Version 02	Version 01 dated 28/01/2021 Version 02 dated 06/08/2021	Project participant
6.	NA	ER sheet version 01 ER sheet Version 02	Version 01 dated 28/01/2021 Version 02 dated 05/06/2021	Project participant
7.	NA	Actual geo-coordinates	Actual coordinates for the project activity via GPS meters	Project participant
8.	NA	Break Down details of plant	Log book records onsite	Project participant
9.	NA	Application of materiality	Guidelines for Application of materiality in verifications version 2.0	UNFCCC
10.	NA	Registered documents of the project activity	Registered PDD version 14.0 dated 28/05/2014	UNFCCC/PP
11.	NA	Approved methodology	AMS-I.D “Grid connected renewable electricity generation” (Version 17.0)	UNFCCC
12.	NA	Calibration certificates	Calibration certificates for energy meters, weigh bridge etc.	PP
13.	NA	Training records	Training records of the O&M personals.	PP

Appendix 4. Clarification requests, corrective action requests and forward action requests

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

FAR ID	xx	Section no.	E.2	Date: DD/MM/YYYY
Description of FAR				
<i>No FAR remaining from validation</i>				
Project participant response				Date: DD/MM/YYYY
Documentation provided by project participant				
DOE assessment				
				Date: DD/MM/YYYY

Table 2. CL from this verification

No CL was raised.

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

Table 3. CAR from this verification

CAR ID	01	Section no.	E.1	Date : 09/03/2021
Description of CAR				
<p>During Desk review following discrepancies has been found in monitoring report:</p> <ol style="list-style-type: none"> 1. Date format throughout the Monitoring report is not line with the guidelines to complete monitoring report. Corrective action sought. 2. Explanatory note on the synchronization of NEWNE grid with India grid is missing in the MR. Corrections sought. 3. Section B.1 "Description of implemented project activity" of Monitoring report not in-line with the guidelines to complete monitoring report. Information on the implementation and actual operation in section B.1 of the PDD of the project activity, including relevant dates (e.g. construction, commissioning, and start of operation) are missing. Supporting related to the same is also not submitted to the assessment team. Corrective action sought. 4. In accordance with the validation and verification standards, v.02, Para 322 (c), Project participant mentioned the details regarding the technologies used in the project activity but to verify the same, no such document (i.e. technical equipment's details, power purchase agreement, technical lifetime etc.) is provided to DOE team. Corrective action is sought for the same. 				
Project participant response				Date : 07/06/2021

1. The date format has been made consistent in the MR Version 02 as per the comment raised
2. Explanatory note for synchronization of NEWNE grid into Indian grid has been transparently mentioned in MR Version 02
3. The relevant dates of project implementation has been included in section B.1 of the MR as requested.
4. The DPR/ Technical manuals of the project activity has been submitted to justify the technical specifications of the project activity.

Documentation provided by project participant

MR Version 02

DPR

Technical Manuals

DOE assessment

Date: 27/07/2021

1. The date format is corrected which is checked and confirmed that it is in line with the guidelines to complete monitoring report. **CAR is closed.**
2. PP has provided explanatory note as a foot note³ in section A.1 which is accepted. However, PP is requested to remove part of sentence i. e. '..... (India has two national grids, i.e. NEWNE grid for Northeast, West and North-east and the southern grid)'.
3. PP has now added dates for grid synchronization (03/05/2013) and date of PPA signing (22/06/2012). These were confirmed through commissioning and synchronization certificate and power purchase agreement with Haryana Power Purchase Centre. **CAR is closed.**
4. PP has submitted commissioning and synchronization certificate, power purchase agreement, and detailed project report which are accepted by the DOE. Only photograph of front page of Operation and Maintenance manual is provided and not the complete document. PP has submitted pollution board NOC, however, the submitted document is incomplete. PP is requested to submit complete and latest document for Operation and Maintenance manual and pollution control board NOC.

Project participant response

Date: 06/08/2021

2. Footnote added in section A.1 and the part of the sentence is removed
4. The complete document of Operation and Maintenance manual is provided. The complete Pollution Board NOC is Submitted, the latest copy of the document is submitted.

DOE assessment

Date: 14/08/2021

2. Footnote is revised which is checked and verified.
 4. The submitted documents were checked to confirm the details mentioned with respect to project details and statutory requirements.
- CAR is closed.

CAR ID	02	Section no.	E.3.	Date : 09/03/2021
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Description of CAR	
<p>In accordance with the Project Standard Ver.02, Para 260, Project Participant requested to provide operation logbook records to DOE Team in orders to verify that does any plant shutdown happen or affects the calculation of GHG emission reduction or net anthropogenic GHG removal.</p> <p>The breakdown details of the Plant are missing in the MR. Further, supporting document regarding the breakdown details are not provided to the assessment team. Corrective action is sought.</p>	
Project participant response	Date : 07/06/2021
<p><i>The plant shutdown hours has been mentioned in MR Version 02 and also declaration from PP has been submitted as a reference.</i></p> <p><i>The plant log sheets are submitted to the verification team as desired.</i></p>	
Documentation provided by project participant	
<p>MR Version 02</p> <p>Plant shutdown details</p> <p>Plant log sheets</p>	
DOE assessment	Date: 27/07/2021
<p>PP has provided declaration regarding shutdown hours during the monitoring period which was checked and confirmed with details provided under Annexure-I of revised monitoring report. However, provide unit of measurement for the values mentioned in Annexure- I to maintain clarity in the document. Further, Annexure –I shall start a new page of revised MR after section E and shall not be continuation with section E in line with CDM-MR-Form v 8.0.</p>	
Project participant response	Date: 06/08/2021
<p>Declaration provided for the declaration regarding the shutdown hours with the unit of measurement clearly mentioned in the document. Also, the Annexure is added clearly in the revised MR after section E.</p>	
DOE assessment	Date: 14/08/2021
<p>Declaration was checked and verified to confirm the details provided. Also annexure is now revised in line with CDM-MR-Form v.8.0. CAR is closed.</p>	

CAR ID	03	Section no.	E.6.2	Date : 09/03/2021
Description of CAR				

Following observation are made regarding the monitoring part of the project:

1. **EG_{Gross, y}** value as mentioned in the MR is reserved till supporting is submitted. Moreover, JMR/Invoices are not provided to DOE for the complete monitoring period.
2. **EG_{gross,export,y}** value as mentioned in the MR is reserved till supporting is submitted. As per the registered PDD the value of gross electricity exported by the project activity shall be **cross checked** with the values as obtained by subtracting the auxiliary consumption from the gross electricity generation. The same is not part of ER sheet and thus the parameter is reserved.
3. **EG_{gross,import,y}** value as mentioned in the MR is reserved till supporting is submitted. As per the registered PDD, The gross import of electricity will be **cross checked** with the value obtained by electricity invoice. The same is not part of ER sheet and thus the parameter is reserved.
4. **EG_{facility,y}** value as mentioned in the MR is reserved till supporting is submitted. As per the registered PDD, the value of the parameter is **cross checked** with the invoices raised by SWIVPL on monthly basis. The same is not part of ER sheet and thus the parameter is reserved.
5. **FC_{biomass,PJ,y}** value as mentioned in the MR is reserved till supporting is submitted. The parameter is **cross checked** with an annual energy balance that is based on purchased quantity (e.g with Sales /receipt) and stock exchange. The same is not part of ER sheet and thus the parameter is reserved.
6. **FC_{FF,y}** value as mentioned in the MR is reserved till supporting is submitted. The parameter is **cross checked** with an annual energy balance that is based on purchased quantity (e.g with Sales /receipt) and stock exchange. The same is not part of ER sheet and thus the parameter is reserved.
7. **NCV_{biomass,y}** value as mentioned in the MR is reserved till supporting is submitted. The parameter is **cross check** with biomass quantity. The same cannot be confirmed at this stage. Parameter is reserved.
8. In accordance with the registered PDD for project activity, Parameters **NCV_{FF,i,y}** and **EF_{Fossil Fuel, I y}** are also need to be monitored. However, monitoring details about both parameters are missing in monitoring report. PP is also requested to submit relevant supporting document with revised MR. Corrective action sought

Project participant response

Date : 07/06/2021

1. **EG_{Gross, y}** value is sourced from plant log sheets and the same has been submitted to the verification team.
2. **EG_{gross,export,y}** value is sourced from monthly JMR and the same has been submitted to the verification team. Further ER Sheet is also revised to represent the crosscheck mechanism.
3. **EG_{gross,import,y}** value is sourced from monthly JMR and the same has been submitted to the verification team. Further ER Sheet is also revised to represent the crosscheck mechanism.
4. **EG_{facility,y}** value is sourced from monthly JMR crosschecked with monthly Invoices and the same has been submitted to the verification team. Further ER Sheet is also revised to represent the crosscheck mechanism.
5. **FC_{biomass,PJ,y}** value is sourced from plant log sheets and the same is submitted to the verification team. Further as per the registered PDD the crosschecking mechanism is justified by means of stock in and stock out being followed at project site and submitted to the verification team.
6. **FC_{FF,y}** value is zero for the current monitoring period as no fossil fuel has been consumed during the current monitoring period.
7. **NCV_{biomass,y}** value is obtained from quarterly assessment of first year which is fixed for the entire crediting period of the project activity.
8. *Both the parameters are now part of the monitoring report version 02 and have been justified as per the monitoring plan prescribed in registered PDD.*

Documentation provided by project participant

MR Version 02

ER Sheet V02

DOE assessment

Date: 27/07/2021

1. **EG_{Gross, y}** : Incomplete set of supporting documents submitted. Hence, assessment could not be completed.
2. **EG_{gross,export,y}** : Incomplete set of supporting documents submitted. Hence, assessment could not be completed.
3. **EG_{gross,import,y}** : Incomplete set of supporting documents submitted. Hence, assessment could not be completed.
4. **EG_{facility,y}** : Incomplete set of supporting documents submitted. Hence, assessment could not be completed.
5. **FC_{biomass,PJ,y}** : Purchase records of biomass residue are not submitted. Hence, assessment could not be completed. **CAR IS OPEN**
6. **FC_{FF,y}** : Purchase records of fossil fuel are not submitted. Hence, assessment could not be completed.
7. **NCV_{biomass,y}** : Supporting document i.e. lab test report for the mentioned NVC value of 2.558 kCal/kg is not submitted. Hence, assessment could not be completed.
8. Parameters **NCV_{FF,i,y}** and **EF_{Fossil Fuel,i, y}** are now mentioned in revised monitoring report under section D.2. As per MR, these parameters were not measured as fossil fuel was not consumed during the monitoring period. This CAR will be closed subject to supporting document receipt for **FC_{FF,y}**.

Project participant response

Date : 07/06/2021

1. Complete set of supporting documents submitted for the parameter $EG_{Gross, y}$
2. Complete set of supporting documents submitted for the parameter $EG_{gross, export, y}$
3. Complete set of supporting documents submitted for the parameter $EG_{gross, import, y}$
4. Complete set of supporting documents submitted for the parameter $EG_{facility, y}$
5. Purchase records submitted for the biomass residue as the biomass is purchased on a daily basis from the local farmers so the register is maintained for the purchased records and the supporting invoices is attached for reference.
6. No fossil fuel is burnt in the present monitoring period, hence no evidence is available.
7. Biomass test record sample submitted for the same.
8. As the fossil fuel is not being used and this have been evident from plant log books

DOE Assessment	Date: 14/08/2021
<ol style="list-style-type: none"> 1. Complete set of supporting documents for the parameter $EG_{Gross, y}$ were checked and verified that the values are sourced from plant log sheets/monthly JMRs and are correct. CAR is closed. 2. Complete set of supporting documents for the parameter $EG_{gross, export, y}$ were checked and verified that the values are sourced from monthly JMR and invoices raised and are correct. CAR is closed. 3. Complete set of supporting documents for the parameter $EG_{gross, import, y}$ were checked and verified that the values are sourced from monthly JMR and invoices raised and are correct. CAR is closed. 4. Complete set of supporting documents submitted for the parameter $EG_{facility, y}$ were checked and verified that the values are sourced from monthly JMR and invoices raised and are correct. CAR is closed 5. Purchase records submitted by PP and with supporting invoices, assessment team confirm the values applied are correct. Hence, CAR is closed. 6. Plant log books were submitted to assessment team based on which it is verified that that no fossil fuel is burnt in the present monitoring period. Hence, CAR is closed. 7. Biomass test record was checked to confirm NCV considered and verified. Hence CAR is closed. 8. Based on plant log books, it is verified that no fossil fuel is used in current monitoring period. Hence, measured quantity will be 'zero' for Parameters $NCV_{FF, i, y}$ and $EF_{Fossil Fuel, i, y}$ 	

CAR ID	04	Section no.	E.7	Date : 09/03/2021
Description of CAR				
The calibration details of all monitoring equipment are not provided in the MR. Moreover, Calibration certificates for the complete monitoring period are also missing. As Actual ER sheet is not submitted the delayed calibrated period (if any) cannot be confirmed. Corrective action is sought for the same.				
Project participant response				Date : 07/06/2021
The calibration certificates pertaining to complete monitoring period has been submitted to the verification team and the details have been included in MR Version 02 as well.				
Documentation provided by project participant				

Calibration Reports

MR Version 02

DOE assessment

Date: 27/07/2021

PP has provided calibration details as below in the revised MR;

For $EG_{gross,y}$

Meter Sr No & Type	Calibration Date	Validity	Calibration Date	Validity
OAE321100 079 (Main Meter)	27/03/2016	26/03/2017	27/03/2017	26/03/2018
	27/03/2018	26/03/2019	27/03/2019	26/03/2020
	27/03/2020	26/03/2021		
1111157544 (Check Meter)	27/03/2016	26/03/2017	27/03/2017	26/03/2018
	27/03/2018	26/03/2019	27/03/2019	26/03/2020
	27/03/2020	26/03/2021		

The details were checked with the supporting calibration certificates provided and are accepted as the meter were found working satisfactory and are calibrated at the frequency specified in the registered PDD which is in line with para 365 of CDM VVS-PA v2.0.

For $EG_{gross,export,y}$ and $EG_{gross,import,y}$

Meter Sr No & Type	Calibration Date	Validity	Calibration Date	Validity
HRT 55955 (Main Meter)	08/05/2015	07/05/2016	25/05/2016	24/05/2017
	13/06/2017	12/06/2018	20/06/2018	19/06/2019
	03/07/2019	02/07/2020	25/07/2020	24/07/2021
HVPN2344 (Check Meter)	08/05/2015	07/05/2016	25/05/2016	24/05/2017
	13/06/2017	12/06/2018	20/06/2018	19/06/2019
	03/07/2019	02/07/2020	25/07/2020	24/07/2021

The details were checked with the supporting calibration certificates provided. A delay in calibration is observed for the month of May 2016, May 2017 & June 2017, June' 2018, June'2019 and July'2019 and July'2020. PP has applied error factor according to accuracy class for energy generations for this months which is accepted as per para 366 (a) of CDM VVS PA v2.0.

For $FC_{biomass,PJ,y}$ and $FC_{FF,y}$

Sr No	Calibration Date	Validity	Calibration Date	Validity
1712/13	03/02/2016	02/02/2017	06/02/2017	05/02/2018
	05/02/2018	04/02/2019	06/02/2019	05/02/2020
	07/02/2020	06/02/2021		

The details were checked with the supporting calibration certificates provided. A delay in calibration is observed for the month of February' 2017, February'2019 and February'2020. PP is requested to clarify the reason for not considering error factor for this period.

Project participant response

Date : 07/06/2021

For $FC_{biomass,PJ,y}$ – Since this parameter has no role in the calculation of Emission reduction so the PP has not applied Error factor to this parameter and for the parameter $FC_{FF,y}$ Since, No fossil fuel is being used so there is no need for applying the error factor.

DOE assessment

Date: 14/08/2021

For $EG_{gross,export,y}$ and $EG_{gross,import,y}$, PP has now submitted calibration certificate prior to current monitoring period which is checked and verified that error consideration for the period 01/04/2016 to 25/06/2016 is not required.

For $FC_{biomass,PJ,y}$, PP's explanation is accepted. For $FC_{FF,y}$, it is already confirmed in earlier assessment that it is not being used. Hence same is accepted.

CAR is closed.

CAR ID	05	Section no.	E.8.1	Date : 09/03/2021
Description of CAR				
<p>Following are the observation on the Emission Reduction:</p> <ol style="list-style-type: none"> 1. ER sheet is not submitted to the assessment team and hence the ER value is thus reserved. 2. Procedure and Formula used to determine Baseline emission in section E.1 of MR is not in line with the registered PDD. Corrective action sought. 3. In section E.1 of MR, Calculated value of Emission reduction is not round down. thus, corrective action sought. 4. In section E.5.1 of MR, Calculation of "amount estimated ex ante for this monitoring period in the PDD" is not correct. Thus, Corrective action sought. 5. In section E.6 of MR, Percentage value of determine difference between estimated and achieved emission reduction for equivalent duration of monitoring period is not correct. Corrective action sought. 				
Project participant response				Date : 07/06/2021
<ol style="list-style-type: none"> 1. <i>ER Sheet V02 is submitted to the verification team</i> 2. <i>The formula used to calculate baseline emissions in section E.1 has been revised as per registered PDD</i> 3. <i>The calculated value of emission reductions has been rounded down as requested</i> 4. <i>The estimated emission reductions has been calculated appropriately as requested</i> 5. <i>The percentage value of difference between estimated and achieved emission reductions has been calculated appropriately and demonstrated transparently in ER Sheet V02</i> 				
Documentation provided by project participant				
<p>MR Version 02</p> <p>ER Sheet Version 02</p>				
DOE assessment				Date: 27/07/2021
<ol style="list-style-type: none"> 1. ER sheet is submitted by the PP. CAR IS CLOSED. 2. PP has revised procedure and formula in the revised MR section E.1 which is found in line with registered PDD and accepted. CAR IS CLOSED 3. Calculated value of emission reduction is now rounded down in section E.1 of revised monitoring report which is checked and accepted. CAR IS CLOSED. 				

4. The calculation is now corrected. CAR IS CLOSED.
5. Percentage value is now corrected. CAR IS CLOSED.

Table 4. FAR from this verification

No FAR was raised during current monitoring period.

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

Document information

<i>Version</i>	<i>Date</i>	<i>Description</i>
04.0	6 April 2021	Revision to: <ul style="list-style-type: none"> • Reflect the “Clarification: Regulatory requirements under temporary measures for post-2020 cases” (CDM-EB109-A01-CLAR).
03.0	31 May 2019	Revision to: <ul style="list-style-type: none"> • Ensure consistency with version 02.0 of the “CDM validation and verification standard for project activities” (CDM-EB93-A05-STAN); • Make structural and editorial improvements.
02.1	11 January 2018	Editorial revision to correct the numbering of appendices in the instructions.
02.0	31 October 2017	Revision to align with the requirements of the “CDM validation and verification standard for project activities” (version 01.0).
01.0	23 March 2015	Initial publication.
Decision Class: Regulatory Document Type: Form Business Function: Issuance Keywords: project activities, verifying and certifying		