




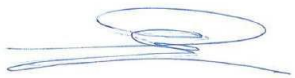
Verification and certification report form for CDM project activities

(Version 01.0)

VERIFICATION AND CERTIFICATION REPORT

Title of the project activity	Biomass based power plant in Mahendargarh, Haryana
Reference number of the project activity	9973
Version number of the verification and certification report	01.1
Completion date of the verification and certification report	02/12/2016
Monitoring period number and duration of this monitoring period	Monitoring Period: 01 Period: 10/07/2014– 31/03/2016 (both dates are included)
Version number of monitoring report to which this report applies	1.2
Crediting period of the project activity corresponding to this monitoring period	Fixed crediting period Start date: 10/07/2014 Length: 10 years
Project participant(s)	Star Wire (India) Vidyut Pvt. Ltd. (SWIVPL)
Host Party	India
Sectoral scope(s), selected methodology(ies), and where applicable, selected standardized baseline(s)	Sectoral scope : 1- Energy industries (renewable - / non-renewable sources Selected Methodology: AMS-I.D. Version 17 – “Grid connected renewable electricity generation” Selected standardized baseline: N/A
Estimated GHG emission reductions or net anthropogenic GHG removals for this monitoring period in the registered PDD	90,481 ¹ tCO ₂ e
Certified GHG emission reductions or net anthropogenic GHG removals for this monitoring period	90,081 tCO ₂ e
Name of DOE	 LGAI Technological Center, S.A. (Applus)
Name, position and signature of the approver of the verification and certification report	Name: Juan Sendín Caballero Position: B.U. Systems Certification Area Manager Signature of the approver:

¹ The current claim period is from 10/07/2014 to 31/03/2016 which gives a year fraction of 1.725. This year fraction has been multiplied by the expected annual emission reductions as per estimates of registered CDM PDD i.e.52,453 tCO₂e which gives the value 90,481.

	
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SECTION A. Executive summary

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LGAI Technological Center, S.A. (hereafter referred to as Applus+ LGAI) has been contracted by Star Wire (India) Vidyut Pvt. Ltd. (SWIVPL) to perform the first periodical verification of Biomass based power plant in Mahendargarh, Haryana (UNFCCC Ref. No. 9973) applying the methodology AMS-I.D Version: 17. The management of Star Wire (India) Vidyut Pvt. Ltd. (SWIVPL) is responsible for the preparation of the GHG emissions data and the reported GHG emission reductions.

A desk review and a site visit have been conducted to verify the data submitted in the monitoring report. Applus+ LGAI confirms the following has been reviewed:

- (a) The registered PDD, including the monitoring plan and the corresponding validation report;
- (a) Monitoring report of previous monitoring period as well as corresponding verification report;
- (b) Monitoring report of this monitoring period;
- (c) The applied monitoring methodology;
- (d) Relevant decisions, clarifications and guidance from the CMP and the CDM Executive Board;
- (e) All information and references relevant to the project activity's resulting in emission reductions.

The project activity involves the generation of electricity by a 9.9 MW biomass (mustard crop residue, Julia Flora and paddy waste as fuel) based power project; the generated electricity is supplied to the NEWNE regional electricity grid of India. This is a renewable energy generation project which can replace the electricity normally generated by a fossil fuel dominated grid connected to power plants. The project is situated in village Khurawata of Mahendargarh District in the Haryana State. This was set up by Star Wire (India) Vidyut Pvt. Ltd. (SWIVPL).

Applus+ LGAI confirms that the project is implemented in accordance with the validated and registered PDD. The monitoring plan complies with the applied methodology AMS-I.D Version: 17 and the monitoring have been carried out in accordance with the monitoring plan. 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 valid and registered project baseline and monitoring and its associated documents. Based on the information reviewed and evaluated Applus+ LGAI confirms that the implementation of the project has resulted in 90,081 tCO₂e emission reductions during period 10/07/2014 to 31/03/2016.

SECTION B. Verification team, technical reviewer and approver**B.1. 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 review	On-site inspection	Interview(s)	Verification findings
1.	Team Leader	OR	Ahirwar	Vivek Kumar	GCEES	Y	Y	Y	Y
2.	Technical Expert	OR	Ahirwar	Vivek Kumar	GCEES	Y	Y	Y	Y
3.	Auditor	OR	Thakur	Ajay Singh	GCEES	Y	N	N	Y

B.2. 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 1	IR	Sitjes Cabanas	Miquel	Applus+ LGAI
2.	Technical Reviewer 2 (support)	IR	Rodrigo Vega	Natalia	Applus+ LGAI
3.	Technical Reviewer in training	EI	Xue	Denny	Applus+ Shanghai
4.	Approver	IR	Sendin Caballero	Juan	Applus+ LGAI

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.	Manual adjustment of otherwise automatically recorded activity levels: This error may be due to manually recording of actual readings in-to original records.	Low	Monitoring Equipment e.g. Energy Meters have totalize which reduce the chance of error as initial readings and final readings can be cross-checked in every records. For measurement of quantity of fuel (biomass/fossil); measurement carried out by weighbridge/Load-cell and for each measurement record receipt is issued and same time recorded in log book. The total quality can be cross-checked form purchase bill/3.5/ and receipt from supplier/3.6/. The plant data was verified by plant manager in regular	100 per cent of the data and information was checked from log book/3.4/, Invoices/3.3/ record book/3.5/ and stock receipt records/3.6/.

			interval, so low potential risk of errors, omissions or misstatements.	
2.	Human error in the quantification of emissions. This error may be due to transfer of monitored data into Emission Reduction calculation sheet/4.2/ for calculation of actual emission reduction archived during monitoring period.	High	The monitoring data is transfer manually, so there is high potential risk of errors/ errors, omissions or misstatements.	100 per cent of the data and information was checked from log book/3.4/, Invoices/3.3/ record book/3.5/ and stock receipt records/3.6/.

C.2. Consideration of materiality in conducting the verification

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The project is a small-scale CDM project activity achieving total emission reductions of <300,000 tons of CO₂e per year; as such, a 5 per cent materiality threshold is applied as per VVS v09.0 §§ 361(d). 100 per cent of the data and information was checked from log book/3.4/, Invoices/3.3/ record book/3.5/ and stock receipt records/3.6/ and were found to be consistent. Therefore, Applus+ LGAI confirms that 100 per cent of the data and information was checked and verified value is free from any potential error / omission /misstatement and is accordance to verification plan.

SECTION D. Means of verification

D.1. Desk review

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The Monitoring Report version 01 dated 10/06/2016 /1.1/ 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.

A complete list of documents reviewed or referenced is available in Appendix 3 of this report.

D.2. On-site inspection

Duration of on-site inspection: 10/08/2016 -11/08/2016				
No.	Activity performed on-site	Site location	Date	Team member
1.	Confirm the implementation and operation of the project;	Khurawata Village Mahendargarh Haryana State	10/08/2016 -11/08/2016	Vivek Kumar Ahirwar
2.	Review the data flow for generating, aggregating and reporting the monitoring parameters;	Khurawata Village Mahendargarh Haryana State	10/08/2016 -11/08/2016	Vivek Kumar Ahirwar
3.	Confirm the correct implementation of procedures for operations and data collection;	Khurawata Village Mahendargarh Haryana State	10/08/2016 -11/08/2016	Vivek Kumar Ahirwar
4.	Cross-check the information provided in the MR documentation with other sources;	Khurawata Village Mahendargarh Haryana State	10/08/2016 -11/08/2016	Vivek Kumar Ahirwar

5.	Check the monitoring equipment against the requirements of the PDD and the approved methodology, including calibrations, maintenance, etc.;	Khurawata Village Mahendargarh Haryana State	10/08/2016 -11/08/2016	Vivek Kumar Ahirwar
6.	Review the calculations and assumptions used to obtain the GHG data and ER;	Khurawata Village Mahendargarh Haryana State	10/08/2016 -11/08/2016	Vivek Kumar Ahirwar
7.	Identify if the quality control and quality assurance procedures are in place to prevent or correct errors or omissions in the reported parameters.	Khurawata Village Mahendargarh Haryana State	10/08/2016 -11/08/2016	Vivek Kumar Ahirwar

D.3. Interviews

No.	Interviewee			Date	Subject	Team member
	Last name	First name	Affiliation			
1.	Sharma	Sanjay	Commercial, SWIVPL	10/06/2016 - 11/06/2016	Project Activity Description, implementation and operation of the project	Vivek Kumar Ahirwar
2.	Sharma	Harsih	CDM – Consultant, EFESPL	10/06/2016 - 11/06/2016	Procurement Records & Consumption , Bill & Energy Bills/Records	Vivek Kumar Ahirwar
3.	Sharma	Mukesh	CDM – Consultant, EFESPL	10/06/2016 - 11/06/2016	Monitoring Data & Records Monitoring Plan, equipment , calibrations, maintenance, data records, certificates etc.; Calculations and assumptions used to obtain the GHG data and ER	Vivek Kumar Ahirwar

D.4. Sampling approach

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Not Applicable, as all monitoring data as reported in MR and ER were verified and checked from actual records.

D.5. Clarification requests, corrective action requests and forward action requests raised

Areas of verification findings	No. of CL	No. of CAR	No. of FAR
Compliance of the monitoring report with the monitoring report form	-	1	-
Compliance of the project implementation with the registered PDD	-	-	1
Post-registration changes	-	-	-
Compliance of the monitoring plan with the monitoring methodology including applicable tool and standardized baseline	-	-	-
Compliance of monitoring activities with the registered monitoring plan	-	1	-
Compliance with the calibration frequency requirements for measuring instruments	-	-	-

Assessment of data and calculation of emission reductions or net removals	-	1	-
Others (please specify)	-	-	-
Total	-	3	1

SECTION E. Verification findings

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

Means of verification	The Monitoring Report version 01.2/1.3/ is compliant with Monitoring Report form (Version 05.1) /2.4/ and guidance as provided by UNFCCC. Applus+ LGAI considers that the attachment "Instructions for filling out the monitoring report form" at the end of template "Monitoring report form (Version 05.1)" /2.4/ has been followed. Relevant information was provided by the project participant in the applicable Monitoring Report sections.
Findings	<p>Corrective action request no. 1</p> <ol style="list-style-type: none"> 1. The PP is requested to provide explanation how the estimated amount of CERs has been calculated for corresponding monitoring period on page 01 of MR. 2. The PP is requested to provide further transparent justification on total capacity of project activity as state in the registered PDD says about project is involve installation of 10 MW Biomass based power plant where is A.1 section of MR mentioned 9.9 MW. 3. The PP is requested to provide technical specification of project, commissioning certificate and PPA for project. Also, the PP is requested to provide relevant dates for the project activity (e.g. construction, commissioning, continued operation periods, etc) in section A of the MR as per requirement of MR filling guidelines. 4. The PP is requested to clarify the inconsistency in reporting of GHG reductions in section A.1 (says 91.706) and page no. 01 of MR (whereas 91,706). 5. The PP is requested to provide details of plant outage and diagram as require guidelines of filling MR says "For the description of the installed technology (ies), technical process and equipment, include diagrams, where appropriate." 6. The contact information provided in Appendix 1 of MR is not consistent with Appendix 1 of the registered PDD, please clarify? <p>In response, the PP has provided revised MR and ER sheet; following information verified :</p> <ol style="list-style-type: none"> 1. The current claim period is from 10/07/2014 to 31/03/2016 which gives a year fraction of 1.725. This year fraction has been multiplied by the expected annual emission reductions as per estimates of registered CDM PDD i.e.52,453 tCO₂e which gives the value 90,481. 2. The project activity was initially envisaged for the installation of 10 MW biomass based power plant for which the consent to establish was awarded by State Pollution Control Board, however Haryana Renewable Energy Development Authority (HAREDA) has sanctioned the approval of 9.9 MW based on the assessment of biomass available in the region around the project activity. The same has been mentioned in section A.1 of the registered PDD also. 3. Technical Specification of major equipments has been provided in section A.1 of the MR. Copy of Commissioning certificate and PPA is being provided to DOE. The relevant dates like commissioning and information of continuous operation has been provided in the relevant section as asked by DOE. 4. The GHG reduction values have been made consistent throughout. 5. The details of plant outages has been detailed in an excel sheet and is being provided to DOE. The diagram for the process included in project boundary has been provided in the said section of the MR. 6. The contact information provided in "Appendix 1" is the latest updated information therefore DOE is requested to please accept the same. <p>The MR is review by verification assessment team found that</p>

	<ol style="list-style-type: none"> 1. The assessment team, after review of the revised MR, found the value of estimated amount of GHG emission to be consistent with the PDD. The explanation for same is correctly provided in the footnote. 2. A transparent justification on capacity of the biomass plant is provided in section A.1 of the revised MR. Same is found consistent with the registered PDD. 3. The technical specification, relevant dates etc are provided in section A. Of the revised MR. Same is found consistent with the commissioning certificate and PPA, shared by the PP. 4. The value of GHG reduction is found consistent throughout the revised MR. 5. The details of the plant outages are appropriately provided in the revised Excel sheet. Also, the description of the installed technology (ies), technical process and equipment, and diagrams are appropriately included in section B. Of the revised MR. 6. The PP clarified that the contact information provided in "Appendix 1" is the latest updated one. <p>Based on review of MR and ER sheet and response provided by the PP, it is found that all issues raised under CAR#1 is completely addressed , hence CAR#1 is closed.</p>
Conclusion	Applus+ LGAI confirms that the monitoring report is in compliance with the relevant valid form and instructions therein as accordance to VVS v09.0 §§ 381-382.

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

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This is first periodic verification of the project. Following FAR was raised during validation of project.

As the project activity was not implemented during the validation site visit (conducted on 18/02/2011 by SGS), hence a FAR was raised to check the appropriateness of the implementation and use of monitoring equipments during first periodic verification. This is in line with the requirement paragraph 27 of VVS version 06.0.

In response of FAR#1, the PP submitted commissioning certificate and PPA which confirm that project was start Commercial Operation on 03/05/2013 and running successfully and same was verified by Verification team during on-site visit, the verification team checked all the monitoring points and taken photographs of metering equipments and project activity site. The assessment team also verified that there is no change in monitoring procedure from the registered PDD and all the procedures as proposed in registered PDD have been implemented at project site and same was verified during on-site visit/6.1/&/6.2/. The verification team has been verified that the requirements of section D of the monitoring report are in place and the calibration and cross check measures have been implemented in accordance with registered PDD. Hence, assessment team satisfactorily closed FAR#1.

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

Means of verification	<p>The project activity is fully implemented according to the description presented in the registered PDD /1.3/. The assessment team confirms, through the visual inspection that all physical features of the proposed CDM project activity including data collecting systems and storage have been implemented in accordance with the registered PDD /1.3/. The project activity was start Commercial Operation on 03/05/2013 with an installed capacity of 9.9 MW, the same is verified through the commissioning certificate/3.1/. During the site visit, the assessment team verified the technology used and the capacity of equipments implemented at the project site through physical inspection and it can be confirmed that there are no changes in the project design against the registered project design document.</p> <p>No events or situations that may impact the applicability of the methodology occurred during this monitoring period, which was confirmed by checking the</p>
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	<p>operational/shut down details /3.4/ and interviewing the PP.</p> <p>The monitoring report version 01.1 dated 08/09/2016 /1.2/ for the first monitoring period (from 10/07/2014 to 31/03/2016) is in compliance with the monitoring plan of the registered PDD /1.3/. The data and variables provided in the monitoring report is the same as that stated in the monitoring plan of the registered PDD /1.3/.</p> <p>By comparing the actual ER claimed in this monitoring period with the estimate in the registered PDD/1.3/, the actual emission reductions (90,081 tCO₂e) are lower than what is stated in the PDD (i.e. 90,481 tCO₂e). Thus, the actual emission reduction is approximately 0.44 % lesser than the estimated value. The variation is negligible, hence accepted.</p>
Findings	No non-conformability was observed during assessment for implementation of project activity against the description presented in the registered PDD/1.3/. Therefore no finding was raised.
Conclusion	Applus+ LGAI confirms that the implementation of project activity is in compliance with the CDM requirement stipulated under VVS v09.0 §§ 383-385.

E.4. Post-registration changes

E.4.1. Temporary deviations from the registered monitoring plan, monitoring methodology or standardized baseline

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There are no temporary deviations from the monitoring plan of registered PDD/1.3/ or applied methodology/2.3/ during the current monitoring period. It was verified and confirmed from the Monitoring Report/1.3/, registered PDD/1.3/, UNFCCC project webpage (<https://cdm.unfccc.int/Projects/DB/SGS-UKL1403254354.2/view>)/1.5/ and on-site verification/6.1/ & /6.2/.

E.4.2. Corrections

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There are no corrections identified during the current monitoring period. It was verified and confirmed from the UNFCCC project webpage (<https://cdm.unfccc.int/Projects/DB/SGS-UKL1403254354.2/view>)/1.5/.

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

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There are no changes to the start date of crediting period identified during the current monitoring period. It was verified and confirmed from the UNFCCC project webpage (<https://cdm.unfccc.int/Projects/DB/SGS-UKL1403254354.2/view>)/1.5/.

E.4.4. Inclusion of a monitoring plan to a registered project activity

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There is no inclusion of a monitoring plan identified during the current monitoring period.

E.4.5. Permanent changes from registered monitoring plan, monitoring methodology or standardized baseline

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There are no permanent changes to changes from the monitoring plan, monitoring methodology or standardized as described in the registered PDD/1.3/ are identified during the current monitoring period. It was verified and confirmed from the Monitoring Report/1.3/, registered PDD/1.3/, UNFCCC project webpage (<https://cdm.unfccc.int/Projects/DB/SGS-UKL1403254354.2/view>)/1.5/ and on-site verification/6.1/&/6.2/.

E.4.6. Changes to the project design of a registered project activity

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There is no change to project design of the registered project activity identified during the current monitoring period. It was verified and confirmed from the Monitoring Report/1.3/, registered PDD/1.3/, UNFCCC project webpage (<https://cdm.unfccc.int/Projects/DB/SGS-UKL1403254354.2/view>) /1.5/ and on-site verification/6.1/&6.2/.

E.4.7. Types of changes specific to afforestation and reforestation project activities

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Not Applicable.

E.5. Compliance of monitoring plan with the monitoring methodology including applicable tool and standardized baseline

Means of verification	The review of applied methodology and monitoring plan establishes that the monitoring plan presented in the PDD/1.3/ is consistent the approved AMS-I.D. Version 17 – “Grid connected renewable electricity generation” /2.3/.
Findings	No non-conformability was observed during assessment for monitoring plan against applied monitoring methodology. Therefore, no finding was raised.
Conclusion	Applus+ LGAI confirms that the monitoring plan is in accordance with the approved methodology /2.3/ and correctly applied by the registered CDM project activity and VVS v09.0 §§ 386-388 have been met.

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	<p>The parameter EF_{CO₂,y} for Ex-ante CO₂ emission factor for the NEWNE regional grid is been referred from the registered PDD/1.3/ which is calculated in line with the guidance provided in the selected methodology ex-ante. The values used for calculation of the baseline emission factor using combined margin approach are considered from an authorised source i.e. CEA database version 5.0/6.3/ applying default weights of 50 % each for the operating margin as well as build margin. The reported value is 0.8401 tCO₂/MWh which is been verified and considered appropriately in the MR/1.3/ and the ER calculation excel sheet/4.2/.</p> <p>The parameter SFC_{biomass,i} for Biomass consumption per unit of electricity generated by the Power Plant is determined ex-ante This is specific fuel consumption of biomass considered by the Haryana Electricity Regulatory Commission (HERC) in its order for the determination of tariff for the biomass based power plants.and is referred from the registered PDD/1.3/. The value is used for calculation of project emissions or actual net GHG removals by sinks. The reported value of SFC_{biomass,i} is 1.36 ton/MWh which has been verified and considered appropriately in the MR/1.3/ and the ER calculation excel sheet/4.2/.</p> <p>The parameter Demonstration of Surplus Biomass for Surplus biomass in District Mahendergarh Block Ateli Nangal, Kanina, Mahendragarh, Nangal, Nangal Chaudhary of Haryana State is determined ex-ante based on the analysis carried out by third party competent entity. The report demonstrates more than 25% surplus availability of biomass even considering the biomass utilization of the project activity also. Therefore the leakage emission considered to be zero for the project activity. Value of this parameter is considered for Calculation of leakage. The reported value of Demonstration of Surplus Biomass is 207,109 MT which is found to be consistent with registered PDD/1.3/.</p> <p>The parameter M_{biomass} for Moisture content of biomass is determined ex-ante. The value has been provided by a third party (NABL accredited laboratory) that carried out an independent assessment of the available biomass. plants.and is referred from the registered PDD/1.3/. Calculation of baseline emissions or baseline</p>
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	net GHG removals by sinks. The reported value of M_{biomass} is 11.91 % which has been verified and considered appropriately in the MR/1.3/ and the ER calculation excel sheet/4.2/.
Findings	No non-conformability was observed about data and parameters fixed ex ante in registered PDD. Therefore, no finding was raised.
Conclusion	Applus+ LGAI confirms that the data and parameters fixed ex ante have been correctly listed. Parameters fixed ex-ante for required parameters have been verified by checking the information flow and in compliance with the monitoring plan of the registered PDD and hence, the requirement of VVS v09.0 §§ 392-393 have been met.

E.6.2. Data and parameters monitored

Means of verification	<p>The monitoring of reductions in GHG emissions resulting from the registered project have been implemented in accordance with the monitoring plan contained in the registered PDD/1.3/. The monitoring mechanism, including the data collection system, is effective and reliable. During the site visit, personnel involved at various levels of operation of the project activity have been interviewed. It has been confirmed that the O&M personnel from the plant are conscious of the importance of the monitoring activities. The on-site verification of the electricity generation data and fuel consumption related data were compared with each other through ratio/trend analysis and it substantiated consistency and hence reliability of the recording and reporting of monitored data and related procedures.</p> <p>The following parameters have been verified:</p> <p>1. $EG_{\text{gross},y}$ - Gross electricity generated by project activity in year y</p>				
	Monitoring Report, onsite checks	Requirement in the applicable methodology and relevant EB Documents	Requirement in the registered PDD monitoring Plan	Means of Verification (MR/1.3/ and ER calculation in excel sheet /4.2/ check and consistency with actual monitoring practice at project site)	DOE Conclusion
	Monitoring Plan & Approved Methodology y				
	Data/Parameter	Not specified	$EG_{\text{gross},y}$	$EG_{\text{gross},y}$	This is in compliance with the applicable methodology and monitoring plan.

	Description	Not Specified	Gross electricity generated by project activity in year y	Gross electricity generated by project activity in year y	This parameter is not mentioned in the methodology, but as parameter net electricity delivered is calculated based on this parameter, thus it is considered as being compliance with the methodology.
	Measured/Calculated /Default	Not specified	Measured	Measured	Specific information is provided. This is in compliance with the applicable methodology and monitoring plan.
	Source of data	Not specified	Electronic Log Sheets	Electronic Log Sheets /3.4/.	The supporting records of monthly energy /3.3/ of; monthly generation record derived from daily generation record book /3.4/ have been verified during site visit. The complete set of data for the current monitoring period have been verified during site visit and the values of the monitored parameters reported in MR /1.2/ and ER spreadsheet /4.2/ have been checked with supporting records during site visit.
	Monitoring equipment	Not specified	Energy meter	Energy meter	This is in compliance with the applicable methodology and monitoring plan.

	Measuring/Reading/Recording frequency	Not specified	Continuous hourly monitoring summarised and recorded monthly and yearly in a log book.	Continuous monitoring and hourly recording is being carried out.	This is in compliance with the applicable methodology and monitoring plan.				
	Calculation method (if applicable)	Applied methodology does not provide any details.	Meter readings	Data is Monitored and recorded from Energy Meter Directly which involves no calculation methods.	Specific information is provided. This value is based on the measured parameter. This is in compliance with the applicable methodology and monitoring plan.				
	QA/QC procedures	Applied methodology does not provide any details.	The energy meters are calibrated annually.	For emergency preparedness a Check meter is installed along with main meter. Also the energy meters are being calibrated by NABL/5.2/	Calibration Certificates/5.2 / has been cross checked				
	Value (s) of Monitored parameter	Not Specified	63,379 MWh/Year	Month wise data is represented in MR /1.3/ and ER sheet /4.2/. The values are found to be correct and consistent with raw data available at project site.	The information flow (data generation, aggregation, recording, calculation and reporting) for the parameters to be monitored including its values in the final version of the MR/1.3/ and ER sheet /4.2/ have been correctly reported and confirmed by the assessment team.				
	2. $EG_{gross,export,y}$ Gross electricity exported by project activity in year y <table border="1"> <tr> <td>Monitoring Report, onsite checks</td> <td>Requirement in the applicable methodology and relevant EB</td> <td>Requirement in the registered PDD monitoring</td> <td>Means of Verification (MR/1.3/ and ER calculation)</td> <td>DOE Conclusion</td> </tr> </table>					Monitoring Report, onsite checks	Requirement in the applicable methodology and relevant EB	Requirement in the registered PDD monitoring	Means of Verification (MR/1.3/ and ER calculation)
Monitoring Report, onsite checks	Requirement in the applicable methodology and relevant EB	Requirement in the registered PDD monitoring	Means of Verification (MR/1.3/ and ER calculation)	DOE Conclusion					

		Monitoring Plan & Approved Methodology y	Documents	Plan	in excel sheet /4.2/ check and consistency with actual monitoring practice at project site)	
		Data/Parameter	Not specified	EG _{gross,export,y}	EG _{gross,export,y}	This is in compliance with the applicable methodology and monitoring plan.
		Description	Not Specified	Gross electricity exported by project activity in year y	Gross electricity exported by project activity in year y	This parameter is not mentioned in the methodology, but as parameter net electricity delivered is calculated based on this parameter, thus it is considered as being compliance with the methodology.
		Measured/Calculated /Default	Not specified	Measured	Measured	Specific information is provided. This is in compliance with the applicable methodology and monitoring plan.
		Source of data	Not specified	Energy meter readings	Energy meter readings /3.4/.	The supporting records of monthly energy /3.4/ of; monthly generation record derived from daily generation record book /3.4/ and invoices /3.3/ have been verified during site visit. The complete set of data for the current monitoring period have been verified during site visit and the values of the

						monitored parameters reported in MR /1.2/ and ER spreadsheet /4.2/ have been checked with supporting records during site visit.	
		Monitoring equipment	Not specified	Energy meter of accuracy class 0.2s	Two Energy Meters i.e. One Main and one check meter has been installed to monitor the parameter	This is in compliance with the applicable methodology and monitoring plan.	
		Measuring/Reading/Recording frequency	Not specified	Continuous hourly monitoring summarised and recorded monthly and yearly in a log book.	Continuous monitoring and hourly recording is being carried out.	This is in compliance with the applicable methodology and monitoring plan.	
		Calculation method (if applicable)	Applied methodology does not provide any details.	Meter readings	Data is Monitored and recorded from Energy Meter Directly which involves no calculation methods however for cross check measure the parameter can be compared with the difference of Gross Electricity Generated and Auxiliary Consumption .	Specific information is provided. This value is based on the measured parameter. This is in compliance with the applicable methodology and monitoring plan.	
		QA/QC procedures	Applied methodology does not provide any details.	All the meters are calibrated annually.	For emergency preparedness a Check meter is installed along with main meter. Also the energy meters are being calibrated by NABL accredited lab once in a year. For cross check measure the parameter	Calibration Certificates/5.1 / has been cross checked	

				can be compared with the difference of Gross Electricity Generated and Auxiliary Consumption .	
		Value (s) of Monitored parameter	Not Specified	62,441 MWh/Year	Month wise data is represented in MR /1.3/ and ER sheet /4.2/. The values are found to be correct and consistent with raw data available at project site. The information flow (data generation, aggregation, recording, calculation and reporting) for the parameters to be monitored including its values in the final version of the MR/1.3/ and ER sheet /4.2/ have been correctly reported and confirmed by the assessment team.

3. $EG_{gross,import,y}$ Gross electricity imported by project activity in year y

Monitoring Report, onsite checks Monitoring Plan & Approved Methodology y	Requirement in the applicable methodology and relevant EB Documents	Requirement in the registered PDD monitoring Plan	Means of Verification (MR/1.3/ and ER calculation in excel sheet /4.2/ check and consistency with actual monitoring practice at project site)	DOE Conclusion
Data/Parameter	Not specified	$EG_{gross,import,y}$	$EG_{gross,import,y}$	This is in compliance with the applicable methodology and monitoring plan.
Description	Not Specified	Gross electricity generated by project activity in year y	Gross electricity imported by project activity in year y	This parameter is not mentioned in the methodology, but as parameter net electricity delivered is

						calculated based on this parameter, thus it is considered as being compliance with the methodology.
		Measured/Calculated /Default	Not specified	Measured	Measured	Specific information is provided. This is in compliance with the applicable methodology and monitoring plan.
		Source of data	Not specified	Energy meter readings	Energy meter readings /3.4/.	The supporting records of monthly energy /3.4/ of; monthly generation record derived from daily generation record book /3.5/ and invoices /3.4/ have been verified during site visit. The complete set of data for the current monitoring period have been verified during site visit and the values of the monitored parameters reported in MR /1.2/ and ER spreadsheet /4.2/ have been checked with supporting records during site visit.
		Monitoring equipment	Not specified	Energy meter of accuracy class 0.2s	Two Energy Meters i.e. One Main and one check meter has been installed to monitor the parameter	This is in compliance with the applicable methodology and monitoring plan.
		Measuring/Reading/Recording frequency	Not specified	Continuous hourly monitoring summarised and recorded monthly and yearly in a log	Continuous monitoring and hourly recording is being carried out.	This is in compliance with the applicable methodology and monitoring

			book.		plan.
	Calculation method (if applicable)	Applied methodology does not provide any details.	Meter readings	Data is Monitored and recorded from Energy Meter Directly which involves no calculation methods.	Specific information is provided. This value is based on the measured parameter. This is in compliance with the applicable methodology and monitoring plan.
	QA/QC procedures	Applied methodology does not provide any details.	All the meters are calibrated annually.	For emergency preparedness a Check meter is installed along with main meter. Also the energy meters are being calibrated by NABL accredited lab once in a year. The value of gross electricity imported by the project activity can be cross checked with the values obtained by electricity invoice/3.3/	Calibration Certificates/5.1 / has been cross checked
	Value (s) of Monitored parameter	Not Specified	0 MWh/Year	Month wise data is represented in MR /1.3/ and ER sheet /4.2/. The values are found to be correct and consistent with raw data available at project site.	The information flow (data generation, aggregation, recording, calculation and reporting) for the parameters to be monitored including its values in the final version of the MR/1.3/ and ER sheet /4.2/ have been correctly reported and confirmed by the assessment team.

4. $EG_{\text{facility},y}$ Net Electricity exported by project activity in year y				
Monitoring Report, onsite checks Monitoring Plan & Approved Methodology	Requirement in the applicable methodology and relevant EB Documents	Requirement in the monitoring plan (PDD monitoring Plan)	Means of Verification (MR/1.3/ and ER calculation in excel sheet /4.2/ check and consistency with actual monitoring practice at project site)	DOE Conclusion
Data/Parameter	$EG_{BL,y}$	$EG_{\text{facility},y}$	$EG_{\text{facility},y}$	This is in compliance with the applicable methodology and monitoring plan.
Description	The electricity supplied by the project activity to the grid	Net Electricity exported by project activity in year y	Net Electricity exported by project activity in year y	The net power exported to the grid is equivalent to the amount of electricity supplied to the grid. Hence, this is in compliance with the applicable methodology and monitoring plan.
Measured/Calculated /Default	Measured	Measured	Measured and calculated based on measured parameters.	The meters installed at the site directly measure the exported and imported electricity. EG_y , (net electricity exported to the grid) is the simple difference of these two directly measured values. Hence this is in compliance with the applicable methodology and monitoring plan.
Source of data	On site measurement	Energy Meter Reading	Energy Meter Reading /3.4/.	More specific information is provided. This is in compliance with the applicable methodology and monitoring plan.
Monitoring equipment	Energy meter	Energy meter	Parameter is Calculated by measured values taken from Energy Meters	This is in compliance with the applicable methodology and monitoring plan.
Measuring/Reading/	Monthly	Continuous hourly	Continuous monitoring and	This is in compliance with

	Recording frequency		monitoring summarised and recorded monthly and yearly in a log book.	hourly recording is being carried out.	the applicable methodology and monitoring plan.
	Calculation method (if applicable)	Not Applicable as this is a measured parameter	Not Applicable as this is a measured parameter	The Gross electricity imported from the grid is subtracted from the gross electricity exported to the grid to obtain the net electricity exported. Gross Electricity Exported and imported is being monitored by Energy Meter (bi directional tri-vector) of 0.2s accuracy class installed at the interconnection point.	More specific information is provided. This parameter is calculated based on the measured parameter. This is in compliance with the applicable methodology and monitoring plan.
	QA/QC procedures	Applied methodology does not provide any details.	All the meters are calibrated annually.	For emergency preparedness a Check meter is installed along with main meter. Also the energy meters are being calibrated by NABL accredited lab once in a year. The value of net electricity exported by the project activity can be cross checked with the values obtained by electricity invoices/3.3/	Calibration Certificates/5.1/ has been cross checked.
	Value (s) of Monitored parameter	Not Specified	62,441 MWh/Year	Month wise data is represented in MR /1.3/ and ER sheet /4.2/. The values are found to be correct and consistent with raw data available at project site.	The information flow (data generation, aggregation, recording, calculation and reporting) for the parameters to be monitored including its values in the final version of the MR/1.3/ and ER sheet /4.2/ have been correctly reported and confirmed by the assessment team.
	5. $FC_{\text{biomass,PJ,y}}$ The quantity of biomass consumed in the project activity during the year y.				

	Monitoring Report, onsite checks Monitoring Plan & Approved Methodology	Requirement in the applicable methodology and relevant EB Documents	Requirement in the monitoring plan (PDD monitoring Plan)	Means of Verification of (MR/1.3/ and ER calculation in excel sheet /4.2/ check and consistency with actual monitoring practice at project site)	DOE Conclusion
	Data/Parameter	Amount of biomass	FC _{biomass,PJ,y}	FC _{biomass,PJ,y}	This is in compliance with the applicable methodology and monitoring plan.
	Description	Amount of biomass used shall be monitored	The quantity of biomass consumed in the project activity during the year y.	The quantity of biomass consumed in the project activity during the year y.	This is in compliance with the applicable methodology and monitoring plan.
	Measured/Calculated /Default	Measured	Measured	Measured	This is in compliance with the applicable methodology and monitoring plan.
	Source of data	On site measurement	Plant Records	Plant Records/3.5/& /3.6/	More specific information is provided. This is in compliance with the applicable methodology and monitoring plan.
	Monitoring equipment	Not specified	The quantity of Biomass fed into the boiler is measured using a conveyer belt equipped with load cells	The quantity of Biomass fed into the boiler is measured using a conveyer belt equipped with load cells Type: BCW51L2 Make: IPA Pvt. Ltd. Accuracy Class: 0.5 % Serial Number: 1712/13	This is in compliance with the applicable methodology and monitoring plan.
	Measuring/Reading/ Recording frequency	Not specified	Continuous, Load cell data electronically saved.	Continuous Monitoring (Electronic data of load cell is available for the record purpose) and Hourly recording is being carried out	This is not specified in the applicable methodology and monitoring plan. However, the data is measured as per actual practice followed at site.
	Calculation method (if applicable)	Not Applicable as this a measured parameter	Not Applicable as this a measured parameter	Not applicable as the parameter is being measured directly without	Not Applicable.

				any calculation	
	QA/QC procedures	Applied methodology does not provide any details.	The conveyor belt shall be calibrated annually.	The conveyor belt system is being calibrated by NABL accredited lab once in a year. The amount of biomass consumed will be cross checked with an annual energy balance that is based on purchased quantities (sales/receipts) and stock inventory changes. The data can be cross checked with the biomass procurement data /3.6/.	Methodology does not provide any specifications; this is as per actual practice. But, this is in line with the general CDM requirements.
	Value (s) of Monitored parameter	Not Specified	Total biomass- 94356 MT/year	Month wise data is represented in MR /1.3/ and ER sheet /4.2/. The values are found to be correct and consistent with raw data available at project site.	The information flow (data generation, aggregation, recording, calculation and reporting) for the parameters to be monitored including its values in the final version of the MR/1.3/ and ER sheet /4.2/ have been correctly reported and confirmed by the assessment team.
6. $FC_{FF,y}$ - The quantity of fossil fuel consumed in year y..					
	<div>Monitoring Report, onsite checks</div> <div>Monitoring Plan & Approved Methodology</div>	Requirement in the applicable methodology and relevant EB Documents	Requirement in the monitoring plan (PDD monitoring Plan)	Means of Verification (MR/1.3/ and ER calculation in excel sheet /4.2/ check and consistency with actual monitoring practice at project site)	DOE Conclusion
	Data/Parameter	Not specified	$FC_{FF,y}$	$FC_{FF,y}$	This is in compliance with the applicable methodology and monitoring plan.
	Description	Amount of fossil fuel used shall be	The quantity of fossil fuel consumed in	The quantity of fossil fuel consumed in	This is in compliance with the applicable

		monitored	year y.	year y.	methodology and monitoring plan.
	Measured/Calculated /Default	Measured	Measured	Measured	This is in compliance with the applicable methodology and monitoring plan.
	Source of data	On site measurement	Plant Records	Plant Records/3.5/ & /3.6/	More specific information is provided. This is in compliance with the applicable methodology and monitoring plan.
	Monitoring equipment	Not specified	The quantity of fossil fuel fed into the boiler can be measured BY conveyor belt equipped with load Cells	The quantity of fossil fuel fed into the boiler can be measured using a weighbridge and recorded accordingly.	This is in compliance with the applicable methodology and monitoring plan.
	Measuring/Reading/ Recording frequency	Not specified	Continuous, Load cell data electronically saved.	Provision of Continuous Monitoring and Hourly recording is in place	This is in compliance with the applicable methodology and monitoring plan.
	Calculation method (if applicable)	Not Applicable as this is a measured parameter	Not Applicable as this a measured parameter	Not applicable as the parameter can be measured directly without any calculation	Not Applicable.
	QA/QC procedures	Applied methodology does not provide any details.	The conveyor belt shall be calibrated annually.	The weighing system is being calibrated by NABL accredited lab once in a year. The amount of Fossil fuel consumed will be cross checked with an annual energy balance that is based on purchased quantities (slaes/receipts) and stock inventory changes. The data can be cross checked with the invoices /3.6/.	Methodology does not provide any specifications; this is as per actual practice. But, this is in line with the general CDM requirements.
	Value (s) of Monitored parameter	Not Specified	0 MT/year	Month wise data is represented in MR /1.3/ and ER sheet /4.2/.	The information flow (data generation, aggregation,

				The values are found to be correct and consistent with raw data available at project site.	recording, calculation and reporting) for the parameters to be monitored including its values in the final version of the MR/1.3/ and ER sheet /4.2/ have been correctly reported and confirmed by the assessment team.
<p>7. $NCV_{biomass,y}$ - Net Calorific Value of biomass type k combusted during year y</p>					
Monitoring Report, onsite checks	Requirement in the applicable methodology and relevant EB Documents	Requirement in the monitoring plan (PDD monitoring Plan)	Means of Verification (MR/1.3/ and ER calculation in excel sheet /4.2/ check and consistency with actual monitoring practice at project site)	DOE Conclusion	
Monitoring Plan & Approved Methodology					
Data/Parameter	Not specified	$NCV_{biomass,y}$	$NCV_{biomass,y}$	This is in compliance with the applicable methodology and monitoring plan.	
Description	Not specified	Net Calorific Value of biomass type k combusted during year y	Net Calorific Value of biomass type k combusted during year y	This is in compliance with the applicable methodology and monitoring plan.	
Measured/Calculated /Default	Not specified	Measured	Measured	This is in compliance with the applicable methodology and monitoring plan.	
Source of data	Not specified	Lab test reports	Lab test reports/3.5/	More specific information is provided. This is in compliance with the applicable methodology and monitoring plan.	
Monitoring equipment	Not specified	NCV of biomass will be tested in laboratory in dry basis. The average value of quarterly assessment of first year shall be used for the entire crediting period.	NCV of the biomass used in project activity would be tested by a NABL accredited lab on dry basis. NCV would be tested once in quarter, by taking three samples, for the first year. The average value from the	This is in compliance with the applicable methodology and monitoring plan.	

				quarterly assessment of first year shall be used for the entire crediting period.	
Measuring/Reading/Recording frequency	Not specified	Determined once in the first year for the entire crediting period	Determined once in the first year for the entire crediting period	This is in compliance with the applicable methodology and monitoring plan.	
Calculation method (if applicable)	Not Applicable as this is a measured parameter	NCV of biomass will be tested in NABL accredited laboratory in dry basis	The measurement and calculation procedure will be performed by third party NABL accredited laboratory as per best industry practices	Not Applicable.	
QA/QC procedures	Applied methodology does not provide any details.	The analysis of biomass will be carried out by an authorised testing agency. The average value of the first year shall be cross checked with relevant data sources and default values of the IPCC	The measurement will be carried out by NABL accredited lab quarterly, by taking three samples, for the first year. The average value from the quarterly assessment of first year shall be used for the entire crediting period.	Methodology does not provide any specifications; this is as per actual practice. But, this is in line with the general CDM requirements.	
Value (s) of Monitored parameter	Not Specified	Not Specified	NCV is represented in MR /1.3/ and ER sheet /4.2/. The value is found to be correct and consistent with raw data available at project site.	The information flow (data generation, aggregation, recording, calculation and reporting) for the parameters to be monitored including its values in the final version of the MR/1.3/ and ER sheet /4.2/ have been correctly reported and confirmed by the assessment team.	

The registered PDD states that the project activity will generate power using biomass fuel only and that fossil fuel would be used only in contingency situations. During the current monitoring period, the assessment team has verified that no fuel is used.

The Net Electricity exported by project activity in year y ($EG_{\text{facility},y}$) which is used to calculate baseline emission is obtained by subtracting gross electricity imported ($EG_{\text{gross,import},y}$) from Gross electricity exported ($EG_{\text{gross,export},y}$) as per the registered PDD/1.3/.

The value of $EG_{\text{gross,import},y}$, $EG_{\text{gross,import},y}$, $EG_{\text{gross,export},y}$ for current monitoring period are:

Year	$EG_{\text{gross,export},y}$	$EG_{\text{gross,import},y}$	$EG_{\text{gross},y}$
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	10/01/2014 to 31/12/2014	30352	142	33610
	01/01/2015 to 31/12/2015	61580	304	68107
	01/01/2016 to 31/03/2016	15812	72	17319
Findings	<p>CAR #2 raised to clarify followings:</p> <ol style="list-style-type: none"> 1. The PP is requested to clarify why the section C is not included any diagrams of the monitoring system as require by MR filling guidelines says "Include diagrams of the monitoring system and the information flow where appropriate." 2. The PP is requested to clarify why the Value of monitored parameters EG_{gross,y} , EG_{gross,export,y} , EG_{gross,import,y} , EG_{facility,y} and FC_{biomass,PJ,y} are considered from 1 July 2014 where as monitoring and crediting period start from 10 July 2014. 3. The PP is requested to clarify why the monitoring equipment (both Main and Check energy meter) details for parameters EG_{gross,y} , EG_{gross,export,y} and EG_{gross,import,y} are not provided in section D.2 of MR as per requirement of MR filling says "For "Monitoring equipment" in the table, provide information on type, accuracy class, serial number, calibration frequency, date of last calibration and validity." 4. The PP is requested to clarify why the monitoring equipment details for parameters FC_{biomass,PJ,y} & FC_{FF,y} are not provided in section D.2 of MR as per requirement of MR filling says "For "Monitoring equipment" in the table, provide information on type, accuracy class, serial number, calibration frequency, date of last calibration and validity." 5. The PP is requested to provide annual energy balance and sales/receipts to cross check the amount of biomass consumed as mentioned in QA/QC of registered PDD , page 25 for parameter FC_{biomass,PJ,y} 6. The PP is requested to clarify why the value of monitored parameter "NCV_{biomass,y}" is left blank in MR? Also, it is mentioned in the registered PDD and MR that "NCV of the biomass used in project activity would be tested by a NABL accredited lab on dry basis. NCV would be tested once in quarter, by taking three samples, for the first year. The average value from the quarterly assessment of first year shall be used for the entire crediting period.", so the PP is requested to clarify how this requirement has been done for current monitoring period. 7. The purpose of data for parameter "NCV_{biomass,y}" not consistently mentioned with registered PDD as MR mentioned "Calculation of baseline emissions" where as PDD says "To cross check the biomass quantity" . Please clarify? 8. The PP is requested to clarify why the parameters NCV_{FF,i,y} and EF_{Fossil Fuel,i,y} are not listed in MR as these are part of registered monitoring plan of the PDD. Please clarify?. <p>The PP responded that;</p> <ol style="list-style-type: none"> 1. The diagram indicating the flow of information for the data and monitoring system has been provided at the last of the said section. 2. The billing cycle for the project activity is from 1st date of each month but as the crediting period start from 10th July 2014 due to which only 21 days are eligible for the consideration of GHG calculations therefore now data has been apportioned for the 21 days of the month. 3. The monitoring equipments i.e. both Main and Check energy meter details for parameters EG_{gross,y} , EG_{gross,export,y} and EG_{gross,import,y} have now been provided in section D.2 of MR in accordance with the guideline. 4. The monitoring equipments i.e. both Main and Check energy meter details for parameters FC_{biomass,PJ,y} & FC_{FF,y} have now been provided in section D.2 of MR in 			

	<p>accordance with the guideline.</p> <ol style="list-style-type: none"> Annual Energy Balance has been provided in an excel sheet to DOE for the cross check measure. The Average NCV is being provided in the said section as per the requirement. The purpose of monitoring NCV of fuel is to cross check the biomass quantity fired during year Y, the same has now been updated in the MR which is now in consistency with registered PDD. As none of fossil fuel is used during this monitoring period therefore the NCV and EF couldn't be monitored/reported. That is why the said parameters are not tabulated in the monitoring report. <p>The MR is review by verification assessment team found that</p> <ol style="list-style-type: none"> Assessment team, after review of the revised MR confirms that In section C, the diagram indicating flow of information is provided. The value of monitored parameter like $EG_{gross,y}$, $EG_{gross,export,y}$, $EG_{gross,import,y}$, $EG_{facility,y}$ and $FC_{biomass,PJ,y}$ are considered from start of this monitoring period i.e. 10 July 2014 in the revised MR. An an apportioned data is given. The monitoring equipment (both Main and Check energy meter) details for parameters $EG_{gross,y}$, $EG_{gross,export,y}$ and $EG_{gross,import,y}$ are provided in section D.2 of revised MR as per requirement of MR form filling guidelines which says "For "Monitoring equipment" in the table, provide information on type, accuracy class, serial number, calibration frequency, date of last calibration and validity." The same is confirmed during site visit and calibration certificates shared by the PP. The monitoring equipment details for parameters $FC_{biomass,PJ,y}$ & $FC_{FF,y}$ are provided in section D.2 of revised MR as per requirement of MR form filling guidelines which says "For "Monitoring equipment" in the table, provide information on type, accuracy class, serial number, calibration frequency, date of last calibration and validity." The same is confirmed during site visit and calibration certificates shared by the PP. Annual balance sheet has been provided by the PP to cross check the amount of biomass consumed. The value is found consistent. The Average NCV is being provided in the said section as per the requirement. The value of Net Calorific Value of biomass is now provided in the revised MR, The purpose of the data is made consistent with the PDD in the revised MR. The value is cross checked with NCV test certificates As none of the fossil fuel is used during current monitoring period, hence $NCV_{FF,i,y}$ and $EF_{Fossil\ Fuel,i,y}$ are not listed in the revised MR. Same is found appropriate by the assessment team <p>Revised documents have been checked by the assessment team and found correct. Furthermore , the PP is requested to clarify why the last calibration date fall under in year 2016 is mentioned for parameters $EG_{gross,y}$, $EG_{gross,export,y}$ and $EG_{gross,import,y}$</p> <p>In response, the PP has submitted revised MR with provide missing calibration dates, same was verified with certificate and found to be correct, hence accepted. Thus CAR#2 was closed</p>
Conclusion	<p>Applus+ LGAI confirms that the actual monitoring activities observed on site are in compliance with the PDD monitoring plan which is described in the registered PDD/1.3/ and the same is in line with the monitoring methodology /2.3/. The project emissions calculated based on the amount of coal consumed makes the emission reductions calculations conservative. The applicable parameters stated in the PDD monitoring plan/1.3/ and the applied methodology/2.3/ have been sufficiently monitored. The responsibilities and authorities for</p>

	monitoring and reporting are in accordance with what is stated in the PDD monitoring plan/1.3/. The information flow (data generation, aggregation, recording, calculation and reporting) for the parameters to be monitored including its values in the final version of the MR/1.3/ have been correctly reported and confirmed. Hence, the requirement of VVS v09.0 §§ 389-393 have been met.
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E.6.3. Implementation of sampling plan

Means of verification	No sampling plan is defined in the registered monitoring plan. All the data and information has been checked during verification assessment, thus no sampling plan has been applied in the Project.
Findings	Not Applicable
Conclusion	Not Applicable

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

Means of verification	<p>All the monitoring parameters have been monitored and the monitoring results are consistently recorded as per the frequency mentioned under the registered monitoring plan. Accuracy of all equipment has been observed to be maintained within the specified limits.</p> <p>There was no change in the installed meters observed since commissioning of the plant. The calibration was done by qualified and authorised personnel from NABL. The assessment team has checked the calibration certificates/5.1/,/5.2/,/5.3/ for accuracy and validity, so as to assure reliability and steadiness of monitoring results. The calibrations results have been verified as below.</p>		
	Monitoring equipment	Energy Meter	
	Monitoring parameter	EG _{gross,y}	
	Serial no.	OAE321100079 (Main Meter)	1111157544 (Check Meter)
	Type	Sentron PAC3200	7UM6221-5EB99-3CE0-0D2K
	Accuracy Level	0.5 %	0.5 %
	Calibration frequency requirement	Annual	Annual
	Date of Calibration	03/05/2013, 29/03/2014 , 28/03/2015,27/03/2016	03/05/2013, 29/03/2014 , 28/03/2015,27/03/2016
	Validity of calibration	One Year	One Year
	Delays in calibration (if any)	NIL	NIL
	Accreditation Certificate for the calibration entity issuing authority relevant	NABL	NABL
	Monitoring equipment	Energy Meter	
	Monitoring parameter	EG _{gross,export,y} and EG _{gross,export,y}	
	Serial. No.	HRT55955 (Main Meter)	HVPN2344 (Check Meter)
	Type	E3M021 (3Ph 4 Wire)	E3M021 (3Ph 4 Wire)
	Accuracy Level	0.2s	0.2s
	Calibration frequency requirement	Annual	Annual
	Date of Calibration	03/05/2013, 12/05/2014, 08/05/2015, 25/05/2016	03/05/2013, 12/05/2014 , 08/05/2015, 25/05/2016
	Validity of calibration	One Year	One Year
	Delays in calibration (if any)	NIL	NIL

	Accreditation Certificate for the calibration entity issuing authority relevant	NABL accredited	NABL accredited
	<p>The metering equipment for biomass and fossil fuel measurement mainly consists of conveyer belt system which is used to monitor the quantity of biomass and coal procured on each delivery in the project activity. The calibrations results have been verified as below.</p>		
	Monitoring equipment	Conveyer Belt System for weighing Biomass/fuel Fired	
	Parameter to be measured	FC _{biomass,PJ,y} and FC _{FF,y}	
	Unique Identification Number/Sr. No.	1712/13	
	Accuracy Level	0.5 %	
	Calibration frequency requirement	Annual	
	Date of Calibration	23/04/2013, 18/02/2014, 11/02/2015,03/02/2016	
	Validity of calibration (Next Calibration due date)	One Year	
	Delays in calibration (if any)	NIL	
Accreditation Certificate for the calibration entity issuing authority relevant	NABL accredited		
<p>The results of the calibration are satisfactory and are accepted..</p> <p>NCV measurement for the biomass during the current monitoring period are obtained laboratory test/3.5/. Hence, calibration is not required.</p> <p>In light of the guidance as outlined under VVS v09.0 §§ 394, the assessment team checked the calibration procedures. As per the monitoring plan outlined in the registered PDD /1.3/, the calibration interval is annual.</p>			
Findings	No non-conformability was observed during assessment for calibration frequency requirements. Therefore, no finding was raised.		
Conclusion	Applus+ LGAI confirms that the calibration is conducted at the frequency following the relevant industry standard as specified by the methodology /2.3/ and the monitoring plan contained in the registered PDD /1.3/. Therefore, the requirement of VVS v09.0 §§ 400 have been met.		

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	<p>The PP has provided the complete set of data for the current monitoring period. The values of the parameters reported in the MR /1.3/ and ER sheet /4.2/ have been crosschecked with the values mentioned in the supporting documents. The values were found to be consistent and accurate.</p> <p>As per AMS I.D. version 17 If the project activity uses fossil fuel to produce electricity, a specific energy consumption of each type of fuel (biomass or fossil) to be used shall be ex-ante. As per AMS I.D. version 17, paragraph 11 the baseline is the kWh produced by the renewable generating unit multiplied by an emission coefficient calculated in transparent and conservative manner as per para 12 of the methodology.</p> <p>The baseline grid emission factor, Biomass SFC and Emission factor are defined ex-ante and are appropriate and justified. The calculation approach provided in the ER calculation sheet /4.2/ is checked and found to be correct. The baseline emissions are calculated as per provisions indicated in the registered PDD /1.3/ and applied methodology /2.3/. The calculate value of baseline emission BE_y is 90,081</p>
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	tCO ₂ e The means of verification for the parameter are described under section E.6.2.
Findings	<p>CAR #3 raised to clarify followings:</p> <ol style="list-style-type: none"> 1. The PP is requested to clarify how the baseline emission calculation equation mentioned in section E.1 of MR is consistent with equation mentioned in registered PDD page 21? 2. The PP is requested to clarify why baseline emission reduction is calculated based on data monitored from 1st July 2014 whereas the crediting period start from 10th July 2014 in section E.1 of MR. 3. The PP is requested to provide emission reduction calculation sheet. <p>The PP responded that;</p> <ol style="list-style-type: none"> 1. The Equation for the calculation of baseline emissions has been made consistent with the equation given in registered PDD. Please refer section E.1 of the MR for the updated equation. 2. The baseline emission reduction now has been considered from the start date of crediting period i.e. from 10th July 2016. 3. Emission reduction calculation sheet is being shared with DOE. <p>The MR is review by verification assessment team found that:</p> <ol style="list-style-type: none"> 1. The equation for calculation of baseline emission is found consistent with the registered PDD in the revised MR 2. Also, the baseline emission calculation start day is consistent with the start day of monitoring period. 3. The PP has shared emission reduction calculation sheet. Same is found consistent with the revised MR. <p>Hence, CAR#3 is closed satisfactorily</p>
Conclusion	<p>Applus+ LGAI confirms that the requirement outlined under VVS v09.0 §§ 403 have been meet as:</p> <ul style="list-style-type: none"> • A complete set of data for the monitoring period is available. • Information on the baseline GHG emission calculation provided in the monitoring report /1.3/ has been cross-checked with other sources. • Calculations of baseline emissions have been carried out in accordance with the formulae and methods described in the monitoring plan and the applied methodology document. • Appropriate emission factor of the power grid has been correctly applied.

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

Means of verification	<p>The project emission has been considered zero.</p> <p>As per paragraph 20 of AMS I.D. version 17, since the project activity is neither a geothermal power plant, nor does it have water reservoir, the project emissions are estimated to be zero. The auxiliary consumption is met by the generation itself, therefore no fossil fuel is used.</p>
Findings	<p>No non-conformability was observed during assessment for this section. Therefore, no finding was raised.</p>
Conclusion	<p>Applus+ LGAI confirms that the requirement outlined under VVS v09.0 §§ 403 have been meet as:</p> <ul style="list-style-type: none"> • A complete set of data for the monitoring period is available. • Information on the project emission calculation provided in the monitoring report /1.3/ has been cross-checked with other sources. • Calculations of project emissions have been carried out in accordance with the formulae and methods described in the monitoring plan and the applied methodology document.

	<ul style="list-style-type: none"> Appropriate emission factor of the diesel and coal have been correctly applied.
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E.8.3. Calculation of leakage GHG emissions

Means of verification	<p>As per AMS I.D. version 17 If the energy generating equipment is transferred from another activity than leakage has to be considered. Since, no such transfer is there, hence no leakage is considered.</p> <p>Also, it was evaluated in the registered PDD/1.3/, that there is surplus of biomass in the region of the project activity.</p> <p>Hence, leakage has been neglected. Therefore, Leakage, $LE_y = 0$.</p>
Findings	No non-conformability was observed during assessment for this section. Therefore, no finding was raised.
Conclusion	<p>Applus+ LGAI confirms that the requirement outlined under VVS v09.0 §§ 403 have been met as:</p> <ul style="list-style-type: none"> A complete set of data for the monitoring period is available. Information on the leakage emission calculation provided in the monitoring report /1.2/ has been cross-checked with other sources. Calculations of leakage emissions have been carried out in accordance with the formulae and methods described in the monitoring plan and the applied methodology document.

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

Means of verification	<p>The verification team has reviewed the calculation of GHG emission reductions in the final MR /1.3/ and ER spreadsheet /4.2/ as per the registered PDD /1.3/ and the applied methodology /2.3/.</p> <p>The emission reduction is calculated as</p> $ER_y = BE_y - PE_y - LE_y$ $ER_y = 90,081 \text{ tCO}_2\text{e}$ <p>The assessment team verified that the ER excel spreadsheet /4.2/, the ER for each month has been calculated. The sum of the ER for each month has been rounded down to arrive at the total ER for the current monitoring period. Therefore, the PP has considered the conservative ER value as 90,081 tCO₂e</p>
Findings	No non-conformability was observed during assessment for this section. Therefore, no finding was raised.
Conclusion	<p>Applus+ LGAI confirms that the requirement outlined under VVS v09.0 §§ 403 have been met as:</p> <ul style="list-style-type: none"> A complete set of data for the monitoring period is available. Information provided in the monitoring report /1.3/ has been cross-checked with other sources; Calculations of baseline emissions, and project activity emissions and leakage, as appropriate, been carried out in accordance with the formulae and methods described in the monitoring plan and the applied methodology document. There are no assumptions in emission reductions calculation. Appropriate emission factor of the power grid has been correctly applied.

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

Means of verification	<p>The comparison of actual GHG emission reductions with estimates in registered PDD /1.3/ has been checked and re-calculated by the verification team. The emission reduction during the monitoring period (10/07/2014 to 31/03/2016, 1.725 year fraction) is verified as 90,081 tCO₂e. According to the registered PDD, the annual emission reductions were estimated as 52,453 tCO₂e (for year), which gives the exploration value of estimated emission reductions for the same current monitoring period (for 1.725 year fraction) is 90,481 tCO₂e. The verified emission reductions are 0.44% lesser than the estimated value in the monitoring period.</p>
Findings	No non-conformability was observed during assessment for this section. Therefore,

	no finding was raised.
Conclusion	<p>Applus+ LGAI confirms that the requirement outlined under PS v09.0 §§ 256 have been met as:</p> <ul style="list-style-type: none"> • A comparison of actual GHG emission reductions or net anthropogenic GHG removal of the project activity achieved during this monitoring period with the estimates in the registered PDD /1.3/ has been provided in the Monitoring Report /1.3/. • The verification team confirms that the calculation of the comparison is correct.

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

Means of verification	The verification team has assessed the cause of any variation in the actual GHG emission reductions achieved during the current monitoring period by the current monitoring report /1.3/. There is decrease of 0.44% in the actual emission reductions achieved during the current monitoring period from that stated in the registered CDM-PDD. The variation is negligible, hence accepted
Findings	No non-conformability was observed during assessment for this section. Therefore, no finding was raised.
Conclusion	<p>Applus+ LGAI confirms that the requirement outlined under PS v09.0 §§ 257 and VVS v09.0 §§ 385 I and 385 (d) have been met as:</p> <ul style="list-style-type: none"> • The verified emission reductions are lesser than the estimated value in the monitoring period. The project participants have explained the cause of any decrease in the actual GHG emission reductions achieved during the current monitoring period, and including all information (i.e. data and/or parameters) that is different from that stated in the registered PDD /1.3/. • The variation is deemed to be reasonable.

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 reviewed the monitoring report with the daily/monthly reading records to assess whether the GHG emission reductions or removals has been correctly calculated based on a pro-rata approach. The assessment team is able to certify that the emission reductions from the CDM project activity 9973 "Biomass based power plant in Mahendargarh, Haryana" in India during the period 10/07/2014 to 31/03/2016 (First and last day included) amount to 90,081 tCO ₂ e.
Findings	No non-conformability was observed during assessment for this section. Therefore, no finding was raised.
Conclusion	Applus+ LGAI confirms that the requirement outlined under PS v09.0 §§ 254 as the project participants has calculated GHG emission reductions.

SECTION F. Internal quality control

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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 for Issuance is submitted to the CDM-EB along with the relevant documents.

SECTION G. Verification opinion

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Applus+ LGAI has been contracted by Star Wire (India) Vidyut Pvt. Ltd. (SWIVPL) to perform the verification of the emission reductions reported for the CDM project “Biomass based power plant in Mahendargarh, Haryana” in the period 10/07/2014 to 31/03/2016.

Applus+ LGAI concludes that the CDM Project “Biomass based power plant in Mahendargarh, Haryana”, as described in the monitoring plan contained in the registered PDD /1.3/ (Version 14, 28/05/2014), and Monitoring Report /1.3/ (Version 01.2, 02/12/2016), meets all relevant requirements of the UNFCCC for CDM project activities including article 12 of the Kyoto Protocol, the modalities and procedures for CDM (Marrakesh Accords) and the subsequent decisions by the COP/MOP and CDM Executive Board. The verification is conducted in line with the VVS /2.1/ requirements. The Project is implemented according to selected monitoring methodology /2.3/ and the monitoring plan contained in the registered PDD /1.3/. The monitoring equipment was installed, calibrated and maintained in a proper manner. The monitoring system is in place and the Project is generating GHG emission reductions as a CDM project.

Applus+ LGAI confirms that the project is implemented in accordance with the validated and registered Project Design Document. 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 valid and registered project baseline and monitoring and its associated documents. Based on the information seen and evaluated we confirm that the implementation of the project has resulted in 90,081 tCO₂e emission reductions during the period 10/07/2014 to 31/03/2016 (both days included).

Applus+ LGAI therefore issues the positive verification opinion expressed in the Certification statement in Section H.

SECTION H. Certification statement

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Applus+ LGAI has been engaged by Star Wire (India) Vidyut Pvt. Ltd. (SWIVPL) to perform the first periodical verification of the 'Biomass based power plant in Mahendargarh, Haryana' (UNFCCC Ref. No. 9973).

The management of Star Wire (India) Vidyut Pvt. Ltd. (SWIVPL) 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 /1.3/, completed on 28/05/2014 and the applied methodology AMS-I.D Version: 17 /2.3/.

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 and is calibrated appropriately;
- 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 10/07/2014 to 31/03/2016 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: From 10/07/2014 to 31/03/2016

Verified emissions in the above reporting period:

Leakage emissions 0 tCO₂ equivalents

Project emissions 0 tCO₂ equivalents

Baseline emissions 90,081 tCO₂ equivalents

Emission reductions in this monitoring period (i.e. 10/07/2014 to 31/03/2016) 90,081 tCO₂ equivalents

Appendix 1. Abbreviations

Abbreviations	Full texts
AMS	Approved Methodology Small-scale
BM	Build Margin
CAR	Corrective Action Request
CDM	Clean Development Mechanism
CEA	Central Electricity Authority
CER	Certified Emission Reductions
CL	Clarification Request
CM	Combined Margin
CO ₂ e	Carbon Dioxide equivalent
CoP/MoP/CMP	Conference of the Parties serving as the Meeting of the Parties to the Kyoto Protocol
DG	Diesel Generator
DNA	Designated National Authority
DOE	Designated Operational Entity
EB	CDM Executive Board
EF	Emission Factor
EFESPL	Environmentfirst Energy Services Pvt. Ltd.
ER	Emission Reductions
GCV	Gross Calorific Value
GHG	Greenhouse Gas(es)
GPS	Global Positioning System
IPCC	Intergovernmental Panel on Climate Change
ISO	International Organisation for Standardisation
KWh	Kilowatt hour
MP	Monitoring Plan
MR	Monitoring Report
MW/MWh	Megawatt/ Megawatt hour
NEWNE	North East West and North-East
NCV	Net Calorific Value
OM	Operating Margin
PDD	Project Design Document
PP	Project Participant
PPA	Power Purchase Agreement
PLF	Plant Load Factor
PS	Project Standard
QMS	Quality Management System
SFC	Specific Fuel Consumption
SWIVPL	Star Wire (India) Vidyut Pvt. Ltd.
UNFCCC	United Nations Framework Convention on Climate Change
VVS	Validation and Verification Standard

Appendix 2. Competence of team members and technical reviewers

According to the sectoral scopes / technical area and experiences in the sectoral or national business environment, Applus+ LGAI has composed a project validation team in accordance with the appointment rules in Applus+ LGAI. The composition of assessment team has to be approved by the Applus+ LGAI ensuring that the required skills are covered by the team. The four qualification levels for team members that are assigned by formal appointment rules as below:

- Leader Auditor (LA)
- Auditor (A)
- Auditor Trainee (T)
- Technical Experts (E)

It is required that the sectoral scope / technical area related to the methodology has to be covered by the assessment team.

Name	Qualification	Coverage of scope	Coverage of technical Area	Financial aspect	Host country Experience	Attendance to the On-Site Assessment
Vivek Kumar Ahirwar	LA/E	Yes (1)	Yes (1.2)	Yes	Yes	Yes
Ajay Singh Thakur	A	Yes (1)	Yes (1.2)	Yes	Yes	No

Technical Reviewers:

- Miquel SITJES CABANAS
- Natalia RODRIGO VEGA (SUPPORT)
- Technical Reviewer in Training: Denny XUE

The curricula vitae of the DOE's validation team members are provided below:

Vivek Kumar Ahirwar is a BEE-Certified Energy Auditor by Govt of India with over eight years of relevant experience in energy efficiency, energy audit, thermal and electrical energy generation technology from renewable source and energy conservation in energy intensive industries, designated consumers and commercial buildings, implementation of energy conservation building codes, research, process and green building projects. He is a certified lead auditor for ISO 14001 EMS and 14064. He has experience under various categories of projects stating from renewable

to waste to supercritical projects and WCD. He has successfully audited more than 100 GHG (CDM/VCS/GS) projects in different states across the India. He has done Master in Technology (Energy Management) from a premier institute, School of Energy & Environmental Studies, DAVV, Indore (M.P.), India and Bachelor of Engineering (Mechanical Engineering) from Govt. Engineering college, Rewa, RGPV, India.

Ajay Singh Thakur is a certified lead auditor for ISO 14001 EMS LA. He has more than Seven years of work experience across Climate Change, Environmental Management & Monitoring, Health & Safety Management, and Statutory Compliance. He was involved in more than 100 CDM validation and verifications activities and Gold Standard, VER projects as a team leader/technical reviewer / validator / verifier covering the sectoral scope 1 technical area 1.2. He has experience in design and development of Environment Health & Safety Management System (EHS), ISO 14001:2004 (EMS), OHSAS 18001:2007, ISO 14064:2006, ISO 50001:2011 (EnMS) and ISO 9001:2008 (QMS). Also providing trainings on EHS (ISO 14001:2004 (EMS) & OHSAS 18001:2007) to various industries

Miquel SITJES CABANAS (B. Sc. degree in Chemistry 1975, Universidad de Barcelona – Spain) He has 15 years of experience in a Spanish chemical group company specialized in the manufacturing of raw chemical products, where he worked as the Manager of Quality Control, Production Manager and Environmental Manager. He also worked in the Spanish pharmaceutical industry for 7 years as Quality, Manufacturing and Environmental Manager. He has been working in the Applus+ LGAI Technological Centre since 1999: he started working there as an auditor (quality, environment, CDM, VCS, greenhouse gas verification and others) and since 2006 he has been the Systems Certification Technical Manager.

Natalia RODRIGO VEGA has a Bachelor's Degree on Environmental Engineering and Master's Degree on Environmental and Quality Management System (under ISO 9001 and 14001). She Works in APPLUS Environmental and Quality Management Systems Department since March 2012, being specially involved on technical support tasks related to CDM-VCS and GS Standards, among others (i.e GHG accounting and monitoring, GHG verification, National inventories and Proyecto Clima).

She is a qualified CDM Lead auditor and Technical Reviewer.

Hanshen (Denny) Xue (Master Degree in Environmental Engineering, Bachelor Degree in Thermal Engineering) is a lead auditor appointed by Applus+ LGAI for the GHG project assessment. He is based on Shanghai. He has more than 6 years of work experiences in CDM project development. Before he joined Applus+ LGAI, he has been worked for Shanghai Chuanji Investment and Management which is a CDM consultancy company as a project manager for CDM project development.

Appendix 3. Documents reviewed or referenced

No.	Author	Title	References to the document	Provider
1.	Basic Documents (Monitoring Report, Project Design Documents, Previous Verification Reports)			
1.1	SWIVPL	MR for GSC, version 1.0 "Biomass based power plant in Mahendargarh, Haryana"	10/06/2016	PP
1.2	SWIVPL	MR, version 1.1 "Biomass based power plant in Mahendargarh, Haryana"	08/09/2016	PP
1.3	SWIVPL	Registered PDD version 14	28/05/2014	PP
1.4	SGS	Validation Report for Registered PDD	12/06/2014	Other: SGS
1.5	UNFCCC website	CDM Project activity view page "Biomass based power plant in Mahendargarh, Haryana" https://cdm.unfccc.int/Projects/DB/SGS-UKL1403254354.2/view	26/01/2011	Other: UNFCCC
2.	References and requirements at UNFCCC/IPCC/etc.			
2.1	UNFCCC website	VVS, Version 09.0	20/02/2015	Other: UNFCCC
2.2	UNFCCC website	PS, Version 09.0	20/02/2015	Other: UNFCCC
2.3	UNFCCC website	AMS-I.D. (version 17.0): "Grid connected renewable electricity generation"	03/06/2011	Other: UNFCCC
2.4	UNFCCC website	Guidance to Complete "Monitoring Report Form (F-CDM-MR), Version 05.1" as accordance with the Attachment "Instructions for filling out the monitoring report form"	04/05/2015	Other: UNFCCC
2.5	UNFCCC website	Tool to calculate project or leakage CO2 emissions from fossil fuel combustion (Version 02)	02/08/2008	Other: UNFCCC
2.5	IPCC	IPCC Guidelines Vol. 2	Year 2006	Other: IPCC
3.	Project implementation information			
3.1	HPVNL	Start Date of Commercial Operation for the project activity by HPVNL & DHBVNL for synchronisation to NEWNE grid	03/05/2013	PP
3.2	HPPC	Power Purchase Agreements (PPA) for the project activity between SWIVPL and Haryana Power Purchase Centre (HPPC)	22/06/2012	PP
3.3	SWIVPL	Invoices/ Power Supply bills issued to HPPC	10/07/2014 – 31/03/2016	PP
3.4	SWIVPL	Electrical Log Book	10/07/2014 – 31/03/2016	PP
3.5	SWIVPL	Raw Material Fire Log	10/07/2014 – 31/03/2016	PP
3.6	SWIVPL	Daily Raw Material Stock Register	10/07/2014 – 31/03/2016	PP
4.	ER calculation and cross checking issue			
4.1	SWIVPL	Emission reduction calculation sheet version 1.0	10/06/2016	PP
4.2	SWIVPL	Emission reduction calculation sheet version 1.1	08/09/2016	PP
5.	Calibration issues			
5.1	SWIVPL	Calibration test certificates for Main and check energy meters	03/05/2013, 12/05/2014,	PP

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			08/05/2015, 25/05/2015	
5.2	SWIVPL	Calibration test certificates for Main and check energy meters gross electricity generation meter	03/05/2013, 29/03/2014, 28/03/2015, 27/03/2016	PP
5.3	SWIVPL	Calibration test certificates for Electronic weigh bridge & load cell	23/04/2013, 18/02/2014, 11/02/2015, 03/02/2016	PP
6.	Others			
6.1	LGAI	Site Visit Attendance Sheet	10/08/2016 - 11/08/2016	Other: DOE
6.2	LGAI	Site Visit Photograph	10/08/2016 - 11/08/2016	Other: DOE
6.3	CEA	CEA database version 5.0 (Ministry of Power, Government of India) http://www.cea.nic.in/		Other: CEA

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

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

FAR ID	1	Section no.	E	Date: N/A
Description of FAR				
Following FAR was raised during validation of project. As the project activity was not implemented during the validation site visit (conducted on 18/02/2011), hence a FAR is raised to check the appropriateness of the implementation and use of monitoring equipments during first periodic verification. This is in line with the requirement paragraph 27 of VVS version 06.0.				
Project participant response				Date: 16/09/2016
This is to request that during verification site visit all the monitoring points have been evidenced to DOE with photographs of metering equipments. Also this is to state that there is no change in monitoring procedure from the registered PDD and all the procedures as proposed in registered PDD have been implemented in the site. Moreover the requirements of section D of the monitoring report are in place and the calibration and cross check measures have been implemented in accordance with registered PDD.				
Documentation provided by project participant				
1. Commissioning Certificate 2. Power Purchase Agreement (PPA)				
DOE assessment				Date: 18/11/2016
The PP submitted commissioning certificate and PPA which confirm that project was start Commercial Operation on 03/05/2013 and running successfully and same was verified by Verification team during on-site visit, the verification team checked all the monitoring points and taken photographs of metering equipments and project activity site. The assessment team also verified that there is no change in monitoring procedure from the registered PDD and all the procedures as proposed in registered PDD have been implemented at project site and same was verified during on-site visit. The verification team has been verified that the requirements of section D of the monitoring report are in place and the calibration and cross check measures have been implemented in accordance with registered PDD. Hence, assessment team satisfactorily closed FAR#1.				

Table 2. CL from this verification

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

Table 3. CAR from this verification

CAR ID	01	Section no.	E.1	Date: 06/08/2016
Description of CAR				

1. The PP is requested to provide explanation how the estimated amount of CERs has been calculated for corresponding monitoring period on page 01 of MR.
2. The PP is requested to provide further transparent justification on total capacity of project activity as state in the registered PDD says about project is involve installation of 10 MW Biomass based power plant where is A.1 section of MR mentioned 9.9 MW.
3. The PP is requested to provide technical specification of project, commissioning certificate and PPA for project. Also, the PP is requested to provide relevant dates for the project activity (e.g. construction, commissioning, continued operation periods, etc) in section A of the MR as per requirement of MR filling guidelines.
4. The PP is requested to clarify the inconsistency in reporting of GHG reductions in section A.1 (says 91,706) and page no. 01 of MR (whereas 91,706).
5. The PP is requested to provide details of plant outage and diagram as require guidelines of filling MR says "For the description of the installed technology (ies), technical process and equipment, include diagrams, where appropriate."
6. The contact information provided in Appendix 1 of MR is not consistent with Appendix 1 of the registered PDD, please clarify?

Project participant response	Date: 16/09/2016
<ol style="list-style-type: none"> 1. The current claim period is from 10/07/2014 to 31/03/2016 which gives a year fraction of 1.725. This year fraction has been multiplied by the expected annual emission reductions as per estimates of registered CDM PDD i.e.52,453 tCO₂e which gives the value 90,481. 2. The project activity was initially envisaged for the installation of 10 MW biomass based power plant for which the consent to establish was awarded by State Pollution Control Board, however Haryana Renewable Energy Development Authority (HAREDA) has sanctioned the approval of 9.9 MW based on the assessment of biomass available in the region around the project activity. The same has been mentioned in section A.1 of the registered PDD also. 3. Technical Specification of major equipments has been provided in section A.1 of the MR. Copy of Commissioning certificate and PPA is being provided to DOE. The relevant dates like commissioning and information of continuous operation has been provided in the relevant section as asked by DOE. 4. The GHG reduction values have been made consistent throughout. 5. The details of plant outages has been detailed in an excel sheet and is being provided to DOE. The diagram for the process included in project boundary has been provided in the said section of the MR. 6. The contact information provided in "Appendix 1" is the latest updated information therefore DOE is requested to please accept the same. 	

Documentation provided by project participant	
<ol style="list-style-type: none"> 1. Commissioning Certificate 2. Power Purchase Agreement (PPA) 	

DOE assessment	Date: 18/11/2016
<ol style="list-style-type: none"> 1. The assessment team, after review of the revised MR, found the value of estimated amount of GHG emission to be consistent with the PDD. The explanation for same is correctly provided in the footnote. 2. A transparent justification on capacity of the biomass plant is provided in section A.1 of the revised MR. Same is found consistent with the registered PDD. 3. The technical specification, relevant dates etc are provided in section A. Of the revised MR. Same is found consistent with the commissioning certificate and PPA, shared by the PP. 4. The value of GHG reduction is found consistent throughout the revised MR. 5. The details of the plant outages are appropriately provided in the revised Excel sheet. Also, the description of the installed technology (ies), technical process and equipment, and diagrams are appropriately included in section B. Of the revised MR. 6. The PP clarified that the contact information provided in "Appendix 1" is the latest updated one. 	

Based on review of MR and ER sheet and response provided by the PP, it is found that all issues raised under CAR#1 is completely addressed , hence CAR#1 is closed.

CAR ID	02	Section no.	E.6	Date: 06/08/2016
Description of CAR				
<ol style="list-style-type: none"> 1. The PP is requested to clarify why the section C is not included any diagrams of the monitoring system as require by MR filling guidelines says "Include diagrams of the monitoring system and the information flow where appropriate." 2. The PP is requested to clarify why the Value of monitored parameters $EG_{gross,y}$, $EG_{gross,export,y}$, $EG_{gross,import,y}$, $EG_{facility,y}$ and $FC_{biomass,PJ,y}$ are considered from 1 July 2014 where as monitoring and crediting period start from 10 July 2014. 3. The PP is requested to clarify why the monitoring equipment (both Main and Check energy meter) details for parameters $EG_{gross,y}$, $EG_{gross,export,y}$ and $EG_{gross,import,y}$ are not provided in section D.2 of MR as per requirement of MR filling says "For "Monitoring equipment" in the table, provide information on type, accuracy class, serial number, calibration frequency, date of last calibration and validity." 4. The PP is requested to clarify why the monitoring equipment details for parameters $FC_{biomass,PJ,y}$ & $FC_{FF,y}$ are not provided in section D.2 of MR as per requirement of MR filling says "For "Monitoring equipment" in the table, provide information on type, accuracy class, serial number, calibration frequency, date of last calibration and validity." 5. The PP is requested to provide annual energy balance and sales/receipts to cross check the amount of biomass consumed as mentioned in QA/QC of registered PDD , page 25 for parameter $FC_{biomass,PJ,y}$ 6. The PP is requested to clarify why the value of monitored parameter "$NCV_{biomass,y}$" is left blank in MR? Also, it is mentioned in the registered PDD and MR that "NCV of the biomass used in project activity would be tested by a NABL accredited lab on dry basis. NCV would be tested once in quarter, by taking three samples, for the first year. The average value from the quarterly assessment of first year shall be used for the entire crediting period.", so the PP is requested to clarify how this requirement has been done for current monitoring period. 7. The purpose of data for parameter "$NCV_{biomass,y}$" not consistently mentioned with registered PDD as MR mentioned "Calculation of baseline emissions" where as PDD says "To cross check the biomass quantity" . Please clarify? 8. The PP is requested to clarify why the parameters $NCV_{FF,i,y}$ and $EF_{Fossil\ Fuel,i,y}$ are not listed in MR as these are part of registered monitoring plan of the PDD. Please clarify? 				
Project participant response				Date: 16/09/2016
<ol style="list-style-type: none"> 1. The diagram indicating the flow of information for the data and monitoring system has been provided at the last of the said section. 2. The billing cycle for the project activity is from 1st date of each month but as the crediting period start from 10th July 2014 due to which only 21 days are eligible for the onsideration of GHG calculations therefore now data has been apportioned for the 21 days of the month. 3. The monitoring equipments i.e. both Main and Check energy meter details for parameters $EG_{gross,y}$, $EG_{gross,export,y}$ and $EG_{gross,import,y}$ have now been provided in section D.2 of MR in accordance with the guideline. 4. The monitoring equipments i.e. both Main and Check energy meter details for parameters $FC_{biomass,PJ,y}$ & $FC_{FF,y}$ have now been provided in section D.2 of MR in accordance with the guideline. 5. Annual Energy Balance has been provided in an excel sheet to DOE for the cross check measure. 6. The Average NCV is being provided in the said section as per the requirement. 7. The purpose of monitoring NCV of fuel is to cross check the biomass quantity fired during year Y, the same has now been updated in the MR which is now in consistency with registered PDD. 8. As none of fossil fuel is used during this monitoring period therefore the NCV and EF couldn't be monitored/reported. That is why the said parameters are not tabulated in the monitoring report. 				
Documentation provided by project participant				

1. Joint Metering Report and Invoices against sale of electricity
2. Calibration Certificates
3. NCV Test Certificates of Biomass

DOE assessment	Date: 18/11/2016
<ol style="list-style-type: none"> 1. Assessment team, after review of the revised MR confirms that In section C, the diagram indicating flow of information is provided. 2. The value of monitored parameter like $EG_{gross,y}$, $EG_{gross,export,y}$, $EG_{gross,import,y}$, $EG_{facility,y}$ and $FC_{biomass,PJ,y}$ are considered from start of this monitoring period i.e. 10 July 2014 in the revised MR. An an apportioned data is given. 3. The monitoring equipment (both Main and Check energy meter) details for parameters $EG_{gross,y}$, $EG_{gross,export,y}$ and $EG_{gross,import,y}$ are provided in section D.2 of revised MR as per requirement of MR form filling guidelines which says "For "Monitoring equipment" in the table, provide information on type, accuracy class, serial number, calibration frequency, date of last calibration and validity." The same is confirmed during site visit and calibration certificates shared by the PP. 4. The monitoring equipment details for parameters $FC_{biomass,PJ,y}$ & $FC_{FF,y}$ are provided in section D.2 of revised MR as per requirement of MR form filling guidelines which says "For "Monitoring equipment" in the table, provide information on type, accuracy class, serial number, calibration frequency, date of last calibration and validity." The same is confirmed during site visit and calibration certificates shared by the PP. 5. Annual balance sheet has been provided by the PP to cross check the amount of biomass consumed. The value is found consistent. 6. The Average NCV is being provided in the said section as per the requirement. 7. The value of Net Calorific Value of biomass is now provided in the revised MR, The purpose of the data is made consistent with the PDD in the revised MR. The value is cross checked with NCV test certificates 8. As none of the fossil fuel is used during current monitoring period, hence $NCV_{FF,i,y}$ and $EF_{Fossil\ Fuel,i,y}$ are not listed in the revised MR. Same is found appropriate by the assessment team <p>Revised documents have been checked by the assessment team and found correct.</p> <p>Furthermore , the PP is requested to clarify why the last calibration date fall under in year 2016 is mentioned for parameters $EG_{gross,y}$, $EG_{gross,export,y}$ and $EG_{gross,import,y}$</p>	
Project participant response	Date: 02/12/2016
Missing Calibration dates of energy meters are provided in revised MR	
Documentation provided by project participant	
Calibration Certificates MR version 1.3 dated 02/12/2016	
DOE assessment	Date: 02/12/2016
The PP has submitted revised MR with provide missing calibration dates, same was verified with certificate and found to be correct, hence accepted. Thus CAR#2 was closed	

CAR ID	03	Section no.	E.7	Date: 06/08/2016
Description of CAR				
<ol style="list-style-type: none"> 1. he PP is requested to clarify how the baseline emission calculation equation mentioned in section E.1 of MR is consistent with equation mentioned in registered PDD page 21? 2. The PP is requested to clarify why baseline emission reduction is calculated based on data monitored from 1st July 2014 whereas the crediting period start from 10th July 2014 in section E.1 of MR. 3. The PP is requested to provide emission reduction calculation sheet. 				
Project participant response				Date: 16/09/2016

1. The Equation for the calculation of baseline emissions has been made consistent with the equation given in registered PDD. Please refer section E.1 of the MR for the updated equation.
2. The baseline emission reduction now has been considered from the start date of crediting period i.e. from 10th July 2016.
3. Emission reduction calculation sheet is being shared with DOE.

Documentation provided by project participant

Emission Reduction Calculation Sheet.

DOE assessment**Date:** 18/11/2016

1. The equation for calculation of baseline emission is found consistent with the registered PDD in the revised MR
2. Also, the baseline emission calculation start day is consistent with the start day of monitoring period.
3. The PP has shared emission reduction calculation sheet. Same is found consistent with the revised MR.

Hence, CAR#3 is closed satisfactorily

Table 4. FAR from this verification

FAR ID	N/A	Section No.	N/A	Date: N/A
Description of FAR				
N/A				
Project participant response				Date: N/A
N/A				
Documentation provided by project participant				
N/A				
DOE assessment				Date: N/A
N/A				

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Document information

<i>Version</i>	<i>Date</i>	<i>Description</i>
01.0	23 March 2015	Initial publication.
Decision Class: Regulatory Document Type: Form Business Function: Issuance Keywords: project activities, verifying and certifying		