

# BIOMASS BASED COGENERATION PLANT AT GODREJ AGROVET LTD. CHINTAMPALLI

Document Prepared By

EPIC Sustainability Services Private Limited



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<b>Report Title</b>	Biomass based cogeneration plant at Godrej Agrovet Ltd. Chintampalli
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<b>Prepared By</b>	EPIC Sustainability Services Private Limited
<b>Contact</b>	41, Anugraha, 1st Cross, Sundarnagar, Near BEL Circle, Bangalore-560054, Karnataka, India
<b>Approved By</b>	Mr. K. Sudheendra (Head-Operations)
<b>Work Carried Out By</b>	Mr. R. Vijayaraghavan (Lead Auditor cum Technical expert) Mr. A. Prabu Das (Technical reviewer)

**Summary:**

Godrej Agrovet Ltd has appointed EPIC Sustainability Services Private Limited to perform the first periodic verification of the emission reductions reported for the project titled “Biomass based cogeneration plant at Godrej Agrovet Ltd. Chintampalli” (Project ID: 1315) for the period from 18<sup>th</sup> August 2012 to 31<sup>st</sup> March 2016. The verification was based on the validated project design document (PD) version 4.0 dated 23<sup>rd</sup> September 2014, corresponding validation report, monitoring reports and other supporting documents made available to the verification team by the client.

The project involves fuel switch from coal to renewable biomass fibre, shell and empty fruit bunches in the cogeneration plant (35 TPH and 2.5 MW) in a 60 TPH palm fruit processing facility. The avoidance of coal directly related to the emission reduction.

The verification team identified, through the verification process, 03 CARs. The PP has taken actions and submitted to EPIC the revised monitoring report and supporting evidence. The verification team, through the verification process, confirmed that the emission reductions achieved by the project activity during the monitoring period are correctly calculated in the monitoring report, Version 2.0, dated 22<sup>nd</sup> May 2016 based on the approved monitoring methodology, AMS.I.C, version 19.0. Therefore, EPIC certifies the emission reductions amounting to 96,490 tCO<sub>2</sub>e during the monitoring period.

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## 1 INTRODUCTION

### 1.1 Objective

EPIC Sustainability Services Private Limited (hereinafter referred to as EPIC) has been contracted by Godrej Agrovet Ltd (hereinafter referred to as PP) to undertake the (first periodic) independent verification of the project activity titled “Biomass based cogeneration plant at Godrej Agrovet Ltd. Chintampalli” (hereinafter referred to as project activity)

- To verify that the actual monitoring system and procedures are in full compliance with the system and procedures described in the monitoring plan of validated PD, version 4.0 dated 23<sup>rd</sup> September 2014 (hereinafter referred to as validated PD) as well as with the applicable methodology;
- To verify that the data reported were accurate, complete, consistent, transparent and free of material error or omission by checking the monitoring records and the emissions reduction calculation; and
- To verify and certify GHG emission reduction reported for the project for the period from 18<sup>th</sup> August 2012 to 31<sup>st</sup> March 2016 (hereinafter referred to as current monitoring period).

### 1.2 Scope and Criteria

The scope of the verification was the independent and objective review and ex-post determination of the monitored reductions in GHG emissions from the project activity. The verification of this CDM project was based on the validated and registered project design document (PD), validation report and monitoring reports and supporting documents made available to the verification team. These documents were reviewed against the requirements of the VCS standard<sup>1/</sup> version 3.4, VCS guidelines, the CDM Modalities and Procedures, related rules and guidance, and the Validation and Verification standard<sup>2/</sup> Version 9.0. The verification is not meant to provide any consulting towards the client. However, stated request for clarifications and/or corrective actions may provide input for improvement of the project design.

### 1.3 Level of Assurance

In line with VCS requirements and as per ISO 14064-3:2006 para A.2.3.2, a reasonable level of assurance is defined for the verification of the project.

This implies that based on the process and procedures conducted EPIC should state whether the information in the PD is materially correct and is a fair representation of the of the actual project details, and is prepared in accordance with the VCS requirements and the applied CDM methodology for information pertaining to additionality, GHG quantification, monitoring and reporting.

### 1.4 Summary Description of the Project

The project involves fuel switch from coal to renewable biomass fibre, shell and empty fruit bunches in the cogeneration plant (35 TPH and 2.5 MW) in a 60 TPH palm fruit processing facility. The avoidance of coal directly related to the emission reduction. The intent of the Project Activity is to reduce GHG emission and promote sustainable development by use of renewable energy for generation of steam and power in the cogeneration power plant. In the absence of the project activity, the equivalent amount of electricity and steam would have been generated using coal.

## 2 VERIFICATION PROCESS

### 2.1 Method and Criteria

The verification process consists of the following phases:

- i) a document review of the project design documents, monitoring reports and preparation of verification protocol;
- ii) on-site visit to the project activity and interviews with project developer and project consultant; and
- iii) resolution of outstanding issues and the issuance of final verification report and opinion

In order to ensure transparency, a verification protocol was prepared for the project according to the VCS version 9.0 verification requirements and VCS Standard version 3.4. The verification protocol serves the following purposes:

- it organizes, details and clarifies the requirements that a CDM project is expected to meet;
- it ensures a transparent validation process where the validator will document how a particular requirement has been validated and the result of the validation.

The completed validation protocol is enclosed in Appendix of this report.

During the verification, non-fulfillment of the verification protocol criteria or identified risks to the fulfillment of project objectives were raised as either CAR or CR. Corrective Action Requests (CAR) were issued, where:

- i) mistakes had been made that directly impacted on the project results; or
- ii) CDM requirements had not been met; or
- iii) there was a risk that the project would not be accepted as a CDM project or that emission reductions will not be certified.

The Clarification Requests (CR) were issued where additional information was needed to clarify issues, and Forward Action Requests (FAR) for issues relating to project implementation that required review during the first verification of the project activity.

The following team members from EPIC are involved in identifying the following:

Name	Role	Components reviewed
Mr. R. Vijayaraghavan	Lead Auditor cum Technical expert	Completeness check, desk review, onsite inspection, Interview with project representatives, issuance of findings, report preparation
Mr. A. Prabu Das	Technical Reviewer	Technical Issues related to project

### 2.2 Document Review

The verification was performed primarily based on the review of the monitoring report and the supporting documentation. This process included:-

1. a review of data and information presented to verify their completeness
2. a review of the Monitoring Plan and monitoring methodology, paying particular attention to the frequency of measurements, the quality of metering equipment including calibration requirements, and the QA/QC procedures, and
3. an evaluation of data management and the QA/QC system in the context of their influence on the generation and reporting of ERs.

The monitoring report<sup>5/</sup>, Version 01, dated 3<sup>rd</sup> May 2016 (hereinafter referred to as initial MR) was initially reviewed and further EPIC requested the PP to present the supporting evidences. Additional background information and documents related to the project performance were also reviewed by EPIC. Through the process of the verification, the revised monitoring report and the supporting documents were evaluated to confirm the actions taken by the PP to the CARs and CLs issued by EPIC. The documents reviewed by EPIC are listed in References section of this report. EPIC reviewed the final version of the monitoring report<sup>5/</sup> Version 2.0 dated 22<sup>nd</sup> May 2016 (hereinafter referred to as final MR) to confirm that all changes agreed had been incorporated.

## 2.3 Interviews

After the review of the Project description and documents a site visit was carried out from 5<sup>th</sup> May 2016. During the site visit physical inspection of the project components followed by interviews with the on-site personnel was carried out to verify the project details. A follow-up meeting was also conducted with the project representatives. The following persons were interviewed.

Name & Designation	Company	Details of Interview
Mr. MSMS Kumar General Manager (Production and Projects)	Godrej	Technical Details, Cogeneration system, Purchase of biomass, Monitoring system, calibration frequency, Grid connectivity & power evacuation system / Infrastructure. Overall Project management.
Mr. Sumeet Singhvi – Managing Director  Mr. Jimmy Sah – General Manager (Sustainability)	Infinite Solutions	.

## 2.4 Site Inspections

During the site visit, the actual on-site practices adopted and followed for the operation of the project were compared with the description given in the monitoring report. The technical details, cogeneration system, metering practices, calibration and level of accuracy were examined. The archived data of the energy generated was also reviewed.

An on-site assessment was conducted as a part of verification activity and involved:

- 1) an assessment of the implementation and operation of the project activity as per the registered PDD
- 2) a review of information flows for generating, aggregating and reporting of the monitoring parameters
- 3) interviews with relevant personnel to confirm that the operational and data collection procedures are implemented in accordance with the Monitoring Plan
- 4) a cross-check between information provided in the MR and data from other sources
- 5) a check of the monitoring equipment including calibration performance, and observations of monitoring practices against the requirements of the PDD and the applied methodology
- 6) A review of calculations and assumptions made in determining the GHG data and ERs, and

7) An identification of QA/QC procedures in place to prevent, or identify and correct, any errors or omissions in the reported monitoring parameters.

## 2.5 Resolution of Findings

### Resolution of Clarification and Corrective Action Requests

The objective of this phase of the verification was to resolve the corrective action requests and clarifications and any other outstanding issues which needed to be clarified prior to EPIC positive conclusion on the monitoring report and the project design. During the validation process three CARs were raised.

All the CARs and CRs were resolved during this phase. In order to ensure the transparency of the validation process, the concerns raised and responses that were given are summarized in Appendix 1 of this report and documented in more detail in the Verification in Appendix 1. All the corrective actions have been incorporated into the monitoring report.

### Internal quality control

A Technical Reviewer is appointed to review the final draft verification report and the final verification report. The comments made by the Technical Reviewer are taken into consideration and incorporated in the final report. The final report (after resolutions of all findings) is then submitted to the Head – Operations for review and approval.

#### 2.5.1 Forward Action Requests

There is no FAR raised during this verification process.

## 2.6 Eligibility for Validation Activities

EPIC has accredited for validation and verification for the scopes 1-11 and 13-15 by CDM UNFCCC and as well as by the VCS board.

## 3 VALIDATION FINDINGS

### 3.1 Participation under Other GHG Programs

Not applicable

### 3.2 Methodology Deviations

There is no methodology deviation involved.

### 3.3 Project Description Deviations

There are no such deviations observed for this project activity.

### 3.4 Grouped Project

The project activity is not a grouped project.

## 4 VERIFICATION FINDINGS

### 4.1 Project Implementation Status

The verification based on the onsite observation, found that there is no material discrepancies between the project implementation and the project description. The verification team checked the status of monitoring plan the completeness of monitoring system and found no discrepancies between the actual monitoring system and the monitoring plan set in the validated project description. PP has provided an undertaking letter that there will not be any double counting. The verification team was able to conclude the project has been implemented as described in the validated project description.

### 4.2 Accuracy of GHG Emission Reduction and Removal Calculations

The verification of all the data ex-ante and data ex-post (monitoring parameters) used for the calculation of baseline emissions, project emissions and leakage emissions are tabulated below.

Parameter	Conclusion by the verification team
Emission reduction of the project activity (ER <sub>y</sub> )	<p>As per para 49 of the applied methodology, emission reduction is calculated as follows.  <math>ER_y = BE_y - PE_y - LE_y</math></p> <p>Where            BE<sub>y</sub>- Baseline emissions during the monitoring period y            PE<sub>y</sub>-Project emissions during the monitoring period y            LE<sub>y</sub>- Leakage emissions during the monitoring period y</p> <p>The verification opinion of the same is demonstrated below.</p>
Baseline emissions (BE <sub>y</sub> )	<p>Since the project activity producing both heat and electricity, it uses case 19d as baseline scenario. As per para 27 of the applied methodology, the following equation is used to calculate baseline emissions.</p> $BE_y = BE_{cogen,CO2,y} = [(EG_{PJ,thermal,y} + EG_{PJ,electrical,y} \times 3.6) / \eta_{BL,cogen}] \times EF_{FF,CO2}$ <p>Where            BE<sub>cogen,CO2,y</sub> -Baseline emissions from electricity and thermal energy displaced by the project activity during the year y            EG<sub>PJ,thermal,y</sub> -net quantity of thermal energy supplied by the project activity during the year y</p>

	<p><math>EG_{PJ,electrical,y}</math> -amount of electricity supplied by the project activity during the year <math>y</math></p> <p>3.6-Conversion factor</p> <p><math>\eta_{BL,cogen}</math> -total annual average efficiency of the cogeneration plant using fossil fuel</p> <p><math>EF_{FF,CO_2}</math> -CO2 emission factor of the fossil fuel that would have been used in the baseline cogeneration plant</p> <p>The verification opinion of the same is demonstrated below.</p>
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<p>Net quantity of thermal energy supplied by the project activity during the year y</p>	<p>As per the PD, it is calculated as below.</p> <p><math>EG_{PJ,thermal,y} = \text{mass of steam extracted} \times (\text{Enthalpy of extracted steam at extracted pressure \&amp; corresponding temperature} - \text{Enthalpy of feed water})</math></p> <p>The verification opinion of the same is demonstrated below.</p>																		
<p>Mass of steam extracted (<math>Q_{steam}</math>) = 1,984 tonnes per month to 19,156 tonnes per month</p> <p>(monitored parameter)</p> <p>QA/QC procedure:</p> <table border="1" data-bbox="191 655 704 844"> <thead> <tr> <th>Instrument no / serial no</th> <th>Year</th> <th>Actual error</th> </tr> </thead> <tbody> <tr> <td>TB-MSF-FT2</td> <td>17<sup>th</sup> August 2012</td> <td>No error</td> </tr> <tr> <td>TB-MSF-FT2</td> <td>25<sup>th</sup> Jan 2014</td> <td>No error</td> </tr> </tbody> </table>	Instrument no / serial no	Year	Actual error	TB-MSF-FT2	17 <sup>th</sup> August 2012	No error	TB-MSF-FT2	25 <sup>th</sup> Jan 2014	No error	<p>As per the PD, it is to be measured continuously and recorded every month by a totaliser. It is recorded in steam production log sheet. The verification team has reviewed the log sheet and accepted the value as correctly applied for emission reduction calculation.</p> <p>QA/QC procedure:</p> <p>As per the PD, it is to be calibrated every 3 year. The accuracy of steam flow meter is 0.5%. As per the calibration certificates reviewed, the actual error does not cross the maximum permissible error of the meter. Hence accepted by the verification team.</p>									
Instrument no / serial no	Year	Actual error																	
TB-MSF-FT2	17 <sup>th</sup> August 2012	No error																	
TB-MSF-FT2	25 <sup>th</sup> Jan 2014	No error																	
<p>Enthalpy of extracted steam at extracted pressure &amp; temperature</p>	<p>Enthalpy is directly related to extracted pressure and temperature of steam extracted at the back pressure turbine. The verification team has observed this at the onsite.</p> <p>The verification opinion of the same is demonstrated below.</p>																		
<p>Average monthly Extracted pressure = 1.5 to 3.1 kg/cm<sup>2</sup></p> <p>(monitored parameter)</p> <p>QA/QC procedure:</p> <table border="1" data-bbox="191 1306 727 1675"> <thead> <tr> <th>Instrument no / serial no</th> <th>Year</th> <th>Actual error</th> </tr> </thead> <tbody> <tr> <td>TB-18</td> <td>17<sup>th</sup> August 2012</td> <td>0%</td> </tr> <tr> <td>TB-18</td> <td>17<sup>th</sup> August 2013</td> <td>+0.00625%</td> </tr> <tr> <td>TB-18</td> <td>25<sup>th</sup> Jan 2014</td> <td>0%</td> </tr> <tr> <td>TB-21</td> <td>22<sup>nd</sup> Jan 2015</td> <td>+0.008%</td> </tr> <tr> <td>TB-21</td> <td>21<sup>st</sup> Jan 2016</td> <td>No error</td> </tr> </tbody> </table>	Instrument no / serial no	Year	Actual error	TB-18	17 <sup>th</sup> August 2012	0%	TB-18	17 <sup>th</sup> August 2013	+0.00625%	TB-18	25 <sup>th</sup> Jan 2014	0%	TB-21	22 <sup>nd</sup> Jan 2015	+0.008%	TB-21	21 <sup>st</sup> Jan 2016	No error	<p>As per the PD, it is to be measured continuously and recorded every month. The average value is used for emission reduction. It is recorded in steam production log sheet. The verification team has reviewed the log sheet and accepted the value as correctly applied. The verification team has observed that it is measured as gauge pressure. For some months, value was recorded as zero which indicates that plant was shut down. The verification team has accepted as it resulted in conservative baseline emissions.</p> <p>QA/QC procedure:</p> <p>As per the PD, it is to be calibrated every 1 year. The accuracy of pressure gauge is 1%. As per the calibration certificates reviewed, the actual error does not cross the maximum permissible error of the meter. Hence accepted by the verification team.</p>
Instrument no / serial no	Year	Actual error																	
TB-18	17 <sup>th</sup> August 2012	0%																	
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TB-21	22 <sup>nd</sup> Jan 2015	+0.008%																	
TB-21	21 <sup>st</sup> Jan 2016	No error																	

<p>Average monthly Extracted temperature =180 to 214 Deg C</p> <p>(monitored parameter)</p> <p>QA/QC procedure:</p> <table border="1" data-bbox="191 411 727 821"> <thead> <tr> <th>Instrument no / serial no</th> <th>Year</th> <th>Actual error</th> </tr> </thead> <tbody> <tr> <td>TB-THT-TT3</td> <td>17<sup>th</sup> August 2012</td> <td>+0.008%</td> </tr> <tr> <td>TB-THT-TT3</td> <td>17<sup>th</sup> August 2013</td> <td>+0.008%</td> </tr> <tr> <td>TB-THT-TT3</td> <td>25<sup>th</sup> Jan 2014</td> <td>+0.008%</td> </tr> <tr> <td>TB-THT-TT3</td> <td>22<sup>nd</sup> Jan 2015</td> <td>+0.008%</td> </tr> <tr> <td>TB-THT-TT3</td> <td>21<sup>st</sup> Jan 2016</td> <td>+0.008%</td> </tr> </tbody> </table>	Instrument no / serial no	Year	Actual error	TB-THT-TT3	17 <sup>th</sup> August 2012	+0.008%	TB-THT-TT3	17 <sup>th</sup> August 2013	+0.008%	TB-THT-TT3	25 <sup>th</sup> Jan 2014	+0.008%	TB-THT-TT3	22 <sup>nd</sup> Jan 2015	+0.008%	TB-THT-TT3	21 <sup>st</sup> Jan 2016	+0.008%	<p>As per the PD, it is to be measured continuously and recorded every month. The average value is used for emission reduction. It is recorded in steam production log sheet. The verification team has reviewed the log sheet and accepted the value as correctly applied.</p> <p>QA/QC procedure: The accuracy of temperature gauge is 1%. As per the calibration certificates reviewed, the actual error does not cross the maximum permissible error of the meter. Hence accepted by the verification team.</p>
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TB-THT-TT3	17 <sup>th</sup> August 2012	+0.008%																	
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TB-THT-TT3	21 <sup>st</sup> Jan 2016	+0.008%																	
<p>Enthalpy of extracted steam at extracted pressure &amp; temperature = 2716.59 kJ/kg to 2762.42 kJ/kg</p>	<p>Enthalpy is directly related to extracted pressure and temperature of steam extracted at the back pressure turbine. The verification team has observed this at the onsite. PP has used spiraxsarco website for determining enthalpy with reference to pressure and temperature which is authentic.</p>																		
<p>Average monthly Enthalpy of feed water = 440 kJ/kg</p> <p>(ex-ante parameter)</p>	<p>It is assumed that feed water temperature is 105 deg C which directly gives the value of enthalpy of feed water.</p>																		
<p>Net quantity of thermal energy supplied by the project activity during the monitoring period (<math>EG_{PJ,thermal,y}</math>) = 810.95 TJ</p>	<p>As per the PD, it is calculated as below.</p> <p><math>EG_{PJ,thermal,y}</math> = mass of steam extracted x (Enthalpy of extracted steam at extracted pressure &amp; temperature– Enthalpy of feed water)</p>																		
<p>Amount of electricity supplied by the project activity during the monitoring period (<math>EG_{PJ,electrical,y}</math>)</p>	<p>As per the onsite observation, amount of electricity supplied by the project activity during the monitoring period (<math>EG_{PJ,electrical,y}</math>) is calculated as difference between amount of electricity generated by the project activity during the monitoring period and Import from grid during this monitoring period.</p>																		
<p>Amount of electricity generated by the project activity during the monitoring period = 12,841.456 MWh</p> <table border="1" data-bbox="191 1654 727 1854"> <thead> <tr> <th>Instrument no / serial no</th> <th>Year</th> <th>Actual error</th> </tr> </thead> <tbody> <tr> <td>MSB0001253</td> <td>17<sup>th</sup> August 2012</td> <td>-0.1%</td> </tr> <tr> <td>MSB0001253</td> <td>25<sup>th</sup> Jan 2014</td> <td>-0.1%</td> </tr> </tbody> </table>	Instrument no / serial no	Year	Actual error	MSB0001253	17 <sup>th</sup> August 2012	-0.1%	MSB0001253	25 <sup>th</sup> Jan 2014	-0.1%	<p>As per the PD, it is to be measured continuously and recorded every month by an electricity meter. It is recorded in cogen log sheet. But during this monitoring period, DG set was not used. The verification team has observed that the electricity meter account for auxiliary consumption as well. The verification team has reviewed the log sheet and accepted the value as correctly applied for emission reduction calculation.</p> <p>QA/QC procedure: As per the PD, it is to be calibrated every 3 year. The</p>									
Instrument no / serial no	Year	Actual error																	
MSB0001253	17 <sup>th</sup> August 2012	-0.1%																	
MSB0001253	25 <sup>th</sup> Jan 2014	-0.1%																	

	accuracy of steam flow meter is 0.2s. As per the calibration certificates reviewed, the actual error does not cross the maximum permissible error of the meter. Hence accepted by the verification team.									
<p>Import from grid during this monitoring period = 287.345 MWh</p> <table border="1"> <thead> <tr> <th>Instrument no / serial no</th> <th>Year</th> <th>Actual error</th> </tr> </thead> <tbody> <tr> <td>MSB0001254</td> <td>17<sup>th</sup> August 2012</td> <td>-0.1%</td> </tr> <tr> <td>MSB0001254</td> <td>25<sup>th</sup> Jan 2014</td> <td>-0.1%</td> </tr> </tbody> </table>	Instrument no / serial no	Year	Actual error	MSB0001254	17 <sup>th</sup> August 2012	-0.1%	MSB0001254	25 <sup>th</sup> Jan 2014	-0.1%	<p>As per the PD, it is to be measured continuously and recorded every month by an electricity meter. It is controlled by electricity board. The verification team has reviewed the log sheet and accepted the value as correctly applied for emission reduction calculation.</p> <p>QA/QC procedure: As per the PD, it is to be calibrated every 3 year. The accuracy of meter is 0.2s. As per the calibration certificates reviewed, the actual error does not cross the maximum permissible error of the meter. Hence accepted by the verification team.</p>
Instrument no / serial no	Year	Actual error								
MSB0001254	17 <sup>th</sup> August 2012	-0.1%								
MSB0001254	25 <sup>th</sup> Jan 2014	-0.1%								
<p>Amount of electricity supplied by the project activity during the monitoring period (<math>EG_{PJ,electrical,y}</math>) =12,554.111 MWh</p> <p>(Calculated value)</p>	<p>As per the onsite observation, amount of electricity supplied by the project activity during the monitoring period (<math>EG_{PJ,electrical,y}</math>) is calculated as difference between amount of electricity generated by the project activity during the monitoring period and Import from grid during this monitoring period.</p>									
<p>Total annual average efficiency of the cogeneration plant using fossil fuel (<math>\eta_{BL,cogen}</math>) = 85%</p> <p>(ex-ante parameter)</p>	<p>It is sourced from PD. It is fixed during the crediting period. Hence accepted by the verification team.</p>									
<p>CO2 emission factor of the fossil fuel that would have been used in the baseline cogeneration plant (<math>EF_{FF,CO2}</math>) =95.80 tCO2/TJ</p> <p>(monitored parameter)</p>	<p>As per the PD, it is monitored once in a monitoring period. PP has used CEA database (version 8.0) to source the value. The verification team has reviewed the CEA database and accepted.</p> <p>QA/QC procedure: Since the data is taken from Indian National Communication to UNFCCC/IPCC it is considered to be authentic source.</p>									

<p>Baseline emissions during the monitoring period (<math>BE_y</math>) =96,490 tCO<sub>2</sub>e</p>	<p>Since the project activity producing both heat and electricity, it uses case 19d as baseline scenario. As per para 27 of the applied methodology, the following equation is used to calculate baseline emissions.</p> $BE_y = BE_{\text{cogen,CO}_2,y} = [(EG_{P,J,\text{thermal},y} + EG_{P,J,\text{electrical},y} \times 3.6) / \eta_{\text{BL,cogen}}] \times EF_{\text{FF,CO}_2}$
<p>Project emissions during the monitoring period (<math>PE_y</math>) = 0 tCO<sub>2</sub>e</p>	<p>As per para 45 of the applied methodology, Project emissions include CO<sub>2</sub> emissions from on-site consumption of fossil fuels due to the project activity shall be calculated using the latest version of the “Tool to calculate project or leakage CO<sub>2</sub> emissions from fossil fuel combustion”</p> <ul style="list-style-type: none"> <li>• CO<sub>2</sub> emissions from electricity consumption by the project activity using the latest version of the “Tool to calculate baseline, project and/or leakage emissions from electricity consumption”</li> <li>• Any other significant emissions associated with project activity within the project boundary;</li> <li>• For geothermal project activities, project participants shall account for the following emission sources, where applicable: fugitive emissions of carbon dioxide and methane due to release of non-condensable gases from produced steam; and carbon dioxide emissions resulting from combustion of fossil fuels related to the operation of the geothermal power plant.</li> </ul> <p>No electricity was consumed by the project activity which can be considered for the calculation of project emissions as import of electricity was already accounted in the calculation of baseline emissions. There is no other significant emission associated with project activity within the project boundary. Based on the above, project emission is zero.</p>
<p>Quantity of fossil fuel combusted in the project in year y (<math>FC_{i,j,y}</math>) =0 tonne</p> <p>(monitored parameter)</p> <p>QA/QC procedure:</p>	<p>As per onsite observation, there is no fossil fuel was used at the facility in the boiler nor DG set was used.</p> <p>QA/QC procedure: The verification team has cross-checked with the annual energy balance and found that no coal is used in this monitoring period. Accuracy class of the weigh bridge is 1%. But calibration was not done in any of the year. Since fossil fuel is not used, non-compliance does not material. Hence accepted by the verification team.</p>
<p>NCV of fossil fuel</p> <p>(monitored parameter)</p>	<p>As per the PD, NCV of fossil fuel is to be measured once in the first year of the crediting period (3 samples in each quarter) by third party laboratory/ in-house as per national/ international standard. But no fossil fuel is procured during this monitoring period.</p> <p>QA/QC procedure: No QA/QC procedure is possible as there was no procurement of fossil fuel.</p>

<p>Leakage emissions during the monitoring period (LE<sub>y</sub>)=0 tCO<sub>2</sub>e</p>	<p>As per para 47 of the applied methodology, if the energy generating equipment utilised is transferred from outside the boundary to the project activity, leakage is to be considered. The verification team has observed that boiler or turbine was transferred from outside the project facility. As per para 48 of the applied methodology, In cases where the collection/ processing / transportation of biomass residues is outside the project boundary CO<sub>2</sub> emissions from the collection / processing / transportation of biomass residues to the project site shall be taken into account as leakage. The verification observed that biomass is procured from local market which is located near to the project activity (less than 50 km). In view of the above, the leakage emissions are zero.</p>
<p>Net Quantity of biomass type k (Palm Fibre) consumed in the boiler during the monitoring period =89,214.97 tonnes</p>	<p>As per the PD, it is to be measured using weigh bridge. The verification team has observed that it is measured every time when the load arrives at the facility.</p> <p>QA/QC procedure: The quantity of Palm Fibre consumed is crosschecked with the mass balance as only Palm Fibre, Shredded Fibre and Palm shell are used in the boiler. Accuracy of the weigh bridge is 1% only. But calibration was not done in any of the year. Since biomass is not used, for emission calculations, non- compliance does not material. Hence accepted by the verification team.</p>
<p>NCV of Palm Fibre =4288 kCal/kg (monitored parameter)</p>	<p>As per the PD, NCV is to be measured once in the first year of the crediting period (3 samples in each quarter) by third party laboratory/ in-house as per national/ international standard. At the site, it is measured in the lab.</p> <p>QA/QC procedure: Average value obtained using third party analysis is compared public literature and found to be in the range hence accepted.</p>
<p>Net Quantity of biomass type k (Shredded Fibre) consumed in the boiler during the monitoring period = 9207.24 tonnes</p>	<p>As per the PD, it is to be measured using weigh bridge. The verification team has observed that it is measured every time when the load arrives at the facility.</p> <p>QA/QC procedure: The quantity of Shredded Fibre consumed is crosschecked with the mass balance as only Palm Fibre, Shredded Fibre and Palm shell are used in the boiler. Accuracy of the weigh bridge is 1% only. But calibration was not done in any of the year. Since biomass is not used, for emission calculations, non-compliance does not material. Hence accepted by the verification team.</p>
<p>NCV of Shredded Fibre =3,863 kCal/kg (monitored parameter)</p>	<p>As per the PD, NCV is to be measured once in the first year of the crediting period (3 samples in each quarter) by third party laboratory/ in-house as per</p>

	<p>national/ international standard. At the site, it is measured in the lab.</p> <p>QA/QC procedure: Average value obtained using third party analysis is compared public literature and found to be in the range hence accepted.</p>
Net Quantity of biomass type k (Palm shell) consumed in the boiler during the monitoring period =14,680.52 tonnes	<p>As per the PD, it is to be measured using weigh bridge. The verification team has observed that it is measured every time when the load arrives at the facility.</p> <p>QA/QC procedure: The quantity of Palm shell consumed is crosschecked with the mass balance as only Palm Fibre, Shredded Fibre and Palm shell are used in the boiler. Accuracy of the weigh bridge is 1% only. But calibration was not done in any of the year. Since biomass is not used, for emission calculations, non- compliance does not material. Hence accepted by the verification team.</p>
NCV of Palm shell = 4,372 kCal/kg  (monitored parameter)	<p>As per the PD, NCV is to be measured once in the first year of the crediting period (3 samples in each quarter) by third party laboratory/ in-house as per national/ international standard. At the site, it is measured in the lab.</p> <p>QA/QC procedure: Average value obtained using third party analysis is compared IPCC default values and found to be in the range hence accepted.</p>
Emission reduction of the project activity (ER <sub>y</sub> ) = 96,490 tCO <sub>2</sub> e	<p>As per para 49 of the applied methodology, emission reduction is calculated as follows. ER<sub>y</sub> =BE<sub>y</sub>-PE<sub>y</sub>-LE<sub>y</sub></p>

### 4.3 Quality of Evidence to Determine GHG Emission Reductions and Removals

Refer section 4.2 above for details

### 4.4 Non-Permanence Risk Analysis

Not applicable for a renewable energy project.

## 5 VERIFICATION CONCLUSION

EPIC Sustainability Services Private Limited has been engaged by Godrej Agrovet Limited to perform the first periodic verification of the VCS project “Biomass based cogeneration plant at Godrej Agrovet Ltd. Chintampalli” for the period from 18<sup>th</sup> August 2012 to 31<sup>st</sup> March 2016.

The verification was based on the validated PD, the baseline and monitoring methodology (AMS.I.C version 19.0), the Monitoring Report, emission reduction spread sheets and other supporting documents made available to EPIC verification team by the project participant. The management of PP was responsible for the preparation and reporting of GHG emissions data, and the reported GHG emissions reduction on the basis set out within the project monitoring plan.

It is the responsibility of EPIC verification team to express an independent GHG verification opinion on the GHG emissions from the project for the monitoring period and on the calculation of GHG emission reductions from the project based on the verified emissions for the same period.

The verification was carried out in accordance with the requirements of the Validation and Verification standard Version 9.0 and VCS Standard 3.4. As a result of the verification, the verification team confirms that for the reporting period:

- all operations of the project were implemented as described in the registered PD, (project ID 1315) ,
- the monitoring plan is in accordance with the approved monitoring methodology applied by the project activity.
- the monitoring has been carried out in accordance with the validated PD version 4.0 dated 23<sup>rd</sup> September 2014.
- the monitoring aspects (i.e. additional monitoring parameters, monitoring frequency and calibration frequency) were in place and functional, with the installed equipment essential for generating emission reduction operating appropriately and the calibration of all the equipment had been carried out accordingly and appropriate adjustments had been made when there were delays in the calibration, and
- the GHG emission reductions achieved were calculated correctly on the basis of approved monitoring methodology.

We have verified that the information included in the final monitoring report (version 2.0, dated 22<sup>nd</sup> May 2016) was correct and that the emission reductions achieved had been determined correctly. In our opinion, the GHG emission reductions for the monitoring period stated in the latest revised monitoring report for the project are fairly stated

The verifier confirms that the GHG emission reductions were calculated without material misstatements for the whole monitoring period. Our opinion is based on the project's GHG emissions and resulting GHG emission reductions reported, and, to the valid and registered project baseline and monitoring documents. We confirm the following:

Verification period: From [18<sup>th</sup> August 2012] to [31<sup>st</sup> March 2016]

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

Year	Baseline emissions or removals (tCO <sub>2</sub> e)	Project emissions or removals (tCO <sub>2</sub> e)	Leakage emissions (tCO <sub>2</sub> e)	Net GHG emission reductions or removals (tCO <sub>2</sub> e)
Year 2012	7,956	0	0	7,956
Year 2013	27,055	0	0	27,055
Year 2014	28,703	0	0	28,703
Year 2015	29,450	0	0	29,450
Year 2016	3,326	0	0	3,326
<b>Total</b>	96,490	0	0	96,490

Prepared by :	<i>R. Vijayaraghavan</i>	Approved by:	<i>K. Sudheendra</i>
	(R. Vijayaraghavan) Verification Team Leader		(K. Sudheendra) Head-Operations

## 6 REFERENCES

1	Validation and verification Standard version 9.0
2	VCS Standard version 3.4
3	Commissioning Certificates of boiler and turbine
4	Electricity invoices
5	Monitoring report Version 1.0 and its related documents Monitoring report Version 2.0 and its related documents
6	Registered PD
7	Corresponding Validation report
8	Calibration certificates

## Verification checklist

**Project name:** Biomass based cogeneration plant at Godrej Agrovet Ltd. Chintampalli

**TABLE 1: VERIFICATION REQUIREMENTS BASED ON CDM VALIDATION AND VERIFICATION STANDARD VERSION 9.0**

	Checklist Questions	Comments by verifier	Conclusion
	<b>Compliance of the project implementation with the registered project design document</b>		
1	Was an on-site visit conducted for this verification? If no, please justify the rationale of the decision. (Refer VVS 262)	The verification team visited physically to the site and found that boiler and turbine were commissioned as on date.	<b>OK</b>
2	Are all physical features of the CDM project activity proposed in the registered PDD in place? (Refer 262)	The physical features, as required by the registered PDD, include boiler, turbine and energy meters. The verification team was able to confirm that all physical features of the proposed project activity matches with that mentioned in the registered PDD. The project is not was claiming CDM also. But evidence for there will not be any double counting is not provided.	<b>CAR-1</b>
3	Have the project participants operated the proposed CDM project activity as per the registered PDD or any approved revised PDD? (Refer VVS 262 and 265)	It has implemented and operated the project as per the registered PDD. This was also evident from the logsheets are available provided by the PP.	<b>OK</b>
4	For this monitoring period, what is the status of the implementation of the project?  For project activities that consist of more than one site, the DOE shall describe the status of implementation and starting date of operation for each site. (Refer VVS 263 (a))	The project was fully commissioned on 18 <sup>th</sup> August 2012.	<b>OK</b>

	Checklist Questions	Comments by verifier	Conclusion
5	For project activities with phased implementation, what is the progress of the proposed project activity achieved in each phase under verification. If the phased implementation is delayed, describe the reasons and present the expected implementation dates; (Refer VVS 263 (a))	The project was fully commissioned on 18 <sup>th</sup> August 2012.	
6	Describe the actual operation of the project activity. (Refer VVS 263 (b))	The project involves fuel switch from coal to renewable biomass fibre, shell and empty fruit bunches in the cogeneration plant (35 TPH and 2.5 MW) in a 60 TPH palm fruit processing facility. The avoidance of coal directly related to the emission reduction. The intent of the Project Activity is to reduce GHG emission and promote sustainable development by use of renewable energy for generation of steam and power in the cogeneration power plant. In the absence of the project activity, the equivalent amount of electricity and steam would have been generated using coal.	
7	Any information (data and variables) provided in the monitoring report that is different from that stated in the registered PDD or any approved revised PDD? (that has caused an increase in estimates of the emission reductions in the current monitoring period or is highly likely to increase the estimates of emission reductions in the future monitoring)  (Refer VVS 263 (c))	Commissioning certificates of boiler and turbines are not provided.	<b>GAR-2</b>
	<b>Compliance of the monitoring plan with the monitoring methodology including applicable tool(s)</b>		
	<b>The monitoring plan of the proposed CDM project activity shall comply with the applied methodology.</b>		
8	For monitoring aspects that are not specified in the methodology and where applicable the standardized baseline, particularly in the case of small-scale methodologies (e.g. addi-	Not applicable	<b>OK</b>

	<b>Checklist Questions</b>	<b>Comments by verifier</b>	<b>Conclusion</b>
	tional monitoring parameters, monitoring frequency and calibration frequency), these should be brought to the attention of the Board issues which may enhance the level of accuracy and completeness of the monitoring plan. (Refer VVS 266)		
	<b>Compliance of monitoring activities with the registered monitoring plan.</b>		
	<b>Determine whether the monitoring of parameters related to the GHG emissions reductions in the project activity has been implemented in accordance with the monitoring plan contained in the registered PDD or any accepted revised monitoring plan.</b>		
9	Is the monitoring plan of the CDM project activity complying with the methodology applied by the registered CDM project activity or an approved revised PDD? (Refer VVS 268)	Yes. Monitoring plan and applied methodology have been properly implemented and duly followed by PP.	<b>OK</b>
10	Has the monitoring plan been properly implemented and followed by the project participants? (Refer VVS 269 (a))	Yes. Monitoring plan and applied methodology have been properly implemented and duly followed by PP.	<b>OK</b>
11	Have all parameters stated in the monitoring plan, and relevant CDM Executive Board decisions been sufficiently monitored and updated as applicable, including: (Refer VVS 269 (b))		
	i) project emission parameters	For this project, there are no project emissions as no fossil fuel was used.	<b>OK</b>

	Checklist Questions	Comments by verifier	Conclusion
	ii) baseline emission parameters	<p>Since the project activity producing both heat and electricity, it uses case 19d as baseline scenario. As per para 27 of the applied methodology, the following equation is used to calculate baseline emissions.</p> $BE_y = BE_{\text{cogen,CO}_2,y} = [(EG_{\text{PJ,thermal},y} + EG_{\text{PJ,electrical},y} \times 3.6) / \eta_{\text{BL,cogen}}] \times EF_{\text{FF,CO}_2}$ <p>Where  <math>BE_{\text{cogen,CO}_2,y}</math> -Baseline emissions from electricity and thermal energy displaced by the project activity during the year y  <math>EG_{\text{PJ,thermal},y}</math> -net quantity of thermal energy supplied by the project activity during the year y  <math>EG_{\text{PJ,electrical},y}</math> -amount of electricity supplied by the project activity during the year y            3.6-Conversion factor  <math>\eta_{\text{BL,cogen}}</math> -total annual average efficiency of the cogeneration plant using fossil fuel  <math>EF_{\text{FF,CO}_2}</math> -CO2 emission factor of the fossil fuel that would have been used in the baseline cogeneration plant.</p>	OK
	iii) leakage parameters	<p>As per para 47 of the applied methodology, if the energy generating equipment utilised is transferred from outside the boundary to the project activity, leakage is to be considered. The verification team has observed that boiler or turbine was transferred from outside the project facility. As per para 48 of the applied methodology, In cases where the collection/ processing / transportation of biomass residues is outside the project boundary CO2 emissions from the collection / processing / transportation of biomass residues to the project site shall be taken into account as leakage. The verification observed that biomass is procured from local market which is located near to the project activity (less than 50 km). In view of the above, the leakage emissions are zero.</p>	OK
	iv) Management and operational system: the responsibilities and authorities for monitoring and reporting are in accordance with the responsibilities and authorities stated in the monitoring plan?	<p>It is demonstrated that project management system procedures, including responsibility and authority of monitoring and reporting activities are comply with registered monitoring plan. The emergency preparedness mentioned in the monitoring report is complete.</p>	OK

	<b>Checklist Questions</b>	<b>Comments by verifier</b>	<b>Conclusion</b>
12	Has the equipment used for monitoring is in accordance with section 4 below and is controlled and calibrated in accordance with the monitoring plan, the applied methodology, the applied standardized baseline, the Board guidance, local/national standards, or as per the manufacturer's specification? (Refer VVS 269 (c))	It is found that there is no calibration due.	<b>OK</b>
13	Are monitoring results consistently recorded as per approved frequency? (Refer VVS 269 (d))	Yes. But the frequency of calibration of Energy meters is mentioned explicitly in the monitoring report	<b>OK</b>
14	Have quality assurance and quality control procedures been applied in accordance with the monitoring plan or revised monitoring plan? (Refer VVS 269 (e))	It is clearly indicated that in the monitoring report the activities related to the project, e.g. Measurement, calculation, reporting complies with the procedures defined in the registered PD and applied methodology	<b>OK</b>
	<b>Compliance with the calibration frequency requirements for measuring instruments.</b>		
	<b>Determine whether the calibration of those measuring equipments that have an impact on the claimed emission reductions is conducted by the project participants at a frequency specified in the applied monitoring methodology, the applied standardized baseline and/or the monitoring plan.</b>		
15	Identify if there is any monitoring equipment not calibrated in accordance with the monitoring plan, the applied monitoring methodology, the Board guidance, local/national standards, or as per the manufacturer's specification? (Refer VVS 272)	It is found that there is no calibration due.	<b>OK</b>

	<b>Checklist Questions</b>	<b>Comments by verifier</b>	<b>Conclusion</b>
16	<p>If there is delayed and the calibration has been implemented after the monitoring period in consideration (i.e. the results of delayed calibration are available), has the following conservative approach adopted in the calculation of emission reductions:</p> <p>(a) Applying the maximum permissible error of the instrument to the measured values taken during the period between the scheduled date of calibration and the actual date of calibration, if the results of the delayed calibration do not show any errors in the measuring equipment, or if the error is smaller than the maximum permissible error; or</p>	It is found that there is no calibration due.	<b>OK</b>
17	<p>(b) Applying the error identified in the delayed calibration test, if the error is beyond the maximum permissible error of the measuring equipment. (Refer VVS 283)</p>	It is found that there is no calibration due.	<b>OK</b>
18	<p>Confirm that the error has been applied:</p> <p>(a) In a conservative manner, such that the adjusted measured values of the delayed calibration shall result in fewer claimed emission reductions;</p>	It is found that there is no calibration due.	<b>OK</b>
	<p>(b) For all measured values taken during the period between the scheduled date of calibration and the actual date of calibration. (Refer VVS 283)</p>	It is found that there is no calibration due.	<b>OK</b>

	Checklist Questions	Comments by verifier	Conclusion
19	<p>In cases where the results of the delayed calibration are not available, or the calibration has not been conducted at the time of verification, the verification team, prior to finalizing verification, shall request the project participants to conduct the required calibration and shall determine whether the project participants have calculated the emission reductions conservatively using the approach mentioned in paragraph 4.2 above. (Refer VVS 275)</p>	<p>It is found that there is no calibration due.</p>	<p><b>OK</b></p>
20	<p>In cases where the verification team determines that it is not possible for the project participants to conduct the calibration at a frequency specified by either the applied methodology, the applied standardized baseline, guidance provided by the Board, and/or the registered monitoring plan due to reasons beyond the control of project participants (For example, due to the contractual terms between the project participant and purchasing/selling entities), the verification team, shall follow the requirements for post registration changes in section of E of the VVS. (Refer VVS 276)</p>	<p>It is found that there is no calibration due.</p>	<p><b>OK</b></p>

	Checklist Questions	Comments by verifier	Conclusion
21	<p>In cases where neither the applied monitoring methodology, where applicable, the applied standardized baseline nor the monitoring plan specify any requirements for calibration frequency for measuring equipments, the verification team shall determine whether the equipments are calibrated either in accordance with the specifications of the local/national standards, or as per the manufacturer's specification. If neither local/national standards nor the manufacturer's specification are available, international standards may be used. Refer to appendix 1 of the VVS for an illustrative example to apply the above requirements. (Refer VVS 277)</p>	<p>Not applicable as the registered PD mandates 3 year calibration frequency.</p>	<p><b>OK</b></p>
	<p><b>Assessment of data and calculation of emission reductions</b></p>		
	<p><b>Assess the data and calculations of GHG emission reductions achieved by/resulting from the project activity by the application of the selected methodology and, where applicable, the applied standardized baseline.</b></p>		
22	<p>If only partial data are available because activity levels or non-activity parameters have not been monitored in accordance with the registered monitoring plan, the verification team shall raise a CAR for the project participants to comply with the requirements of Appendix 1 of the Project Standard or submit a request for deviation prior to submitting the request for issuance, if appropriate; (Refer VVS 280 a)</p>	<p>Not applicable</p>	<p><b>OK</b></p>

	<b>Checklist Questions</b>	<b>Comments by verifier</b>	<b>Conclusion</b>
23	Has information provided in the monitoring report been crosschecked with other sources such as plant log books, inventories, purchase records, laboratory analysis? (Refer VVS 280 b)	It is crosschecked with the log sheets.	<b>OK</b>
24	Have calculations of baseline emissions, proposed CDM project activity emissions and leakage, as appropriate, been carried out in accordance with the formulae and methods described in the monitoring plan, the applied methodology and where applicable, the applied standardized baseline? (Refer VVS 280 c)	Yes, the information in the report has been crosschecked with the log sheets and values used in the monitoring report are found to be correct.	<b>OK</b>
25	Any assumptions used in emission calculations? If yes, they been justified? (Refer VVS 280 d)	Yes. Emission factor which is relevant as far as this project is concerned. The emission factor is determined ex ante and fixed for the crediting period and is correctly applied by the PP. But Emission reduction sheet is not provided.	<b>CAR-3</b>
26	Have appropriate emission factors, IPCC default values and other reference values been correctly applied? (Refer VVS 280 e)	No. No other assumptions are followed.	<b>OK</b>
27	For a registered CDM project activity using an approved standardized baseline that standardizes baseline emissions, have the standardized value(s) of the parameter(s) are applied using the correct version of the applied standardized baseline in accordance with the Project standard. (Refer VVS 280 f)	Not applicable.	<b>OK</b>
	<b>Post registration changes Temporary deviations from the registered monitoring plan, monitoring methodology and/or standardized baseline</b>		

	<b>Checklist Questions</b>	<b>Comments by verifier</b>	<b>Conclusion</b>
28	Where the deviation is identified during verification, the DOE shall indicate in the verification report how the monitoring report reflects the application of the approved guidance from the Board regarding the deviation from the provisions of the registered monitoring plan, the applied methodology and /or the applied standardized baseline. (Refer VVS 290)	Not applicable	<b>OK</b>
29	Where the deviation is identified prior to verification, the DOE shall state its opinion on whether the deviation reflects the application of the approved guidance from the Board regarding the deviation from the provisions of the registered monitoring plan, the applied methodology and /or the applied standardized baseline and as per the applicable provisions of the Project Standard. (Refer VVS 291)	Not applicable.	<b>OK</b>
	<b>Corrections</b>		
30	If the DOE identifies that the project participants have made corrections to project information or parameters determined at validation, the DOE shall determine whether: (a) The corrected information is an accurate reflection of actual project information; and/or (Refer VVS 293 a)	Not applicable.	<b>OK</b>
31	The corrected parameters are in accordance with the applied methodology the monitoring plan and /or the applied standardized baseline. (Refer VVS 293 b)	Not applicable.	<b>OK</b>
	<b>Changes to the start date of the crediting period</b>		

	<b>Checklist Questions</b>	<b>Comments by verifier</b>	<b>Conclusion</b>
32	The DOE shall indicate if the requirements in the Project standard have been met and shall submit a request for post registration changes in accordance with the Project cycle procedure. (Refer VVS 296)	The start date of the crediting period is correctly mentioned.	<b>OK</b>
	<b>Permanent changes from the registered monitoring plan or monitoring methodology</b>		
33	The DOE shall determine whether the changes to the monitoring plan contained in the registered PDD proposed by the project participants are in compliance with the applied methodology and, where applicable, the applied standardized baseline and do not reduce the level of accuracy of the monitoring compared with the requirements contained in the registered monitoring plan. (Refer VVS 298)	Not applicable.	<b>OK</b>
34	In cases where the proposed changes refer to a later version of the applied methodology and /or the applied standardized baseline in the registered PDD, the DOE shall determine whether the application of any later version of the applied methodology any applicable tool(s) and/or the applied standardized baseline does not impact the conservativeness of the monitoring and verification process, including the related emission reduction calculations. (Refer VVS 299)	Not applicable.	<b>OK</b>

	Checklist Questions	Comments by verifier	Conclusion
35	<p>If the DOE identifies that the project participants are unable to implement the monitoring plan contained in the registered PDD and it will not be possible to monitor the registered CDM project activity in accordance with a monitoring plan that would comply with the applied methodology any applicable tools, and, where applicable, the standardized baseline or the relevant provisions of appendix 1 of the Project standard, the DOE shall request guidance from the Board concerning the acceptability of the permanent changes in accordance with the section on post registration changes in the Project cycle procedure. (Refer VVS 300)</p>	Not applicable.	OK
36	<p>The DOE shall determine whether the permanent changes are likely to lead to a reduction in the accuracy of the calculation of emission reductions. In cases where the DOE considers that the permanent changes will lead to a reduction in the accuracy of the calculation of emission reductions, the DOE shall request the project participants to apply conservative assumptions or discount factors to the calculations to the extent required to ensure that emission reductions will not be over-estimated as a result of the permanent change. (Refer VVS 301)</p>	Not applicable.	OK
	<p><b>Changes to the project design of a registered project activity</b></p>		

	<b>Checklist Questions</b>	<b>Comments by verifier</b>	<b>Conclusion</b>
37	<p>If the DOE identifies that the project design in the implementation or operation of the project activity does not conform with the description contained in the registered PDD or the relevant provisions of appendix 1 of the Project standard, the DOE shall request guidance from the Board concerning the acceptability of the proposed or actual changes in accordance with the section on post registration changes in the Project cycle procedure. (Refer VVS 305)</p>	Not applicable.	<b>OK</b>
38	<p>In case of actual changes, the DOE shall, by means of an on-site visit and review of the submitted revised PDD by the project participants, which describes the nature and extent of the actual changes, determine whether this description accurately reflects the implementation, operation and monitoring of the modified project activity. (Refer VVS 306)</p>	Not applicable.	<b>OK</b>
39	<p>The DOE shall conduct an on-site inspection to assess the impacts of the actual changes on the compliance of the monitoring plan, the level of accuracy of the monitoring activity, the applied monitoring methodology and including applicable tool(s) and/or, where applicable, the applied standardized baseline. (Refer VVS 307)</p>	Not applicable.	<b>OK</b>

	Checklist Questions	Comments by verifier	Conclusion
40	<p>The DOE shall, by means of reviewing the revised PDD against applicable additionality and methodological requirements, determine whether the proposed or actual changes would adversely affect the conclusions of the validation report of the registered PDD with regard to:</p> <ul style="list-style-type: none"> <li>(a) Additionality of the project activity;</li> <li>(b) Scale of the project activity;</li> <li>(c) Applicability and application of the approved baseline methodology and, where applicable, the approved standardized baseline under which the project activity has been registered; or</li> <li>(d) The compliance of the monitoring plan with the applied monitoring methodology and, where applicable, the applied standardized baseline</li> </ul> <p>(Refer VVS 308)</p>	Not applicable.	OK
41	<p>If the proposed or actual changes affect the additionality of the project activity then the DOE shall confirm that:</p> <ul style="list-style-type: none"> <li>(a) In the case of investment analysis, project participants have only modified the key parameters in the original spreadsheet calculations affected by the proposed or actual changes to the project activity;</li> <li>(b) In the case where only barriers have been claimed to demonstrate additionality, project participants have demonstrated that the barriers are still valid under the new circumstances.</li> </ul> <p>(Refer VVS 309)</p>	Not applicable.	OK

	Checklist Questions	Comments by verifier	Conclusion
42	<p>For registered CDM project activity using an approved standardized baseline that standardizes additionality:-            If the proposed or actual changes affect the additionality of the project activity then the DOE shall confirm that the project activity complies with the positive list of the applied standardized baseline in the registered PDD.            (Refer VVS 309)</p>	Not applicable.	OK
43	<p>The DOE shall confirm that the applied methodology including applied tools and/or the applied standardized baseline do not impact the conservativeness of the monitoring and verification process and the related emission reduction calculations in cases where:</p> <p>(a) The proposed or actual changes impact the implementation of the project activity;            (b) The original methodology and/or the original standardized baseline would no longer be applicable; and            (c) The project participant applies:            (i) A later version of the methodology and/or the standardized baseline; or            (ii) Another methodology and/or another standardized baseline that is(are) applicable to the project activity.            (Refer VVS 310)</p>	Not applicable.	OK

	<b>Checklist Questions</b>	<b>Comments by verifier</b>	<b>Conclusion</b>
44	The DOE shall assess whether the revised PDD complies with: (a) The applied methodology, tools and/or standardized baseline; (b) Any later version of the methodology and/or the standardized baseline; or (c) The requirements of another methodology and/or another standardized baseline that is(are) applicable to the project activity. (Refer VVS 311)	Not applicable.	<b>OK</b>

**TABLE 2: RESOLUTION OF CORRECTIVE ACTION AND CLARIFICATION REQUESTS**

Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in table 1	Summary of project owner response	Verification team conclusion
<p><b>CAR 1</b> The project was claiming CDM also. But evidence for there will not be any double counting is not provided.</p>	<p>S. No 2</p>	<p>The evidence for there will not be any double counting is provided now.</p>	<p>The verification team has reviewed the undertaking letter stating that there is no double counting for this project which has accepted. Conclusion: CAR 1 is closed.</p>
<p><b>CAR 2</b> Commissioning certificates of boiler and turbine is not provided.</p>	<p>S. No 7</p>	<p>It is provided now.</p>	<p>The verification team has reviewed the commissioning certificates and accepted the start date as correct. Conclusion: CAR 2 is closed.</p>
<p><b>CAR 3</b> Emission reduction spreadsheet is not provided.</p>	<p>S. No 25</p>	<p>ER sheet is submitted for verification.</p>	<p>The verification team has reviewed the VER sheet and all the data are mentioned and hence accepted. Conclusion: CAR 3 is closed.</p>