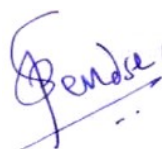


**Verification and certification report form for  
Gold Standard project activities  
(Version 04.0)**

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

**BASIC INFORMATION**

|                                                                                                                       |                                                                                                                                                                                                          |       |                |       |                              |       |                           |
|-----------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|----------------|-------|------------------------------|-------|---------------------------|
| <b>Title and UNFCCC reference number of the project activity</b>                                                      | National Biodigester Programme, Cambodia<br><b>(GS reference number: 751)</b>                                                                                                                            |       |                |       |                              |       |                           |
| <b>Scale of the project activity</b>                                                                                  | <input checked="" type="checkbox"/> Large-scale<br><input type="checkbox"/> Small-scale                                                                                                                  |       |                |       |                              |       |                           |
| <b>Version number of the verification and certification report</b>                                                    | 1.1                                                                                                                                                                                                      |       |                |       |                              |       |                           |
| <b>Completion date of the verification and certification report</b>                                                   | 29 <sup>th</sup> August 2024                                                                                                                                                                             |       |                |       |                              |       |                           |
| <b>Monitoring period number and duration of this monitoring period</b>                                                | 5 <sup>th</sup> Monitoring; 01/01/2023-31/12/2023                                                                                                                                                        |       |                |       |                              |       |                           |
| <b>Version number of the monitoring report to which this report applies</b>                                           | 2.0 Dtd. 26/07/2024                                                                                                                                                                                      |       |                |       |                              |       |                           |
| <b>Crediting period of the project activity corresponding to this monitoring period</b>                               | 01/01/2019 – 31/12/2025                                                                                                                                                                                  |       |                |       |                              |       |                           |
| <b>Project participants</b>                                                                                           | National Biodigester Programme (NBP)                                                                                                                                                                     |       |                |       |                              |       |                           |
| <b>Host Party</b>                                                                                                     | Cambodia                                                                                                                                                                                                 |       |                |       |                              |       |                           |
| <b>Applied methodologies and standardized baselines</b>                                                               | Technologies and Practices to Displace Decentralized Thermal Energy Consumption version 3.1 (TPDDTEC 3.1)                                                                                                |       |                |       |                              |       |                           |
| <b>Estimated amount SDG contribution for this monitoring duration in the registered PDD</b>                           | <table border="1"> <tr> <td>SDG 2</td> <td>50,105 hectare</td> </tr> <tr> <td>SDG 7</td> <td>122,204 No. of beneficiaries</td> </tr> <tr> <td>SDG13</td> <td>81,585 tCO<sub>2</sub>e</td> </tr> </table> | SDG 2 | 50,105 hectare | SDG 7 | 122,204 No. of beneficiaries | SDG13 | 81,585 tCO <sub>2</sub> e |
| SDG 2                                                                                                                 | 50,105 hectare                                                                                                                                                                                           |       |                |       |                              |       |                           |
| SDG 7                                                                                                                 | 122,204 No. of beneficiaries                                                                                                                                                                             |       |                |       |                              |       |                           |
| SDG13                                                                                                                 | 81,585 tCO <sub>2</sub> e                                                                                                                                                                                |       |                |       |                              |       |                           |
| <b>Certified amount of SDG contribution for this monitoring period</b>                                                | <table border="1"> <tr> <td>SDG 2</td> <td>7,973 hectare</td> </tr> <tr> <td>SDG 7</td> <td>66,089 No. of beneficiaries</td> </tr> <tr> <td>SDG13</td> <td>51,739 tCO<sub>2</sub>e</td> </tr> </table>   | SDG 2 | 7,973 hectare  | SDG 7 | 66,089 No. of beneficiaries  | SDG13 | 51,739 tCO <sub>2</sub> e |
| SDG 2                                                                                                                 | 7,973 hectare                                                                                                                                                                                            |       |                |       |                              |       |                           |
| SDG 7                                                                                                                 | 66,089 No. of beneficiaries                                                                                                                                                                              |       |                |       |                              |       |                           |
| SDG13                                                                                                                 | 51,739 tCO <sub>2</sub> e                                                                                                                                                                                |       |                |       |                              |       |                           |
| <b>Estimated amount of GHG emission reductions or GHG removals for this monitoring duration in the registered PDD</b> | 51,739 tCO <sub>2</sub> e                                                                                                                                                                                |       |                |       |                              |       |                           |
| <b>Name and UNFCCC reference number of the DOE</b>                                                                    | Bureau Veritas India Pvt. Ltd.                                                                                                                                                                           |       |                |       |                              |       |                           |
| <b>Name, position and signature of the approver of the verification and certification report</b>                      | <p>Sameer Pendse</p>  <p>General Manager – Global Schemes</p>                                                         |       |                |       |                              |       |                           |

## SECTION A. Executive summary

National Biodigester Programme, Cambodia has commissioned Bureau Veritas (India) Private Limited to verify the emissions reductions of its GS project National Biodigester Programme, Cambodia (hereafter called “**the Project**”) at National Biodigester Programme Head Office building of General Directorate of Animal Health and Production in Phnom Penh and several provinces in Cambodia where Biodigesters are installed and in operation under this project.

This report summarizes the findings of the verification of the Project, performed on the basis of Gold Standard criteria, as well as criteria given to provide for consistent project operations, monitoring and reporting.

The program's objective is to implement biodigesters at the household level to treat animal manure, thereby generating biogas for use as cooking and lighting fuel. The bio-slurry collected from the systems is subsequently utilized as organic fertilizer. The biodigester is fed with animal manure, which is anaerobically degraded by microorganisms to generate biogas. In an integrated gasholder, the biogas is captured and stored for a variety of domestic thermal energy services, with a primary focus on lighting and cooking. A biogas lamp, a biodigester, an overflow pit, a number of biogas burners, and the requisite piping comprise a typical system. A biodigester-connected to toilet/commode is optional (as advised by the program). Under aerobic conditions, the slurry is further decomposed by the implementation of a slurry compost facility for the effluent from a biodigester. Composted slurry is employed as fish nutrition and/or organic fertilizer.

By

1. substituting firewood for cooking,
2. preventing methane emissions from animal waste, and
3. substituting chemical fertilizers, the program's technology reduces greenhouse gas emissions.

Program has approved different types of biodigesters for installation and specifications of these biodigesters are provided in the below table.

| Model             | Type                                                                                                                                                                   | units  | share (%) |
|-------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|-----------|
| Farmer's Friend   | Fixed dome made from brick and concrete with biodigester plant's size of 4m <sup>3</sup> , 6m <sup>3</sup> , 8m <sup>3</sup> , 10m <sup>3</sup> and 15m <sup>3</sup> . | 27,319 | 94.3%     |
| NBP S1            | Fixed dome made from brick and concrete with biodigester plant's size of 2m <sup>3</sup> and 3m <sup>3</sup> .                                                         | 786    | 2.7%      |
| Composite         | Pre-fabricated digester made from fibreglass with biodigester plant's size of 4m <sup>3</sup> , 7m <sup>3</sup> and 9m <sup>3</sup> .                                  | 846    | 2.9%      |
| Polyethylene (PE) | Pre-fabricated digester made from PE with biodigester size of 3m <sup>3</sup>                                                                                          | 24     | 0.1%      |
| <b>sum</b>        |                                                                                                                                                                        | 28,975 | 100%      |

These biodigesters are installed at household in various provinces of host country Cambodia i.e., Kampong Cham, Kandal, Svay Reang, Takeo. Kampong Speu, Kampong Chhnang, Kampot, Kampong Som, Kep, Prey Veng and Siem Reap.

### Objective Of Verification:

The objective of GS verification is to conduct a thorough, independent assessment of the registered project activities.

In carrying out its verification work, the VVB shall ensure that the project activity complies with the requirements of paragraph 62 of the CDM modalities and procedures. In particular, this assessment shall:

- (a) Ensure that the project activity has been implemented and operated as per the registered PDD /**Ref-1**/ or any approved revised PDD/**Ref-1**/, and that all physical features (technology, project equipment, and monitoring and metering equipment) of the project are in place.
- (b) Ensure that the monitoring report and other supporting documents provided are complete in accordance with latest applicable version of the completeness checklist for requests for issuance of VERs, verifiable, and in accordance with applicable GS4GG / CDM requirements.
- (c) Ensure that actual monitoring systems and procedures comply with the monitoring systems and procedures described in the monitoring plan /**Ref-2**/ or any revised approved monitoring plan, and the approved methodology including applicable tool(s) / Sustainability indicators.
- (d) Evaluate the data recorded and stored as per the monitoring methodology including applicable tool(s).

### **Scope of Verification:**

The verification scope is defined as an independent and objective review and ex-post determination of the monitored GHG emission reductions. The verification is based on the validated and registered project design document, the monitoring report, emission reduction calculation spreadsheet, and supporting documents. The information in these documents is reviewed against Gold Standard Rules, Kyoto Protocol requirements, UNFCCC rules and associated interpretations.

The verification is not meant to provide any consulting service towards the PPs. However, stated requests for clarifications and/or corrective actions may provide input for improvement of the project monitoring towards reductions in the GHG emissions.

### **GHG Project Description**

SNV and the Ministry of Agriculture, Forestry, and Fisheries (MAFF) decided in January 2006 to work together to create the National Biodigester Program (NBP). The goal was to use biogas in Cambodia and make biogas an energy source that would last.

### **Pre-project scenario:**

Before the project activities started, most homes that had the technology potential for a biodigester cooked with wood, which added to family air pollution and health risks and cut down trees.

Cooking activity is essential daily routine for households and this requires significant amount of the burning wood has to be gathered, which is hard work that takes a lot of time, especially for women. However, buying wood is expensive and takes money away from the family's limited income.

Animal waste is stored in unsanitary ways, like in slurry, lagoons, dry lots, daily spreads, solid storage, and other systems. People also don't have access to basic sanitation, which leads to pollution, bad smells, methane emissions, and a high rate of hygiene-related diseases like diarrhea.

### **Intention of the National Biodigester Programme Project:**

This program's main goal is to spread biodigesters as a local, renewable energy source. It will do this by creating a commercial, market-based biodigester sector in eight provinces of Cambodia, with the option to add more provinces. The goals of the project are to fix the problems shown in the basic situation by treating human and animal waste in a biodigester in a clean way to make biogas, a clean, green fuel for cooking. The treated waste will then be used as a strong and safe organic fertilizer. The detailed goals of the National Biodigester Program that help it reach its main goal are

- ✓ To build more high-quality biodigesters that are big enough for families, with a total of 8,600 biodigesters in certain areas from 2019 to 2025.

- ✓ To make sure that all biodigesters placed through the biodigester program continue to work;
- ✓ To get the most out of the biodigesters that are being used, especially by making the best use of the digester waste;
- ✓ Building up the technical and marketing skills of the people involved in the NBP so that biodigester technology can be used on a larger scale in Cambodia. Specifically, this goal will focus on creating a strong and successful private sector that can handle selling, building, and providing after-sales service for biodigesters;

### Technology Measures adopted:

Franchised Biodigester Company Agencies (BCA) work for NBP and build biodigesters. The Farmer's Friend digester is the main type of digester that NBP places. They also offer a smaller version of this model called the S1, which can be built up to 50 m<sup>3</sup>. After more than 25 years, both tools should still be useful. Besides that, the program doesn't care about the type of biodigester technology as long as it meets these conditions:

- Durability: Biodigesters should last more than 10 years.
- Keeping gas: The digester should be able to hold at least half of the gas made every day.
- Warranties: There must be at least a one-year guarantee.

### List of Facilities and Equipment's included in the project activity:

- Inlet (for mixing the manure with Fuel consumption)
- Biodigester and integrated gasholder
- Compensation tank
- Slurry pit (to store overflowed slurry temporarily before it is scooped to the compost hut)
- Compost hut (optional but strongly encouraged)
- Toilet (optional)
- Gas piping and Fuel consumption trap (Fuel consumption trap is necessarily to remove condense Fuel consumption from the biogas)
- A biogas stove (stoves disseminated via NBP are recommended but not mandatory)
- Pressure gauge (gas pressure in the plant is a proxy for gas availability)
- Biogas lamp / biogas rice cooker (both optional)

As a result of farmers' requests, the project has been installing digesters continuously since it began on 13<sup>th</sup> March 2006. PP has maintained a detailed project database that keeps track of dates like building and commissioning for each unit. These dates are unique for each location.

## SECTION B. Verification team, technical reviewer and approver

### B.1. Verification team member

| No. | Role              | Type of resource | Last name | First name   | Affiliation<br>(e.g. name of central or other office of DOE or outsourced entity) | Involvement in       |                    |            |                       |
|-----|-------------------|------------------|-----------|--------------|-----------------------------------------------------------------------------------|----------------------|--------------------|------------|-----------------------|
|     |                   |                  |           |              |                                                                                   | Desk/document review | On-site inspection | Interviews | Verification findings |
| 1.  | Team Leader       | ER               | Desai     | Ram Madhukar | BV Brunei                                                                         | X                    | X                  | X          | X                     |
| 2.  | Local Interpreter | ER               | Ms. Wat   | NA           | BV Brunei                                                                         |                      |                    | X          |                       |
| 3.  | Technical         |                  | NA        | NA           | NA                                                                                |                      |                    |            |                       |

|    |                            |  |    |    |    |  |  |  |  |
|----|----------------------------|--|----|----|----|--|--|--|--|
|    | Expert                     |  |    |    |    |  |  |  |  |
| 4. | Financial/<br>Other Expert |  | NA | NA | NA |  |  |  |  |
| 5. | Trainee                    |  | NA | NA | NA |  |  |  |  |

## B.2. Technical reviewer and approver of the verification and certification report

| No. | Role               | Type of resource | Last name | First name | Affiliation<br>(e.g. name of central or other office of DOE or outsourced entity) |
|-----|--------------------|------------------|-----------|------------|-----------------------------------------------------------------------------------|
| 1.  | Technical reviewer | IR               | Nguyen    | Hong Linh  | BV Vietnam                                                                        |
| 3.  | Approver           | IR               | Pendse    | Sameer     | BV India                                                                          |

## SECTION C. Application of materiality

### C.1. Consideration of materiality in planning the verification

With reference to Guideline on Application of Materiality in Verification, CDM-EB69-A06-GUID, Para 13 (a - d) The CMP materiality decision prescribes the thresholds for the application of materiality in verifications, by defining that information is material if it might lead, at an aggregated level, to an overestimation of the total emission reductions or removals achieved by a GS project activity equal to or higher than 5 per cent of the emission reductions or removals for small-scale project activities. Since the Emission Reductions achieved during this 5<sup>th</sup> monitoring period of CPIII by the project activity is 51,739 tCO<sub>2</sub>e, the materiality threshold for project activity determined is 5 percent (5%).

| 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.  | <p>Risk of human error in transferring monitoring data from Survey Results (Primary sources) to calculation spreadsheet (secondary sources).</p> <p>This including transferring of data against various monitoring parameters which are having direct bearing on the Emission reduction calculations.</p> | High                   | <p>Though PP has established comprehensive sampling methods and Survey Protocols for verifying the Usage rate and Fuel consumption consumption during project scenario. However, there is a risk of error in transferring the data to the Emission Reduction Calculation spreadsheet which will have significant impact on total Baseline calculation and emission reductions.</p> | <p>Survey results to be verified in detailed and Verification Team has established a sampling plan which is in accordance with the International Accreditation Forum (IAF): Guidance on the Application of ISO/IEC Guide 62:1996: 'General Requirements for Bodies Operating Assessment and Certification/registration of Quality Systems'.</p> <p>Appropriate sample size determined to verify the Survey outcomes and i.e. project survey as well as Fuel consumption field test survey based random sampling approach utilizing approved sampling practice i.e. EB67, Annex 06, Version 4.0 "Guidelines for Sampling and Surveys for CDM Project Activities and Programme of Activities"/Ref-24/.</p> <p>Also, during this verification BV Verifier performed interviews of 35 Household samples selected randomly to confirm that the information obtained is representative and reflecting actual usage and generation of biogas from the project technology implemented by the PP i.e., different size and types of Bio Digesters.</p> |
| 2.  | Inaccuracy in biogas digester Data base                                                                                                                                                                                                                                                                   | High                   | PP has established an unique database and recorded all installed bio gas digesters with different specification (Sizes)                                                                                                                                                                                                                                                            | It is noted that so far PP has installed 28,975 and this is found recorded in the database with unique identification number, household number,                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |

|    |                                                                                    |        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|----|------------------------------------------------------------------------------------|--------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|    |                                                                                    |        | and types with unique identification number provided to each installed biodigester. Baseline emissions and Emission Reductions are directly proportional to the number of bio gas digesters actually working / functional during this monitoring period.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | <p>Geocoordinate and size / capacity of the biogas digester. The database is found to be maintained correctly and there is no error noted in the database and hence it is concluded that there is no protentional materiality risk to the emission reduction calculation.</p> <p>Verification Team derived 170 samples from the CMS Survey Database and compared them with the original installation Database and the information is found to be consistent and accurate. The random sample is determined using International Accreditation Forum (IAF): Guidance on the Application of ISO/IEC Guide 62:1996: 'General Requirements for Bodies Operating Assessment and Certification/registration of Quality Systems'.</p>                                                                                                                                                                                                        |
| 3. | Human error in providing incorrect calculation formulae in calculation spreadsheet | Medium | <p>The Calculation is done using Excel based spreadsheet and the calculations are done as per the PDD /Ref-1/ requirement. Formulae used in the Excel sheet are transparently demonstrated and is found verifiable. The Formulae presented in the spreadsheet are validated during past verifications.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                             | <p>Conducting calculation formulae check at stage of document review prior to onsite inspection covering these calculations</p> <ul style="list-style-type: none"> <li>• Baseline Emission</li> <li>• Project Emission</li> <li>• Leakage Emissions</li> <li>• Total Emission Reduction</li> </ul> <p>Done and confirmed that there is no material error evidence during Verification of Emission Reduction spreadsheet.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| 5. | Risk related to Survey methods and accuracy                                        | High   | <p>Although PP has established comprehensive protocols and methods to perform various survey during project scenario, there is an inherent risk in the accuracy and transparency. Field staff engaged for such activities are either NBP own staff or the survey company staff hired for conducting survey. The accuracy is depends on the competence of the person and the quality controls established by the PP on survey activities. Since the data obtained from survey is very crucial and is directly proportional to the assumptions and calculations for emission reductions.</p> <p>There is risk of wrong data provided by the field staff which will misrepresent the actual project condition and results into overestimation of Emission Reductions.</p> | <p>Conduct cross-checking of all survey analysis spreadsheets for survey submitted to verification to verify the trends and accuracy.</p> <p>The sampled survey questionnaires also to be verified during Offsite review. Verification team selected adequate number of Samples of CMS Survey records to verify the input values / information.</p> <p>In order to ensure that surveys are carried out under controlled conditions PP has ensure that teams selected for survey has a proper composition i.e experienced personnel from NBP and trained hired staff on the survey company.</p> <p>Photographic evidences are also taken against each Household surveyed.</p> <p>Program manager supervises entire process and ensures that the data obtained is correct and transferred to survey data base accurately. There is no material error noted during verification and it is confirmed that the surveys are accurate.</p> |

## C.2. Consideration of materiality in conducting the verification

According to para 9.6 of Validation and Verification Standard V1.0 **/Ref-9/**, since the project activity qualifies as a non-microscale GS project with total emission reductions or removals are within <300,000 tons of carbon dioxide, a 5.0 percent materiality threshold is applied as per CDM-EB69-A06-GUID, Para 13 (a - d) **/Ref-29/**.

The verification process commenced with an assessment of the nature, scope, and complexity of the project activity, achieved through a strategic analysis of all relevant activities. Critical elements such as the verification of pertinent data and the monitoring mechanism were scrutinized using a risk-based approach, considering their materiality.

## SECTION D. Means of verification

### D.1. Desk/document review

The assessment of the project documentation provided by the project participant (PP) is based upon both quantitative and qualitative information on emission reductions. Quantitative information comprises the reported numbers in the monitoring report (MR) version 1.0 dated 17/06/2024 Error! Reference source not found. and emission reduction calculation spreadsheets version Version 1.0, dated 17/06/2024 **/Ref-6/**. Qualitative information comprises information on internal management controls, calculation procedures, and procedures for transfer of data, frequency of emissions reports, and review and internal audit of calculations.

The monitoring report version 1.0, Dated 17<sup>th</sup> June 2024 submitted by the project participant was considered as an initial input to verification and offsite review.

In addition to the monitoring documentation provided by the project participants, the VVB reviews:

- (a) The registered PDD **/Ref-1/** and the monitoring plan **/Ref-2/**, including any approved revised monitoring plan and/or changes from the registered PDD, and the corresponding validation opinion **/Ref-30/**;
- (b) The validation report towards Renewal of crediting period
- (c) Previous verification reports **/Ref-11/**;
- (d) The applied monitoring methodology **/Ref-14/**
- (e) Relevant decisions, clarifications, and guidance from the CMP and the CDM Executive Board / GS Secretariat.
- (f) Other information and references relevant to the project activity's resulting emission reductions (e.g. IPCC reports, laboratory analysis or national regulations).

**D.2. On-site inspection**

| Duration of on-site inspection: 24/06/2024 to 27/06/2024 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                 |                                               |              |
|----------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------|-----------------------------------------------|--------------|
| No.                                                      | Activity performed on-site                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Site location                                   | Date                                          | Team member  |
| 1.                                                       | <p>Visit to Household to gather information on the Usage of the biogas for cooking purpose.</p> <p>Interview household owner to obtain first-hand information on operation, Baseline fuel, current fossil fuel usage even biogas is used for cooking, maintenance difficulties, the way how they operate it, how frequently household use biogas for cooking during day, number of person in the household, Total number of animals, use of biogas slurry.</p>                                                                                                                                                                                                                                                                                                                                                                       | Various villages to interview sampled household | 24 <sup>th</sup> – 27 <sup>th</sup> June 2024 | Ram M. Desai |
| 2.                                                       | <ul style="list-style-type: none"> <li>- To obtain Background information related to the monitoring period of the Project activity and implementation of monitoring plan.</li> <li>- Monitoring report and background information Review</li> <li>- To verify the survey method implemented and results obtained and accuracy in the results.</li> <li>- Usage rate verification</li> <li>- AWMS and Baseline Emission calculation and background information and documents.</li> <li>- SDG impact assessment and quantification review along with relevant background information and backup documents.</li> <li>- Emission Reduction Calculation</li> <li>- Review of monitoring parameter and corresponding monitoring records and including methods employed for monitoring and QA/QC.</li> <li>- Grievance mechanism</li> </ul> | NBP Office                                      | 27 <sup>th</sup> June 2024                    | Rm M. Desai  |

**D.3. Interviews**

| No. | Interviewee |            |                  | Date       | Subject                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Team member  |
|-----|-------------|------------|------------------|------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|
|     | Last name   | First name | Affiliation      |            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |              |
| 1.  | Ms. Nimol   |            | NBP              | 27/06/2024 | <ul style="list-style-type: none"> <li>- To obtain Background information related to the monitoring period of the Project activity and implementation of monitoring plan.</li> <li>- Monitoring report and background information Review</li> <li>- To verify the survey method implemented and results obtained and accuracy in the results.</li> <li>- Usage rate verification</li> <li>- AWMS and Baseline Emission calculation and background information and documents.</li> <li>- SDG impact assessment and quantification review along</li> </ul> | Ram M. Desai |
| 2.  | Mr. Meng    | Vibol      | Nexus for Carbon | 27/06/2024 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Ram M. Desai |
| 3.  | Ms. Mean    | Sovanna    | Nexus for Carbon | 27/06/2024 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Ram M. Desai |

|         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                                            |                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                           |  |
|---------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------|-----------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|
|         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                                            |                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | with relevant background information and backup documents.<br>- Emission Reduction Calculation<br>- Review of monitoring parameter and corresponding monitoring records and including methods employed for monitoring and QA/QC.<br>- Grievance mechanism |  |
| 4. - 41 | Mr.Khuy Saron /Mr. Phen Phoeun / Mrs. Sat Kunthea / En Phearun / Mr. Bun Boeun /Mr. Pak Rin /Mrs. Ngouk Vun / Ms. Sut Morn /Ms. Pen Sok / Mrs. Long Phorn / Mrs. Vun Pov /Mr. Chea Vanna /Mrs. Tip Chheang /Ms. Nem Svey Leak /Ms. Keo Than March/Ms. Sam Seth/Mr. Hong Ly/ Mrs. Som Phim /Mrs. Yous Sokea/Mrs. Sao Vy/ Mrs. Chum Chan Dara/ Mrs. Srey Pov/Mrs. Sok Somphos/Mrs. Srey Sysoma/Mr. Chunker/ Mrs. Ton Sokea/Mrs. Chea Saron/Mrs. Yin Sun Leang /Mr. Long Som/Mr. EL Kongkea / Mr. Chab Vuth /Mrs. Tim Morn /Mr. Chan Ra / Mrs. Nay Lon/ Mr. Chhaeng Ratha/Mrs. Chheng Leng Hor/Mrs. Chum Sopha/Mr. Sao Thavuth | Household owners who installed the biogas digesters under NBP programme in different provinces of Cambodia | 24 <sup>th</sup> – 26 <sup>th</sup> June 2024 | - Confirm operation of Biogas digester and usage of biogas for cooking purpose.<br>- Confirm the number of Animals i.e. Cows, Pigs kept by the household<br>- Confirm if there are any leakages from the biogas digester<br>- Confirm if maintenance of biogas digester and other gas handling apparatus including gas stove is done and there is no breakdown<br>- Confirm that User is aware of the communication methods with the PP if any problem in biogas digester.<br>- Disposal of Digested slurry<br>- Tangible benefits achieved by household by installing the biogas digester.<br>- Confirm that usage survey results presented by PP are realistic and there is no exaggeration in the data and observations reported.<br>- Awareness of household owner towards NBP carbon project. | Ram M. Desai                                                                                                                                                                                                                                              |  |

#### D.4. Sampling approach

To ensure the accuracy and integrity of monitored data, the verification team adopted a sampling approach. The sample size for verifying monitored data was determined in accordance with the International Accreditation Forum (IAF) guidance on the application of ISO/IEC Guide 62:1996. Following this guidance, the verification team calculated the sample size as the square root of the total monitored data points. Utilizing this approach, a sample plan was developed and implemented during the verification site visit. This plan facilitated the cross-checking of various datasets, including electricity generation and export reports, invoices, steam generation and consumption data, steam venting data, calibration records, NCG analysis reports, fuel consumption data, and other relevant inputs used in calculating baseline emissions, leakage emissions, project emissions, and emission reductions.

A systematic sampling method was employed to verify the specified datasets, ensuring mitigation of any materiality threats. Additionally, a simple random sampling approach was utilized to select the dataset for verification, enhancing the robustness of the verification process.

VVB made the sampling plan for visiting Household during this verification using Simple random Sampling approach as specified in the CDM-EB67-A06-GUID, Version 4.0 "Guidelines for Sampling and Surveys for CDM Project Activities and Programme of Activities"/**Ref-45/**.

These sampling approaches found to be appropriate as the household using biogas digester as well fuel for cooking are homogenous.

As per EB67, Annex 06, Version 4.0 states that the Sample size calculation by Simple Random Sampling can be done using following formulae:

$$n \geq \frac{1.645^2 N \times p(1-p)}{(N-1) \times 0.1^2 \times p^2 \times 1.645^2 p(1-p)}$$

Where:

The Calculation made for determining the Sample size is provided in the following Table

|                                                                                       |                                                                                                                 |
|---------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------|
| Total number of Households involved in the Project activity using CWP (N)             | 28,975 <i>[Total units of household biogas plants installed by PP since the start of the project.]</i>          |
| Our expected proportion (p)                                                           | 90% *                                                                                                           |
| Represents the 90% confidence required                                                | 1.645                                                                                                           |
| Represents the 10% relative precision (0.1 × 0.5 = 0.05 = 5% points either side of p) | 0.1                                                                                                             |
| Total Samples of household to be interviewed.                                         | $\frac{1.645^2 \times 28,975 \times 0.9(1-0.9)}{(28,975-1) \times 0.12 \times 0.92 + 1.6452 \times 0.9(1-0.9)}$ |
|                                                                                       | <b>Outcome = 30.04 – Sample to be Verified Rounded up to at least 31 Household.</b>                             |

| Data Parameter                           | Purpose                                               | Number of Data points | Data Point Sampled | Remark                                                                                                                                                                                                                                                                                                        |
|------------------------------------------|-------------------------------------------------------|-----------------------|--------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Number of biogas plants commissioned     | Baseline Emission and Emission Reduction Calculations | 28,975                | 35                 | Total number of samples verified to confirm the accuracy of database.                                                                                                                                                                                                                                         |
| Usage Survey Data Base                   | Baseline Emission and Emission Reduction Calculations | 600                   | 35                 | Total number of households sampled for interview during onsite visit. There is no error detected in the sampling.<br><br>Also, the outcome of usage survey /Ref-28/ was cross verified to confirm the information obtained during interview is matching. It is concluded that there is no deviation observed. |
| Carbon Monitoring Survey (CMS) Data Base | Baseline Emission and Emission Reduction Calculations | 320                   | 35                 | Carbon monitoring survey outcome was verified against randomly sampled households and results are found realistic and in accordance with the survey outcome. It is concluded that there is no deviation observed.                                                                                             |
| Project Fuel Test (PFT) Records          | Baseline Emission and Project Emission Calculations   | 320                   | 28                 | Found correct, no deviation observed.                                                                                                                                                                                                                                                                         |

Based on the above sampling plan verifier observed 5 clarifications (CL) and 01 Corrective Action Requests (CAR), however there is no material misstatement or overestimation of baseline emissions / emission reductions observed.

PP has responded satisfactorily to all reported issues and has corrected the monitoring report as well as other associated records, including the emission reduction spreadsheet, to ensure conservatism in the emission reductions. Based on the verification of the responses and the subsequent corrections made by PP, the verification team confirms that the issues are closed. List of Household randomly selected for interview during site visit is provided in the Appendix 1 of this report.

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

| Areas of verification findings                                                 | No. of CL | No. of CAR | No. of FAR |
|--------------------------------------------------------------------------------|-----------|------------|------------|
| Compliance of the monitoring report with the monitoring report form            | 00        | 00         | 00         |
| Compliance of the project implementation and operation with the registered PDD | 00        | 00         | 00         |

|                                                                                                                           |           |           |           |
|---------------------------------------------------------------------------------------------------------------------------|-----------|-----------|-----------|
| Post-registration changes                                                                                                 | 00        | 00        | 00        |
| Compliance of the registered monitoring plan with the methodologies including applicable tools and standardized baselines | 00        | 00        | 00        |
| Compliance of monitoring activities with the registered monitoring plan                                                   | 00        | 00        | 00        |
| Compliance with the calibration frequency requirements for measuring instruments                                          | 00        | 00        | 00        |
| Assessment of data and calculation of emission reductions or net removals                                                 | 05        | 01        | 00        |
| Assessment of reported sustainable development co-benefits                                                                | 00        | 00        | 00        |
| Global stakeholder consultation                                                                                           | 00        | 00        | 00        |
| Others (please specify)                                                                                                   | 00        | 00        | 00        |
| <b>Total</b>                                                                                                              | <b>05</b> | <b>01</b> | <b>00</b> |

## SECTION E. Verification findings

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

|                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Means of verification</b> | The monitoring report was completed using the appropriate version of the applicable monitoring report form /Ref-13/, as determined by the verification team. The verification team has verified that all sections of the monitoring report adhere to the guidelines outlined in the template.                                                                                                                                                                                                                                                                |
| <b>Findings</b>              | Nil                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Conclusion</b>            | The monitoring report template that GS has prescribed is current and active, and PP has utilized the valid version. Preparation of the monitoring report adheres to the guidelines stipulated in the GS requirements. The verification team has determined that the monitoring report was completed in accordance with the guidelines outlined in the template and was completed using the valid version of the relevant monitoring report form.<br>This is found in accordance with the para 9.4.4 of Validation and Verification Standard published by GS. |

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

The audit team has reviewed the previous verification report and validation report and has determined that there were no FARs still pending for closure from the previous verification and the validation report of the crediting period renewal.

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

|                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Means of verification</b> | <p>The project implementation and operation were confirmed to be in accordance with the registered project design document by conducting interviews and conducting a desk review of the documents submitted by the project participants (all revised documents are enumerated in Appendix (3)).</p> <p>The verifier verified that the primary technical features of the program and other equipment are operational in accordance with the specifications outlined in the PDD/Ref-1/. The audit team reviewed various technical documentation and Operation registers, Surveys to confirm the program's proper operation. The project developer has submitted all requisite information and documentation to substantiate the compliance of the registered program and the monitoring of GHG emissions in accordance with the methodology and the relevant GS4GG regulations.</p> <p>During site visit it was confirmed that more that almost 90% of household are using the biogas for cooking and the biogas digesters are functioning well. Hence it is confirmed that project operation implementation and operation is correct.</p> |
|------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

|                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|-------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                   | <p>It is also confirmed that there is no change in the data and variable applicable for the project as specified in the registered PDD/<b>Ref-1/</b> during this monitoring period. Data and variables monitored and reported in the monitoring report found to be consistent with the registered PDD/<b>Ref-1/</b>.</p> <p>Further it is also verified and confirmed that there is no increase in the actual emission reductions achieved by the registered project in the current monitoring period that was reported in monitoring report, hence no change is required.</p> <p>SDG monitoring and reporting found satisfactorily explained in the submitted monitoring report and the information is found transparent and verified based on the factual observations and events during monitoring period.</p> <p>PP has explained in the monitoring report that there were no feedback / grievances <b>/Ref-18/</b> from relevant stakeholder found received by PP during this monitoring period and it is confirmed during the household interviews conducted by verifier during site visit. Suitable grievance mechanism is found established by PP and it is found to be active, complaints i.e. no enough gas from Biogas digester plant, parts to be replaced etc. PP records such observations and takes necessary actions.</p> |
| <b>Findings</b>   | Nil                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <b>Conclusion</b> | PP has prepared monitoring report using specified template and sufficient information is provided with supporting monitoring records and logs and hence it is found satisfactory. Entire monitoring report is found to be in accordance with the Para 9.4.5 to 9.4.9 and hence it is concluded that the monitoring report is meeting the requirement has hence acceptable.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |

#### **E.4. Post-registration changes**

##### **E.4.1. Temporary deviations from the registered monitoring plan, applied methodologies, standardized baselines or other methodological regulatory documents<sup>1</sup>**

>>

There was no temporary deviation for this monitoring period from the registered PDD/**Ref-1/**.

##### **E.4.2. Corrections**

>>

No corrections have been applied during this monitoring period.

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

>>

There is no change to the start date of the crediting period in this monitoring period.

##### **E.4.4. Inclusion of a monitoring plan**

>>

Not applicable

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

>>

Not applicable

<sup>1</sup> Other standards, methodologies, methodological tools and guidelines (to be) applied in accordance with the applied(selected) methodologies are collectively referred to as the other (applied) methodological regulatory documents).

**E.4.6. Changes to the project design**

&gt;&gt;

There is no such change.

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

&gt;&gt;

This is not afforestation and reforestation project activity and hence this section is not applicable.

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

|                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Means of verification</b> | The verification team verified the monitoring plan/ <b>Ref-2/</b> , including the data and parameters to be monitored, the measurement procedures, the monitoring frequency, and the quality control/quality assurance procedures, as described in the revised PDD / <b>Ref-1/</b> . The Monitoring Plan/ <b>Ref-2/</b> presented in the Monitoring Report adheres to the Approved Gold Standard Methodology, namely TPDDTEC 3.1 as well as relevant parameters which are identified to demonstrate the projects contribution towards sustainable development goals (SDG). All relevant parameters are satisfactorily identified and monitored.                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>Findings</b>              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>Conclusion</b>            | <p>The verification team verified that the monitoring plan was consistent with the methodology in use and that any other monitoring aspect of the program that was not specified in the methodology was established.</p> <p>The verification team verify that the monitoring plan/<b>Ref-2/</b> is consistent with the applied methodology Technologies and Practices to Displace Decentralized Thermal Energy Consumption version 3.1 /<b>Ref-14/</b> for the following reasons:</p> <ul style="list-style-type: none"> <li>- The monitoring parameters in the applied methodology were compared to those in the registered PDD's monitoring plan during the desk review, and they were found to be consistent.</li> <li>- The monitoring plan accurately meets the criteria outlined in the monitoring methodology.</li> <li>- No additional pertinent aspects for monitoring were identified that were not included in the methodology.</li> </ul> <p>Thus, BVIPL certifies that the monitoring plan is consistent with the authorized methodology and applicable instrument of the GS program.</p> |

**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**

|                              |                                                                                                                                                                                                                                                                                  |                                                                                                                  |                                                                                                                                                                                                                                                                     |
|------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Means of verification</b> | Data and parameters fixed ex ante were verified through desk-review of final version of monitoring report, registered PDD / <b>Ref-1/</b> and methodology applied. The fixed parameters used for calculating the emission reduction have been indicated and verified as follows: |                                                                                                                  |                                                                                                                                                                                                                                                                     |
|                              | <b>Data</b>                                                                                                                                                                                                                                                                      | <b>Description</b>                                                                                               | <b>Estimated Annual Average</b>                                                                                                                                                                                                                                     |
|                              | <b>Parameter &amp; units</b>                                                                                                                                                                                                                                                     |                                                                                                                  |                                                                                                                                                                                                                                                                     |
|                              | <b>EF,CO2</b><br>kgCO <sub>2</sub> /TJ<br>fuel                                                                                                                                                                                                                                   | CO <sub>2</sub> emission factor arising from use of fuels in the baseline scenario and continued use of baseline | These parameters are used to establish Baseline and project emissions and PP has applied conservative values for the key fuels used during baseline scenario based on the results of Baseline Survey performed by PP.<br>Fuel <i>b</i> EF <sub>CO2</sub><br>(kg/TJ) |

|                             |                             |                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |        |                             |                     |         |                             |        |          |       |  |
|-----------------------------|-----------------------------|------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|-----------------------------|---------------------|---------|-----------------------------|--------|----------|-------|--|
|                             |                             | fuels in the project scenario                                                                                                                  | <table><tr><td>LPG</td><td>63100</td></tr><tr><td>Charcoal in wood eq</td><td>112,000</td></tr><tr><td>Firewood</td><td>112000</td></tr></table>                                                                                                                                                                                                                                                                                                                                                                                                          | LPG    | 63100                       | Charcoal in wood eq | 112,000 | Firewood                    | 112000 |          |       |  |
| LPG                         | 63100                       |                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |        |                             |                     |         |                             |        |          |       |  |
| Charcoal in wood eq         | 112,000                     |                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |        |                             |                     |         |                             |        |          |       |  |
| Firewood                    | 112000                      |                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |        |                             |                     |         |                             |        |          |       |  |
|                             |                             |                                                                                                                                                | <p>These values are default values obtained from the 2006 IPCC Guideline Defaults, Chapter 2 Stationary combustion. Application of default value is permitted by the methodology and hence it is acceptable.</p> <p>These parameters are used to establish Baseline and project emissions and PP has applied conservative values for the key fuels used during baseline scenario based on the results of Baseline Survey performed by PP.</p>                                                                                                             |        |                             |                     |         |                             |        |          |       |  |
|                             |                             | CH <sub>4</sub> emission factor arising from use of fuels in the baseline scenario and continued use of baseline fuels in the project scenario | <table><tr><td>Fuel b</td><td>EF<sub>i,CH4</sub> (kg/TJ)</td></tr><tr><td>LPG</td><td>11.95</td></tr><tr><td>Charcoal in wood equivalent</td><td>1,224</td></tr><tr><td>Firewood</td><td>1,224</td></tr></table>                                                                                                                                                                                                                                                                                                                                          | Fuel b | EF <sub>i,CH4</sub> (kg/TJ) | LPG                 | 11.95   | Charcoal in wood equivalent | 1,224  | Firewood | 1,224 |  |
| Fuel b                      | EF <sub>i,CH4</sub> (kg/TJ) |                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |        |                             |                     |         |                             |        |          |       |  |
| LPG                         | 11.95                       |                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |        |                             |                     |         |                             |        |          |       |  |
| Charcoal in wood equivalent | 1,224                       |                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |        |                             |                     |         |                             |        |          |       |  |
| Firewood                    | 1,224                       |                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |        |                             |                     |         |                             |        |          |       |  |
|                             |                             |                                                                                                                                                | <p>These values are default values obtained 2006 IPCC Guideline Defaults, Chapter 2 Stationary combustion (Table 2.9). Application of default value is permitted by the methodology under section 8 “Data and Parameters not monitored over the crediting period” and hence it is acceptable</p> <p>These parameters are used to establish Baseline and project emissions and PP has applied conservative values for the key fuels used during baseline scenario based on the results of Baseline Survey performed by PP.</p>                             |        |                             |                     |         |                             |        |          |       |  |
|                             |                             | N <sub>2</sub> O emission factor arising from use of fuels in the baseline scenario                                                            | <table><tr><td>Fuel b</td><td>EF<sub>i,N2O</sub> (kg/TJ)</td></tr><tr><td>LPG</td><td>2.1</td></tr><tr><td>Charcoal in wood equivalent</td><td>11.25</td></tr><tr><td>Firewood</td><td>11.25</td></tr></table>                                                                                                                                                                                                                                                                                                                                            | Fuel b | EF <sub>i,N2O</sub> (kg/TJ) | LPG                 | 2.1     | Charcoal in wood equivalent | 11.25  | Firewood | 11.25 |  |
| Fuel b                      | EF <sub>i,N2O</sub> (kg/TJ) |                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |        |                             |                     |         |                             |        |          |       |  |
| LPG                         | 2.1                         |                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |        |                             |                     |         |                             |        |          |       |  |
| Charcoal in wood equivalent | 11.25                       |                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |        |                             |                     |         |                             |        |          |       |  |
| Firewood                    | 11.25                       |                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |        |                             |                     |         |                             |        |          |       |  |
|                             |                             |                                                                                                                                                | <p>These values are default values obtained 2006 IPCC Guideline Defaults, Chapter 2 Stationary combustion (Table 2.9). Application of default value is permitted by the methodology under section 8 “Data and Parameters not monitored over the crediting period” and hence it is acceptable and hence it is acceptable.</p> <p>These parameters are used to establish Baseline and project emissions and PP has applied conservative values for the key fuels used during baseline scenario based on the results of Baseline Survey performed by PP.</p> |        |                             |                     |         |                             |        |          |       |  |
|                             |                             | Net calorific value of the fuel i used in the baseline                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |        |                             |                     |         |                             |        |          |       |  |

|  |                             |                                                                                |  | Fuel <i>i</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | NCVi<br>(TJ/Gg) |
|--|-----------------------------|--------------------------------------------------------------------------------|--|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|
|  |                             |                                                                                |  | LPG                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | 47.3            |
|  |                             |                                                                                |  | Charcoal in wood equivalent                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 15.6            |
|  |                             |                                                                                |  | Firewood                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 15.6            |
|  | Charcoal to wood ratio      | Charcoal to wood conversion ratio                                              |  | <p>These values are default values obtained 2006 IPCC Guideline Defaults, Chapter 1 Energy (Table 1.2). Application of default value is permitted by the methodology and hence it is acceptable.</p> <p>Pp has applied value 1:6 against this parameter to calculate baseline and project emissions during each monitoring period.</p> <p>This applied value is obtained from IPCC 1996 revised guidelines, Chapter 1, page 45:<br/> <a href="http://www.ipcc-nggip.iges.or.jp/public/gl/guidelin/ch1ref3.pdf">http://www.ipcc-nggip.iges.or.jp/public/gl/guidelin/ch1ref3.pdf</a></p> <p>This parameter is used for calculation of baseline emission and applied value i.e. 1.145815 is obtained through a Kitchen Performance Test and applied as Baseline fuel consumption, which is found in accordance with the requirements of the TPDDTEC methodology.</p> |                 |
|  | Bb1,wood<br>Tonnes/year     | Amount of woody biomass used in the baseline scenario b1                       |  | <p>The value applied for this monitoring period observed to be a fixed value i.e., 1.145815 for CPIII and it is found to be consistent with the PFT results obtained at the beginning of CPIII and it is found transparently presented in the sheet Gen_analysis.</p> <p>It is also noted during site visit and interviews of household, many households are utilizing LPG apart from woody biomass, hence PP applied average consumption of LPG per household as 13.04897 kg LPG per year and this is appropriately mentioned under scenario B1 as emission source during project activity and hence it is found correct and acceptable.</p> <p>The source of this information is found to be BFT study MPI – file CPIII MPI spreadsheet, tab ER_FUEL, D21.</p>                                                                                                  |                 |
|  | Bb2,charcoal<br>Tonnes/year | Amount of charcoal (in fuel-wood equivalents) used in the baseline scenario b2 |  | <p>The value applied for this monitoring period observed to be a fixed value i.e. 3.6685 (expressed in wood equivalents) for CPIII and it is found to be consistent with the KPT results obtained at the beginning of CPIII and it is found transparently presented as BFT study</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                 |

|                |                                                                                 |                                                                                 | MPI – file CPIII MPI spreadsheet sheet, Tab ER_Fuel cell D27.                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |        |          |            |      |                |      |            |      |
|----------------|---------------------------------------------------------------------------------|---------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|----------|------------|------|----------------|------|------------|------|
|                |                                                                                 |                                                                                 | It is also noted during site visit and interviews of household, many households are utilizing LPG and woody biomass as fuel, hence PP applied average consumption of LPG and woody biomass per household as 29.701 kg LPG and 24.277 kg wood on average per year and this is appropriately mentioned under scenario B2 as emission source during project activity and hence it is found correct and acceptable.<br>The source of this information is found to be BFT study MPI – file CPIII MPI spreadsheet sheet, Tab ER_Fuel cell D27. |        |          |            |      |                |      |            |      |
|                | <b>GWP<sub>CH4</sub></b><br>tCO <sub>2</sub> e per tCH <sub>4</sub>             | Global Warming Potential (GWP) of methane                                       | Value applied by PP is 28 and it is obtained from AR5 IPCC                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |        |          |            |      |                |      |            |      |
|                | <b>GWP<sub>N2O</sub></b><br>tCO <sub>2</sub> e per tN <sub>2</sub> O            | Global Warming Potential (GWP) of nitrous oxide                                 | This value shall be updated to any future COP/MOP decision.<br>Value applied by PP is 265 and it is obtained from AR5 IPCC                                                                                                                                                                                                                                                                                                                                                                                                               |        |          |            |      |                |      |            |      |
|                | <b>VS<sub>(T)</sub></b><br>kg dry matter per animal per day                     | Daily volatile solid excreted for livestock category T                          | This value shall be updated to any future COP/MOP decision.<br>These values are used to calculate baseline and project emissions.<br>PP Applied Default values for various types of livestock observed during Baseline Survey and these default values are obtained from Volume 4 of the 2006 IPCC Guidelines for national Greenhouse Gas inventories, Chapter 10. Values applied are given in the following table.                                                                                                                      |        |          |            |      |                |      |            |      |
|                |                                                                                 |                                                                                 | <table><tr><th>Animal</th><th>kgVS/day</th></tr><tr><td><b>Pig</b></td><td>0.3</td></tr><tr><td><b>Buffalo</b></td><td>3.9</td></tr><tr><td><b>Cow</b></td><td>2.3</td></tr></table>                                                                                                                                                                                                                                                                                                                                                     | Animal | kgVS/day | <b>Pig</b> | 0.3  | <b>Buffalo</b> | 3.9  | <b>Cow</b> | 2.3  |
| Animal         | kgVS/day                                                                        |                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |        |          |            |      |                |      |            |      |
| <b>Pig</b>     | 0.3                                                                             |                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |        |          |            |      |                |      |            |      |
| <b>Buffalo</b> | 3.9                                                                             |                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |        |          |            |      |                |      |            |      |
| <b>Cow</b>     | 2.3                                                                             |                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |        |          |            |      |                |      |            |      |
|                | <b>Bo<sub>(T)</sub></b><br>m <sup>3</sup> CH <sub>4</sub> per kg of VS excreted | Maximum methane production capacity for manure produced by livestock category T | These values are used to calculate baseline and project emissions.<br>PP Applied Default values for various types of livestock observed during Baseline Survey and these default values are obtained from Volume 4 of the 2006 IPCC Guidelines for national Greenhouse Gas inventories, Chapter 10. Values applied are given in the following table.                                                                                                                                                                                     |        |          |            |      |                |      |            |      |
|                |                                                                                 |                                                                                 | <table><tr><th>Animal</th><th>kgVS/day</th></tr><tr><td><b>Pig</b></td><td>0.29</td></tr><tr><td><b>Buffalo</b></td><td>0.10</td></tr><tr><td><b>Cow</b></td><td>0.10</td></tr></table>                                                                                                                                                                                                                                                                                                                                                  | Animal | kgVS/day | <b>Pig</b> | 0.29 | <b>Buffalo</b> | 0.10 | <b>Cow</b> | 0.10 |
| Animal         | kgVS/day                                                                        |                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |        |          |            |      |                |      |            |      |
| <b>Pig</b>     | 0.29                                                                            |                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |        |          |            |      |                |      |            |      |
| <b>Buffalo</b> | 0.10                                                                            |                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |        |          |            |      |                |      |            |      |
| <b>Cow</b>     | 0.10                                                                            |                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |        |          |            |      |                |      |            |      |
|                | <b>MCF(k)</b><br>%                                                              | Methane conversion factors for each manure                                      | This value is used for calculation of baseline and project emissions, PP has applied a default value of 10% for bi-digester systems and it is obtained from                                                                                                                                                                                                                                                                                                                                                                              |        |          |            |      |                |      |            |      |

|                                                                                            | management system by climate region k                                                                      | Tables 10.17, Chapter 10, Volume 4 of the 2019 refinement to the IPCC 2006 Guidelines                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                   |                                                                                                            |                  |       |         |        |         |        |              |      |               |      |       |      |         |      |
|--------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|------------------------------------------------------------------------------------------------------------|------------------|-------|---------|--------|---------|--------|--------------|------|---------------|------|-------|------|---------|------|
|                                                                                            |                                                                                                            | <table><tr><th>Type of Treatment</th><th>Default Value as per Tables 10.17, Chapter 10, Volume 4 of the 2019 refinement to the IPCC 2006 Guidelines</th></tr><tr><td>Anaerobic lagoon</td><td>80%</td></tr><tr><td>Slurry</td><td>74.22%</td></tr><tr><td>Dry lot</td><td>2.0%</td></tr><tr><td>Daily spread</td><td>1.0%</td></tr><tr><td>Solid Storage</td><td>5.0%</td></tr><tr><td>Other</td><td>1.0%</td></tr><tr><td>Pasture</td><td>2.0%</td></tr></table>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Type of Treatment | Default Value as per Tables 10.17, Chapter 10, Volume 4 of the 2019 refinement to the IPCC 2006 Guidelines | Anaerobic lagoon | 80%   | Slurry  | 74.22% | Dry lot | 2.0%   | Daily spread | 1.0% | Solid Storage | 5.0% | Other | 1.0% | Pasture | 2.0% |
| Type of Treatment                                                                          | Default Value as per Tables 10.17, Chapter 10, Volume 4 of the 2019 refinement to the IPCC 2006 Guidelines |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                   |                                                                                                            |                  |       |         |        |         |        |              |      |               |      |       |      |         |      |
| Anaerobic lagoon                                                                           | 80%                                                                                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                   |                                                                                                            |                  |       |         |        |         |        |              |      |               |      |       |      |         |      |
| Slurry                                                                                     | 74.22%                                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                   |                                                                                                            |                  |       |         |        |         |        |              |      |               |      |       |      |         |      |
| Dry lot                                                                                    | 2.0%                                                                                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                   |                                                                                                            |                  |       |         |        |         |        |              |      |               |      |       |      |         |      |
| Daily spread                                                                               | 1.0%                                                                                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                   |                                                                                                            |                  |       |         |        |         |        |              |      |               |      |       |      |         |      |
| Solid Storage                                                                              | 5.0%                                                                                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                   |                                                                                                            |                  |       |         |        |         |        |              |      |               |      |       |      |         |      |
| Other                                                                                      | 1.0%                                                                                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                   |                                                                                                            |                  |       |         |        |         |        |              |      |               |      |       |      |         |      |
| Pasture                                                                                    | 2.0%                                                                                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                   |                                                                                                            |                  |       |         |        |         |        |              |      |               |      |       |      |         |      |
|                                                                                            |                                                                                                            | <p>This approach is found in accordance with the Methodology requirement and hence acceptable.</p> <p>Due to the nature of the project, it is explained by the PP that Leakage emissions during project scenario is not applicable.</p> <p>As per methodology requirement it is required to substantiate that the leakage risks deemed very low and hence considered as insignificant.</p> <p>The purpose of this parameter is to calculate Baseline emissions and PP applied Default values obtained from Volume 4 of 2006 and 2009 IPCC Guidelines for National Greenhouse gas Inventories, chapter 10, against various livestock observed during baseline survey.</p> <p>Computed according to the methodological specifications and obtained from Tables 10.A-4 to A-9 in Chapter 10, Volume 4 of the 2006 IPCC Guidelines and the IPCC 2009. Formulated using equation 10, where VST and BoT are default values from IPCC 2006 for the Asia area, and MCF are default values from IPCC 2019 for temperature-based climatic zone definition, and MS is from the baseline survey.</p> |                   |                                                                                                            |                  |       |         |        |         |        |              |      |               |      |       |      |         |      |
| $LE_{p,y}$<br>tCO <sub>2e</sub> /year                                                      | Leakage in project scenario during year y                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                   |                                                                                                            |                  |       |         |        |         |        |              |      |               |      |       |      |         |      |
| $EF_{awms,T}$<br>kgCH <sub>4</sub> per animal per year for livestock type T in the project | Animal waste methane emission factor by average temperature                                                | <table><tr><th>Animal T</th><th>Temperate zone</th></tr><tr><td>Pig</td><td>4.249</td></tr><tr><td>Buffalo</td><td>24.917</td></tr><tr><td>Cow</td><td>13.808</td></tr></table>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Animal T          | Temperate zone                                                                                             | Pig              | 4.249 | Buffalo | 24.917 | Cow     | 13.808 |              |      |               |      |       |      |         |      |
| Animal T                                                                                   | Temperate zone                                                                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                   |                                                                                                            |                  |       |         |        |         |        |              |      |               |      |       |      |         |      |
| Pig                                                                                        | 4.249                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                   |                                                                                                            |                  |       |         |        |         |        |              |      |               |      |       |      |         |      |
| Buffalo                                                                                    | 24.917                                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                   |                                                                                                            |                  |       |         |        |         |        |              |      |               |      |       |      |         |      |
| Cow                                                                                        | 13.808                                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                   |                                                                                                            |                  |       |         |        |         |        |              |      |               |      |       |      |         |      |
| $\eta_{biogasstove}$                                                                       | Combustion efficiency of                                                                                   | The purpose of the data is to calculate project emissions. PP has considered the                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                   |                                                                                                            |                  |       |         |        |         |        |              |      |               |      |       |      |         |      |

|                   |                               |                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|-------------------|-------------------------------|------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                   | [-]%                          | the biogas stove                               | <p>default value from the GS methodology: Indicative Programme, baseline, and monitoring methodology for large Scale Bio-digester, the value applied is 99.4%.</p> <p>The source of this information is found to be credible i.e., Centre for Energy Studies, Institute of Engineering for the Nepal Biogas Support Programme (BSP) and hence it is acceptable.</p> <p>The purpose of this data / parameter is to calculate baseline emissions and this is found to be calculated value obtained based on the information gathered during the survey as it is practically difficult and unsafe to monitor quantified LPG consumption using PFT, hence PP asked directed question to household to understand the consumption of LPG in terms of number bottles and size of the bottles.</p> <p>PP has applied 0.078849 Tonnes/ Year as monitored value based on the information obtained from household during usage survey/Ref-28/ and total Gas utilization per household on and average and this is extrapolated using calculation formulae. The formula</p> $\text{Annual LPG consumption} \left( \frac{\text{kg}}{\text{year}} \right) = \frac{\text{Bottle size (kg)}}{\text{Usage period (days)}} \times 365$ <p>The value applied during this verification is found to be a fixed value for CP III and hence it is found correctly applied.</p> |
|                   | <b>Bb3,LPG</b><br>Tonnes/year | Amount of LPG used in the baseline scenario b3 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>Findings</b>   |                               |                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>Conclusion</b> |                               |                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |

#### E.6.2. Data and parameters monitored

| Means of verification                 | Data                                                           |                                                                           |                                                                                                                                                                                                                                                                                                                                                                                      |
|---------------------------------------|----------------------------------------------------------------|---------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                       | Paramet                                                        | Description                                                               | Estimated Annual Average                                                                                                                                                                                                                                                                                                                                                             |
|                                       | er &<br>units                                                  |                                                                           |                                                                                                                                                                                                                                                                                                                                                                                      |
|                                       | <b>fNRB<sub>i,y</sub></b><br>Fraction of Non-Renewable Biomass | Non-renewability status of woody biomass fuel in scenario i during year y | PP Applied value 95.01% which is a calculated value obtained during Baseline study and fixed for the Crediting period. The calculation is found to be based on the CDM Tool 30 and hence it is found correct and in accordance with the approach described in the applied approved methodology section 3.1.<br>This value is used for Calculation of baseline and project emissions. |
| <b>B<sub>p,y</sub></b><br>kg/ project | Quantity of biomass fuel                                       | This data and parameter is used to calculate Project emissions            |                                                                                                                                                                                                                                                                                                                                                                                      |

|                                                  |                                            |                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |        |                                 |                     |       |          |        |
|--------------------------------------------------|--------------------------------------------|----------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|---------------------------------|---------------------|-------|----------|--------|
|                                                  | household<br>-year                         | that is<br>consumed in<br>the project<br>scenario in<br>year y | <p>The monitored value applied by PP during this monitoring period is verified as given in below table.</p> <table><tr><td>Fuel b</td><td>Average per household (kg/year)</td></tr><tr><td>Charcoal in wood eq</td><td>0.000</td></tr><tr><td>Firewood</td><td>99.246</td></tr></table> <p>These values are determined using survey methods, newton scale values. Survey are conducted at Biennial frequency, starting from MPI. Last survey was performed by PP in February and March 2024.</p> <p>The monitored value is transparently presented in the following documents which were reviewed by Verifier for the accuracy and correctness and found satisfactory.</p> <p>Survey outcome presented in the monitoring report and other supporting documents were confirmed during physical site visit and it is concluded that the results are representative and not biased.</p> <p>This parameter is used to establish Baseline and project emissions and PP has applied conservative values for the key fuels used during baseline scenario which is based on the results of Baseline Survey performed by PP.</p> <p>During this monitoring period PP has applied 15.388 Kg/project household -year. Monitoring frequency followed for this parameter is found to be recorded appropriately and it is observed that the value is determined applying Biennial frequency, starting from MPI and it is found accurate. Calculated Value is based on the information gathered during the survey as it is practically difficult and unsafe to monitor quantified LPG consumption using KPT, hence PP asked directed question to household to understand the consumption of LPG in terms of number bottles and size of the bottles.</p> <p>The value is determined using predefined survey method and the values are computed using PFT database. PFT was performed during Feb – March 2024. PP has provided transparent source information in the following support documents and it is found correct and in accordance with the approved methodology applied by the PDD for this project.</p> <ul style="list-style-type: none"><li>- Excel file: CPIII MPV spreadsheet, tab ER_FUEL K30</li><li>- Excel file: Combined Data_NBP_US-CMS-PFT_CP3MP5_2024,tabCMS_PFT_Analysis, cell C76</li></ul> | Fuel b | Average per household (kg/year) | Charcoal in wood eq | 0.000 | Firewood | 99.246 |
|                                                  | Fuel b                                     | Average per household (kg/year)                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |        |                                 |                     |       |          |        |
| Charcoal in wood eq                              | 0.000                                      |                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |        |                                 |                     |       |          |        |
| Firewood                                         | 99.246                                     |                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |        |                                 |                     |       |          |        |
| B <sub>p,LPG</sub><br>kg/ project household-year | Amount of LPG used in the project scenario |                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |        |                                 |                     |       |          |        |

|                                    |                          |                                      | <p>The purpose of this data is to Calculate baseline emissions. It is observed that the value applied by PP during this monitoring period is a measure value. The Values applied against different baseline scenarios are provided by PP during this monitoring period are verified and confirmed as below.</p> <table><tr><th>Baseline scenario</th><th colspan="2">% of users</th></tr><tr><td>Households with main fuel wood</td><td>Bb1,ratio</td><td>95.00%</td></tr><tr><td>Households with main fuel charcoal</td><td>Bb2,ratio</td><td>0.00%</td></tr><tr><td>Household with main fuel LPG</td><td>Bb3,ratio</td><td>4.69%</td></tr><tr><td>Households using other fuels</td><td>n/a</td><td>0.31%</td></tr></table> <p>These values are determined during CMS Survey performed at annual frequency and the information is provided transparently in following supporting documents.</p> <ul style="list-style-type: none"><li>- Excel file CPIII MPV spreadsheet tab ER_FUEL and</li><li>- Combined Data_NBP_CP3_MP5_2024, Tab: CMS_Analysis - Found Satisfactory.</li></ul> <p>The purpose of this data / parameter is to calculated SDG Contribution Specially SDG 13. The Monitoring arrangement established by PP is directed towards obtaining realistic measured data for correct calculation of the Monitoring parameter.</p> <p>This parameter is monitored during CMS Survey and the values applied during this monitoring period are verified and confirmed during onsite visit through interview of sampled households and found to be correctly represented in the Monitoring report the values confirmed are provided as below.</p> <table><tr><th>Livestock</th><th>% fed into Biodigester</th></tr><tr><td>Cow</td><td>56.73%</td></tr><tr><td>Pig</td><td>73.52%</td></tr><tr><td>Buffalo</td><td>52.88%</td></tr></table> <p>This data/parameter is important to demonstrate that how many percentages of manure is not fed to the biodigester and thus results in the project emissions. The intention of monitoring of this parameter is to demonstrate overall contribution project has towards the SDG 13. PP has performed CMS survey to monitor the current practices at the project household and thus calculate overall percentage of total manure generated is not fed to the biodigester. The values presented</p> | Baseline scenario | % of users |  | Households with main fuel wood | Bb1,ratio | 95.00% | Households with main fuel charcoal | Bb2,ratio | 0.00% | Household with main fuel LPG | Bb3,ratio | 4.69% | Households using other fuels | n/a | 0.31% | Livestock | % fed into Biodigester | Cow | 56.73% | Pig | 73.52% | Buffalo | 52.88% |
|------------------------------------|--------------------------|--------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|------------|--|--------------------------------|-----------|--------|------------------------------------|-----------|-------|------------------------------|-----------|-------|------------------------------|-----|-------|-----------|------------------------|-----|--------|-----|--------|---------|--------|
| Baseline scenario                  | % of users               |                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                   |            |  |                                |           |        |                                    |           |       |                              |           |       |                              |     |       |           |                        |     |        |     |        |         |        |
| Households with main fuel wood     | Bb1,ratio                | 95.00%                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                   |            |  |                                |           |        |                                    |           |       |                              |           |       |                              |     |       |           |                        |     |        |     |        |         |        |
| Households with main fuel charcoal | Bb2,ratio                | 0.00%                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                   |            |  |                                |           |        |                                    |           |       |                              |           |       |                              |     |       |           |                        |     |        |     |        |         |        |
| Household with main fuel LPG       | Bb3,ratio                | 4.69%                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                   |            |  |                                |           |        |                                    |           |       |                              |           |       |                              |     |       |           |                        |     |        |     |        |         |        |
| Households using other fuels       | n/a                      | 0.31%                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                   |            |  |                                |           |        |                                    |           |       |                              |           |       |                              |     |       |           |                        |     |        |     |        |         |        |
| Livestock                          | % fed into Biodigester   |                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                   |            |  |                                |           |        |                                    |           |       |                              |           |       |                              |     |       |           |                        |     |        |     |        |         |        |
| Cow                                | 56.73%                   |                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                   |            |  |                                |           |        |                                    |           |       |                              |           |       |                              |     |       |           |                        |     |        |     |        |         |        |
| Pig                                | 73.52%                   |                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                   |            |  |                                |           |        |                                    |           |       |                              |           |       |                              |     |       |           |                        |     |        |     |        |         |        |
| Buffalo                            | 52.88%                   |                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                   |            |  |                                |           |        |                                    |           |       |                              |           |       |                              |     |       |           |                        |     |        |     |        |         |        |
| <b>B<sub>b,ratio</sub></b><br>(%)  | Baseline scenario ratios |                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                   |            |  |                                |           |        |                                    |           |       |                              |           |       |                              |     |       |           |                        |     |        |     |        |         |        |
|                                    |                          | <b>MS<sub>(T,S,k)</sub></b><br>[-] % | Fraction of livestock category T's manure fed into the bio-digester, S in climate region k                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                   |            |  |                                |           |        |                                    |           |       |                              |           |       |                              |     |       |           |                        |     |        |     |        |         |        |
|                                    |                          | <b>MS<sub>(P,S,K)</sub></b>          | Fraction of livestock category T's manure not fed in the biodigester S in climate region k                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                   |            |  |                                |           |        |                                    |           |       |                              |           |       |                              |     |       |           |                        |     |        |     |        |         |        |

|            |                                                                                              | <p>in the monitoring report found to be correct and representative of the current actual practices followed by project household owners. This is confirmed during onsite verification visit hence it is concluded that the below values are acceptable.</p> <table><tr><th>Livestock</th><th>Slurry</th><th>Aerobic Lagoon</th><th>Dry Lot</th><th>Daily Spread</th><th>Solid Storage</th><th>Other</th><th>Pasture</th></tr><tr><td>Cow</td><td>0.3<br/>1%</td><td>0.10<br/>%</td><td>0.9<br/>9%</td><td>5.66<br/>%</td><td>17.2<br/>8%</td><td>0.0<br/>0%</td><td>18.9<br/>3%</td></tr><tr><td>Pig</td><td>4.2<br/>0%</td><td>6.79<br/>%</td><td>0.2<br/>2%</td><td>9.63<br/>%</td><td>5.65<br/>%</td><td>0.0<br/>0%</td><td>0.00<br/>%</td></tr><tr><td>Buffalo</td><td>0.3<br/>7%</td><td>0.00<br/>%</td><td>0.9<br/>7%</td><td>11.4<br/>2%</td><td>7.03<br/>%</td><td>0.3<br/>7%</td><td>26.9<br/>7%</td></tr></table> <p>The basic monitoring results are found document in the following documents.</p> <ul style="list-style-type: none"><li>- Excel file CPIII MPV spreadsheet tab MS_AWMS cell D12:J14 and</li><li>- Combined Data NBP_US-CMS-PFT_CP3MP5_2024, Tab: CMS_Analysis</li></ul> <p>Number of animals per house hold is an important parameter which is linked to the quantity of manure generated and thus calculation of Baseline emissions, project emissions and emission reductions is done accurately. PP has employed CMS Survey for monitoring this parameter and the values presented in the monitoring report found to be correct and representative. This is confirmed by Verifier during onsite visit interview with sampled project households. The information obtained during interview found to close enough with the values presented by PP in the monitoring report and hence it is concluded that the values applied are correct and credible. Verified values of number of animals during this monitoring period are</p> <table><tr><th>Animal (T)</th><th>N<sub>(T)</sub></th></tr><tr><td>Cow</td><td>6.00</td></tr><tr><td>Pig</td><td>0.59</td></tr><tr><td>Buffalo</td><td>0.76</td></tr></table> <p>Source of this data is verified and confirmed that the values are sourced from</p> <ul style="list-style-type: none"><li>- Excel file CPIII MPV spreadsheet, tab ER_AWMS, cell D31:D33 and</li><li>- Combined Data NBP_US-CMS PFT_CP3MP5_2024, Tab: CMS_Analysis</li></ul> <p>Physical leakages from biodigester is unavoidable and hence methodology requires to monitor this conservatively adopting appropriate measures. This Data/Parameter is monitored to establish the project emissions. PP has employed suitable means to monitor the physical leakages and it is observed that during CMS Survey PP is monitoring physical leaks and account the</p> | Livestock | Slurry       | Aerobic Lagoon | Dry Lot   | Daily Spread | Solid Storage | Other | Pasture | Cow | 0.3<br>1% | 0.10<br>% | 0.9<br>9% | 5.66<br>% | 17.2<br>8% | 0.0<br>0% | 18.9<br>3% | Pig | 4.2<br>0% | 6.79<br>% | 0.2<br>2% | 9.63<br>% | 5.65<br>% | 0.0<br>0% | 0.00<br>% | Buffalo | 0.3<br>7% | 0.00<br>% | 0.9<br>7% | 11.4<br>2% | 7.03<br>% | 0.3<br>7% | 26.9<br>7% | Animal (T) | N <sub>(T)</sub> | Cow | 6.00 | Pig | 0.59 | Buffalo | 0.76 |
|------------|----------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|--------------|----------------|-----------|--------------|---------------|-------|---------|-----|-----------|-----------|-----------|-----------|------------|-----------|------------|-----|-----------|-----------|-----------|-----------|-----------|-----------|-----------|---------|-----------|-----------|-----------|------------|-----------|-----------|------------|------------|------------------|-----|------|-----|------|---------|------|
| Livestock  | Slurry                                                                                       | Aerobic Lagoon                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Dry Lot   | Daily Spread | Solid Storage  | Other     | Pasture      |               |       |         |     |           |           |           |           |            |           |            |     |           |           |           |           |           |           |           |         |           |           |           |            |           |           |            |            |                  |     |      |     |      |         |      |
| Cow        | 0.3<br>1%                                                                                    | 0.10<br>%                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 0.9<br>9% | 5.66<br>%    | 17.2<br>8%     | 0.0<br>0% | 18.9<br>3%   |               |       |         |     |           |           |           |           |            |           |            |     |           |           |           |           |           |           |           |         |           |           |           |            |           |           |            |            |                  |     |      |     |      |         |      |
| Pig        | 4.2<br>0%                                                                                    | 6.79<br>%                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 0.2<br>2% | 9.63<br>%    | 5.65<br>%      | 0.0<br>0% | 0.00<br>%    |               |       |         |     |           |           |           |           |            |           |            |     |           |           |           |           |           |           |           |         |           |           |           |            |           |           |            |            |                  |     |      |     |      |         |      |
| Buffalo    | 0.3<br>7%                                                                                    | 0.00<br>%                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 0.9<br>7% | 11.4<br>2%   | 7.03<br>%      | 0.3<br>7% | 26.9<br>7%   |               |       |         |     |           |           |           |           |            |           |            |     |           |           |           |           |           |           |           |         |           |           |           |            |           |           |            |            |                  |     |      |     |      |         |      |
| Animal (T) | N <sub>(T)</sub>                                                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |           |              |                |           |              |               |       |         |     |           |           |           |           |            |           |            |     |           |           |           |           |           |           |           |         |           |           |           |            |           |           |            |            |                  |     |      |     |      |         |      |
| Cow        | 6.00                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |           |              |                |           |              |               |       |         |     |           |           |           |           |            |           |            |     |           |           |           |           |           |           |           |         |           |           |           |            |           |           |            |            |                  |     |      |     |      |         |      |
| Pig        | 0.59                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |           |              |                |           |              |               |       |         |     |           |           |           |           |            |           |            |     |           |           |           |           |           |           |           |         |           |           |           |            |           |           |            |            |                  |     |      |     |      |         |      |
| Buffalo    | 0.76                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |           |              |                |           |              |               |       |         |     |           |           |           |           |            |           |            |     |           |           |           |           |           |           |           |         |           |           |           |            |           |           |            |            |                  |     |      |     |      |         |      |
|            | <p><b>N<sub>(T)</sub></b></p> <p>Number of animals of livestock category T per household</p> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |           |              |                |           |              |               |       |         |     |           |           |           |           |            |           |            |     |           |           |           |           |           |           |           |         |           |           |           |            |           |           |            |            |                  |     |      |     |      |         |      |
|            | <p><b>PL %</b></p> <p>Physical leakage of the biodigester</p>                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |           |              |                |           |              |               |       |         |     |           |           |           |           |            |           |            |     |           |           |           |           |           |           |           |         |           |           |           |            |           |           |            |            |                  |     |      |     |      |         |      |

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|  | <p>leakage % i.e. percentage of biodigesters found leaking during CMS Survey. PP has applied 4% as the monitored value during this monitoring period and it is found to be correct, as similar observation also recorded during the onsite visit and interview of sampled project household. The value is sourced from following documents</p> <ul style="list-style-type: none"> <li>- <i>Excel file CPIII MPV spreadsheet, tab ER_AWMS, cell F51 and</i></li> <li>- <i>Combined Data NBP US-CMS-PFT_CP3MP5_2024, Tab: CMS_Analysis.</i></li> </ul> <p>Further it is observed that total leakage is estimated using para-A.6.3 of the applied methodology, PP has applied following approach using methodology guidance</p> $PL = 10\% * \%BDleak$ <p>where the IPCC default value for physical leakage is 10%, and %BDleak represents the proportion of residences with a malfunctioning / Leaking biodigester. In the event that the PP fails to measure the leakage, the %BDleak is 100%, indicating that all plants are presumed to leak according to the IPCC estimate. The values used to estimate fugitive emissions from project biogas during this monitoring period are accurate and consistent with the guidance provided in the applicable methodology, as a result of the aforementioned verification. Hence, they are deemed acceptable.</p> <p>This Data / Parameter is the important parameter for the estimation of volatile solids (VS) in the excretion. VS in the excretion of PG is dependent of the size and age of the pig. PP has employed suitable monitoring and measurement method as prescribed by the applied methodology and it is explained in the E.1 Section of the monitoring report. For measuring the size of the pig PP has defined 25% samples during each monitoring period and the result of measurement is documented correctly. Verifier has raised one clarification during this verification, how 25% sampling is appropriate sampling when the Size and age of pig is not uniform across all household during monitoring period. PP has explained the approach and clarified that during this monitoring period 68% samples were measured during CMS Survey which is more than that of required sample size. Also, the rate of failure is lower than the tolerance established. Based on the clarification provided by PP it is concluded that the approach adopted by the PP in sampling is</p> |
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**W<sub>(site)</sub>**  
(kg)

Average pig  
weight at the  
project site  
(kg)

|  |                                                                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|--|---------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  |                                                                                                               | <p>there since the registration of this project activity, hence found satisfactory.</p> <p>PP has applied 95.19 Kg as an average weight of saw during this monitoring period and this is found to be conservative, hence it is found acceptable. The source of this information was verified as</p> <ul style="list-style-type: none"> <li>- <i>Excel file CP/III MPV spreadsheet, tab ER_AWMS, cell E14 and</i></li> <li>- <i>Combined Data NBP_US-CMS-PFT_CP3MP5_2024, Tab: CMS_Analysis, cell D9.</i></li> </ul> <p>This is an important Data / Parameter from the project monitoring point of view as it is prescribed by the applied methodology as well as Usage rate is directly impacting the overall estimation of baseline emissions, project emissions as well as Emission reduction during MP III.</p> <p>PP has deployed recommended method for gathering information on usage rate through usage survey. Usage Survey frequency established as annual and it is found in accordance with the registered PDD, hence acceptable. Last annual usage survey was conducted in the month of Feb – March 2024 and the result of the survey is transparently made available for verification. Based on the assessment of survey results it is observed that PP has applied 48.685% as usage rate for MP III and this information appropriately sourced from the Usage and CMS survey data: <i>/Ref-28/ Combined Data NBP_US-CMS-PFT_CP3MP5_2024, Tab, Usage_Analysis, cell J44.</i></p> <p>PP has defined appropriate survey method to obtain realistic and reliable information to estimate emission reductions accurately. Survey is performed following suitable sampling approach, during usage survey PP Selected 600 Household against requirement of 450 Households (Prescribed by the applied methodology) hence it is concluded that the results presented is found credible and the value applied against this parameter is representative of the entire population of project households. During onsite verification Verifier also selected 35 randomly selected household from different provinces and it is concluded that the results presented by PP are comparable with the results obtained during onsite interview for the Usage Rate determination.</p> <p>Verifier reviewed the database maintained by PP in the Excel sheet and it is confirmed that as of MP III PP has installed 28,975 number</p> |
|  | <p><b>U<sub>p,y</sub></b><br/>Percentage</p> <p>Percentage of bio-digesters in use in monitoring period y</p> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|  | <p><b>N<sub>b,y</sub></b><br/>Number</p> <p>Number of biogas plants commissioned</p>                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |

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|--|------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  |                                                                                                      | <p>of biodigesters in Different provinces of host country Cambodia. This database covers the unique serial number of the biodigester installed, Name of the household owner, geographical coordinates, capacity and type etc. This data base is found appropriately updated and no discrepancy was observed during this verification.</p> <p>This Data / Parameter is used for estimating Contribution towards identified SDG goal 2 and specific indicator 2.4.1 “Proportion of agricultural area under productive and sustainable agriculture”.</p> <p>This parameter is monitored using CMS Survey, planned annually. Last CMS survey was performed along with usage survey during Feb – March 2024 and the result presented in the monitoring report is based on the survey outcome /Ref-28/i.e.,</p> <ul style="list-style-type: none"> <li>- Excel file CPHI MPV spreadsheet tab SDG2&amp;7 calculation cell F8 and</li> <li>- Combined Data NBP US-CMS-PFT CP3MP5 2024, tab CMS PFT Analysis, cell D36.</li> </ul> <p>Results of survey verified in detailed and it is found that PP has designed specific questions to ask during CMS Survey to household and answers to the questions are found transparently documented in the survey outcome. During this monitoring period PP applied value of 96.88% this indicates that 96.88% household are applying the digestate slurry in the field during cropping season.</p> <p>This information was crosschecked during onsite household interviews conducted by verifier against randomly sampled households and observed that there is a good understanding towards the fertilizer value of the slurry and it is confirmed by all household that they utilizing slurry as fertilizer.</p> <p>During site visit it is also confirmed that majority of household have made proper infrastructure for storing the slurry as well channelizing it to the field in case field is near to the house. Thus, it is concluded that the contribution estimated by PP is credible and project is contributing to the identified SDG effectively.</p> <p>This Data / Parameter is used for estimating Contribution towards identified SDG goal 2 and specific indicator 2.4.1 “Proportion of agricultural area under productive and sustainable agriculture”.</p> |
|  | <p>%BS<sub>y</sub></p> <p>Share of households that uses bio-slurry for crop production in year y</p> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|  | <p>Abs,h hectare</p> <p>Average area per household on which bio-slurry is applied.</p>               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |

|                    | <p>This parameter is monitored using CMS Survey, planned annually. Last CMS survey was performed along with usage survey during Feb – March 2024 and the result presented in the monitoring report is based on the survey outcome/Ref-28/ i.e.,</p> <ul style="list-style-type: none"> <li>- Excel file CPIII MPV spreadsheet tab SDG2&amp;7 calculation cell F9 and</li> <li>- Combined_Data_NBP_US-CMS-PFT_CP3MP5_2024, Tab: CMS_Analysis, cell C41..</li> </ul> <p>Survey questions are designed appropriately to get relevant information from household, following questions are asked during CMS Survey and the information obtained is presented in the monitoring report correctly.</p> <table border="1"> <thead> <tr> <th colspan="2">+Use of Bio-slurry</th></tr> </thead> <tbody> <tr> <td>4.1</td><td>Do you use bio-slurry as fertilizer for your crops?</td></tr> <tr> <td>4.1.1</td><td>Howe many square meters of land (total) do you apply the bio-slurry?</td></tr> </tbody> </table> <p>The value applied by PP against this parameter is 0.583 Hectare per house hold. This means that on an average 0.583 hectares of land where the digested slurry is applied by each household. This information is found accurate, hence found acceptable.</p> <p>This Data / Parameter is used for estimating Contribution towards identified SDG goal 7 and specific indicator 7.2.1: “Proportion of population with primary reliance on clean fuels and technology”.</p> <p>This parameter is monitored using CMS Survey, planned annually. Last CMS survey was performed along with usage survey during Feb – March 2024 and the result presented in the monitoring report is based on the survey outcome/Ref-28/ i.e.,</p> <ul style="list-style-type: none"> <li>- Excel file CPIII MPV spreadsheet tab SDG2&amp;7 calculation, cell F17 and</li> <li>- Combined_Data_NBP_US-CMS-PFT_CP3MP5_2024,Tab: CMS_Analysis, cell D46.</li> </ul> <p>Survey questions are designed appropriately to get relevant information from household, During CMS Survey PP asked questions regarding how frequently household is using biogas as clean fuel for cooking utilizing various cooking technologies i.e. Biogas stove type, which determines the efficiency in biogas consumption. The information obtained during CMS survey found to be transparently analysed and result of the analysis is presented, the value applied during this monitoring period is 98.44%. This</p> | +Use of Bio-slurry |  | 4.1 | Do you use bio-slurry as fertilizer for your crops? | 4.1.1 | Howe many square meters of land (total) do you apply the bio-slurry? |
|--------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|--|-----|-----------------------------------------------------|-------|----------------------------------------------------------------------|
| +Use of Bio-slurry |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                    |  |     |                                                     |       |                                                                      |
| 4.1                | Do you use bio-slurry as fertilizer for your crops?                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                    |  |     |                                                     |       |                                                                      |
| 4.1.1              | Howe many square meters of land (total) do you apply the bio-slurry?                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                    |  |     |                                                     |       |                                                                      |

B<sub>daily,y</sub>  
percentage

Share of  
biogas users  
that uses  
biogas at least  
once per day  
for cooking in  
year y

|                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
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|                                          | <p>indicates that 98.44% of households are cooking food at least once per day. During Verification site visit Verifier cross checked this information and found that majority of the household are cooking 3 meals per day using biogas as clean fuel and reduced reliance on fossil fuel i.e., coal, LPG and Wood. Based on the verification CMS Survey outcome and the interview with household it is concluded that the value monitored and applied by the PP during MP III is correct and hence acceptable.</p> <p>During this monitoring period PP has applied 4.76 persons/ household. This information is obtained from the CMS survey outcome. This information is presented in transparent manner and found correct.</p> <p>Verifier crosschecked this value during interview of sampled household during onsite verification visit and concluded that on an average 5 persons are found per household, hence it is concluded that the monitored values is found correct and the method applied for obtaining information is in accordance with the applied methodology, registered PDD and the survey method, hence acceptable.</p> |
| <b>H<sub>s,y</sub></b><br>Household size | Number of family members permanent residing in the household in year y                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>Findings</b>                          | Four Clarification requests (CL) and one Corrective Actions (CAR) were reported during verification and all these findings were closed appropriately based on the responses provided by the PP.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>Conclusion</b>                        | <p>Based on the overall verification process it Bureau Veritas verifier concludes that</p> <ul style="list-style-type: none"> <li>• The monitoring has been conducted in accordance with the monitoring plan/<b>Ref-2/</b> outlined in the registered PDD.</li> <li>• The monitoring plan's required parameters have been measured or determined in accordance with all relevant requirements and standards, without any material misstatements.</li> <li>• The registered monitoring plan has been properly implemented and followed by the project participants.</li> <li>• All parameters specified in the registered monitoring plan have been monitored and updated as necessary.</li> <li>• The controlled and calibrated monitoring apparatus and methods are in accordance with the registered monitoring plan and the applied methodology.</li> <li>• The monitoring results are consistently documented in accordance with the approved frequency.</li> <li>• The registered monitoring plan comprises quality assurance and quality control procedures.</li> </ul>                                                                 |

### E.6.3. Implementation of sampling plan

|                              |                                                                                                                                                                                                                                                                                                                                                                                                                 |
|------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Means of verification</b> | <p>The verification team has checked whether the PP has applied a sampling approach to determine the monitored values. Further it has been checked whether the PP has correctly applied the implemented sampling plan including</p> <ul style="list-style-type: none"> <li>(i) description of the implemented sampling design</li> <li>(ii) collected data</li> <li>(iii) analysis of collected data</li> </ul> |
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|                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
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|                   | <p>(iv) demonstration on whether the required confidence/precision has been met.</p> <p>Based on the careful assessment of the monitoring plan/<b>Ref-2/</b> section D.4, it is observed that PP has explained the sampling plan prepared and implemented during monitoring of the key data/ parameters during this monitoring period. The information is found aligned to the PDD as well as applied Gold Standard methodology i.e., TPDDTEC V3.1. The sampling approach adopted by PP found considering various factors i.e., different provinces, age of Biodigester to ensure that correct representation of actual project implementation is reflected, hence it is concluded that the sampling approach found to be correct.</p>        |
| <b>Findings</b>   | Nil                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <b>Conclusion</b> | <p>Based on the overall assessment of the sampling plan employed by PP it is concluded that</p> <ul style="list-style-type: none"> <li>- Sampling plan is based on the applied methodology</li> <li>- Sampling plan is implemented correctly and the results of surveys found correctly representing the actual implementation of project activity.</li> <li>- Result of survey found to be conservatively estimating the Baseline emissions, Project emissions and emission reduction for the MP III.</li> <li>- PP engaged competent personnel for conducting survey to ensure compliance towards methodological requirement.</li> <li>- PP has used KoBoCollect app for collecting survey data against the specified questions.</li> </ul> |

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

|                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Means of verification</b> | <p>Bureau Veritas Verifier has verified the calibration requirement for the project monitoring equipment's to ensure that the monitoring results are consistent and accurate.</p> <p>Based on the information in the monitoring report PFT is conducted using Newton scale, and thus it is must that this scale must be calibrated.</p> <p>Verifier verified the latest calibration report maintained against newton scale and found valid, the same is referred in the monitoring report section D.2 specifically for the Data / Parameter <b>B<sub>p,y</sub></b> and the calibration report in the source data / information was verified as PFT_Scale_Calibration_2024_EN /<b>Ref-27/</b>.</p> |
| <b>Findings</b>              | Nil                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>Conclusion</b>            | <p>verification team confirms that the calibration is conducted following planned frequency i.e., Annually as prescribed by the methodology and the registered monitoring plan/<b>Ref-2/</b>, hence acceptable.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |

## 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

|                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
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| <b>Means of verification</b> | <p>Bureau Veritas Verifier follows following means of verification. A complete set of data for the specified monitoring period is available.</p> <p>The critical parameter used for the determination of the Emission Reductions is the total number of units of units working and producing biogas and utilized for the cooking purpose in project household, however there many other parameters which also impact emission calculations. All these data and parameters are derived from the Surveys done during the monitoring period. Important surveys which are critical to arrive at the emission reductions are as listed below.</p> <ol style="list-style-type: none"> <li>1. Usage Survey /Ref-28/</li> <li>2. CMS Survey /Ref-28/</li> <li>3. PFT Tests /Ref-28/</li> </ol> <p>The data obtained through above survey and monitoring methods is maintained in the form of relevant records. All the data are in compliance with that stated in the Monitoring Report version 1.1.</p> <p>PP has demonstrated approach towards estimation of Baseline emissions as well as contribution towards identified SDG Goals, the information provided in this section was corroborated with relevant background documents , Survey results as well as with the information gathered and observations made during onsite verification visit to the sampled project household. The conclusion on the correctness and accuracy of the Baseline emission estimation is described as below.</p> <p><b>1. Contribution towards SDG goals:</b><br/>It is noted that PP has identified 3 SDG goals where baseline contribution to be estimated and out of 3 SDG Goals only 1 goal has significant contribution during baseline scenario and that goal is Goal 13 (SDG 13.2.1 - Number of countries that have communicated the establishment or operationalisation of an integrated policy/strategy/plan which increases their ability to adapt to the adverse impacts of climate change, and foster climate resilience and low greenhouse gas emissions development in a manner that does not threaten food production). PP has estimated contribution towards SDG 13.2.1 as 55,588 tCO<sub>2</sub>e during entire monitoring period.</p> <p>Remaining 2 goals i.e., Goal 2 (SDG 2.4.1 and Goal 7 (SDG 7.2.1) does not contribute in the baseline scenario and hence it is estimated as "Zero" in both cases, this assumption is found satisfactory and hence acceptable. The Calculation formula identified for estimation of contribution found to be correct.</p> <p><b>2. Estimation of Baseline Emissions:</b><br/>The Baseline emission estimation presented in the monitoring report was verified against the applied methodology as well as registered PDD to determine whether the estimation of baseline emissions is precise, accurate, transparent and verifiable.</p> <p>PP has explained the approach in estimating Baseline emission in monitoring report section E.1 and it is found satisfactory. explained and justified how the methods or methodological steps in the applied methodologies and the other applied methodological regulatory documents, for calculating baseline emissions.</p> |
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|                             | <p>For estimating Baseline emissions PP has considered following two applicable scenarios</p> <ul style="list-style-type: none"> <li>- Displacement of non-renewable biomass and fossil fuels: This involves the use of renewable biomass sources such as crop residues and sawdust, as well as the use of LPG as a cleaner fuel alternative. By replacing non-renewable biomass and fossil fuels with cleaner, renewable sources, the project aims to reduce GHG emissions.</li> <li>- Avoidance of methane emissions from animal waste management systems (AWMS): Methane is a potent greenhouse gas that is produced during the decomposition of organic waste, including animal waste. By implementing improved animal waste management systems, such as composting and biogas production, the project aims to reduce methane emissions and contribute to GHG emission reductions.</li> </ul> <p>Formulae applied to calculate baseline emission for each scenario is explained below.</p> <p><b>Baseline emission from the thermal energy demand (BE<sub>th</sub>)</b></p> <p>These emissions are the comparison of fuel consumption in a project scenario to the baseline scenario according to the approved revised GS PDD. In the baseline scenario the fossil fuel is LPG whilst the non-renewable fuel is firewood and charcoal.</p> <p>The equation applied:</p> $BE_{b,y} = B_{p,y} \times ((f_{NRB,y} \times EF_{b,fuel,CO_2}) + EF_{b,fuel,CO_2}) \times NCV_{b,fuel}$ <p>Where:</p> <table> <tr> <td>BE<sub>b,y</sub></td><td>Emissions for baseline scenario b during the year y in tCO<sub>2e</sub></td></tr> <tr> <td>B<sub>b,y</sub></td><td>Quantity of fuel consumed in baseline scenario b during year y, in tons, as per by-default factors (cases with project performance field test only)</td></tr> <tr> <td>f<sub>NRB, y</sub></td><td>Fraction of biomass used during year y for the considered scenario that can be established as non-renewable biomass (drop this term from the equation when using a fossil fuel baseline scenario)</td></tr> <tr> <td>NCV<sub>b,fuel</sub></td><td>Net calorific value of the fuel that is substituted or reduced (IPCC default for wood fuel, 0.015 TJ/ton)</td></tr> <tr> <td>EF<sub>b,fuel,CO2</sub></td><td>CO<sub>2</sub> emission factor of the fuel that is substituted or reduced. 112 tCO<sub>2</sub>/TJ for Wood/Wood Waste, or the IPCC default value of other relevant fuel</td></tr> <tr> <td>EF<sub>b,fuel,nonCO2</sub></td><td>Non-CO<sub>2</sub> emission factor of the fuel that is substituted or reduced</td></tr> </table> <p><b>Baseline emissions of methane from the AWMS (BE<sub>awms,h</sub>)</b></p> <p>The emissions from the animal waste management system of the baseline are determined using the IPCC 2006 Tier 2 approach. This approach is applicable for households with distinctive animal waste management system, where the majority of the waste is collected and where the animals are kept near the houses. The following formulas are used to estimate the animal waste management emissions.</p> $BE_{awms,h} = GWP_{CH_4} \times \sum_T (EF_{awms}(T) \times N(T), h) \quad (9)$ <p>Where</p> <table> <tr> <td>BE<sub>awms,h</sub></td><td>The baseline emission from handling of animal waste in for premise h (tCO<sub>2e</sub> per year)</td></tr> <tr> <td>N(T),h</td><td>Number of animals of livestock category T in premise h</td></tr> <tr> <td>EF<sub>awms,(T)</sub></td><td>Emission factor for the defined livestock category T, (tonCH<sub>4</sub> per animal per year)</td></tr> <tr> <td>GWP<sub>CH4</sub></td><td>Global warming potential of methane (tCO<sub>2e</sub> per tCH<sub>4</sub>): 28</td></tr> </table> | BE <sub>b,y</sub> | Emissions for baseline scenario b during the year y in tCO <sub>2e</sub> | B <sub>b,y</sub> | Quantity of fuel consumed in baseline scenario b during year y, in tons, as per by-default factors (cases with project performance field test only) | f <sub>NRB, y</sub> | Fraction of biomass used during year y for the considered scenario that can be established as non-renewable biomass (drop this term from the equation when using a fossil fuel baseline scenario) | NCV <sub>b,fuel</sub> | Net calorific value of the fuel that is substituted or reduced (IPCC default for wood fuel, 0.015 TJ/ton) | EF <sub>b,fuel,CO2</sub> | CO <sub>2</sub> emission factor of the fuel that is substituted or reduced. 112 tCO <sub>2</sub> /TJ for Wood/Wood Waste, or the IPCC default value of other relevant fuel | EF <sub>b,fuel,nonCO2</sub> | Non-CO <sub>2</sub> emission factor of the fuel that is substituted or reduced | BE <sub>awms,h</sub> | The baseline emission from handling of animal waste in for premise h (tCO <sub>2e</sub> per year) | N(T),h | Number of animals of livestock category T in premise h | EF <sub>awms,(T)</sub> | Emission factor for the defined livestock category T, (tonCH <sub>4</sub> per animal per year) | GWP <sub>CH4</sub> | Global warming potential of methane (tCO <sub>2e</sub> per tCH <sub>4</sub> ): 28 |
| BE <sub>b,y</sub>           | Emissions for baseline scenario b during the year y in tCO <sub>2e</sub>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                   |                                                                          |                  |                                                                                                                                                     |                     |                                                                                                                                                                                                   |                       |                                                                                                           |                          |                                                                                                                                                                            |                             |                                                                                |                      |                                                                                                   |        |                                                        |                        |                                                                                                |                    |                                                                                   |
| B <sub>b,y</sub>            | Quantity of fuel consumed in baseline scenario b during year y, in tons, as per by-default factors (cases with project performance field test only)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                   |                                                                          |                  |                                                                                                                                                     |                     |                                                                                                                                                                                                   |                       |                                                                                                           |                          |                                                                                                                                                                            |                             |                                                                                |                      |                                                                                                   |        |                                                        |                        |                                                                                                |                    |                                                                                   |
| f <sub>NRB, y</sub>         | Fraction of biomass used during year y for the considered scenario that can be established as non-renewable biomass (drop this term from the equation when using a fossil fuel baseline scenario)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                   |                                                                          |                  |                                                                                                                                                     |                     |                                                                                                                                                                                                   |                       |                                                                                                           |                          |                                                                                                                                                                            |                             |                                                                                |                      |                                                                                                   |        |                                                        |                        |                                                                                                |                    |                                                                                   |
| NCV <sub>b,fuel</sub>       | Net calorific value of the fuel that is substituted or reduced (IPCC default for wood fuel, 0.015 TJ/ton)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                   |                                                                          |                  |                                                                                                                                                     |                     |                                                                                                                                                                                                   |                       |                                                                                                           |                          |                                                                                                                                                                            |                             |                                                                                |                      |                                                                                                   |        |                                                        |                        |                                                                                                |                    |                                                                                   |
| EF <sub>b,fuel,CO2</sub>    | CO <sub>2</sub> emission factor of the fuel that is substituted or reduced. 112 tCO <sub>2</sub> /TJ for Wood/Wood Waste, or the IPCC default value of other relevant fuel                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                   |                                                                          |                  |                                                                                                                                                     |                     |                                                                                                                                                                                                   |                       |                                                                                                           |                          |                                                                                                                                                                            |                             |                                                                                |                      |                                                                                                   |        |                                                        |                        |                                                                                                |                    |                                                                                   |
| EF <sub>b,fuel,nonCO2</sub> | Non-CO <sub>2</sub> emission factor of the fuel that is substituted or reduced                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                   |                                                                          |                  |                                                                                                                                                     |                     |                                                                                                                                                                                                   |                       |                                                                                                           |                          |                                                                                                                                                                            |                             |                                                                                |                      |                                                                                                   |        |                                                        |                        |                                                                                                |                    |                                                                                   |
| BE <sub>awms,h</sub>        | The baseline emission from handling of animal waste in for premise h (tCO <sub>2e</sub> per year)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                   |                                                                          |                  |                                                                                                                                                     |                     |                                                                                                                                                                                                   |                       |                                                                                                           |                          |                                                                                                                                                                            |                             |                                                                                |                      |                                                                                                   |        |                                                        |                        |                                                                                                |                    |                                                                                   |
| N(T),h                      | Number of animals of livestock category T in premise h                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                   |                                                                          |                  |                                                                                                                                                     |                     |                                                                                                                                                                                                   |                       |                                                                                                           |                          |                                                                                                                                                                            |                             |                                                                                |                      |                                                                                                   |        |                                                        |                        |                                                                                                |                    |                                                                                   |
| EF <sub>awms,(T)</sub>      | Emission factor for the defined livestock category T, (tonCH <sub>4</sub> per animal per year)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                   |                                                                          |                  |                                                                                                                                                     |                     |                                                                                                                                                                                                   |                       |                                                                                                           |                          |                                                                                                                                                                            |                             |                                                                                |                      |                                                                                                   |        |                                                        |                        |                                                                                                |                    |                                                                                   |
| GWP <sub>CH4</sub>          | Global warming potential of methane (tCO <sub>2e</sub> per tCH <sub>4</sub> ): 28                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                   |                                                                          |                  |                                                                                                                                                     |                     |                                                                                                                                                                                                   |                       |                                                                                                           |                          |                                                                                                                                                                            |                             |                                                                                |                      |                                                                                                   |        |                                                        |                        |                                                                                                |                    |                                                                                   |

The emission factor (EF<sub>awms(T)</sub>) for tier 2 approach is calculated as follows (equation 16 of the applied methodology),

$$EF_{awms(T)} = (VS_T \times 365) \times \left[ Bo_T \times \frac{0.67 \text{ kg}}{\text{m}^3} \times \sum_k \frac{1}{100} MCF_{T,k} \times MS_{(T,k)} \right] \quad (10)$$

Where:

- EF<sub>awm</sub> = CH<sub>4</sub> emission factor for livestock category T, (tCH<sub>4</sub> per animal per year)
- VS<sub>(T)</sub> = Daily volatile solid excreted for livestock category T, kg VS.animal<sup>-1</sup>
- 365 = Basis for calculating annual VS production, days yr<sup>-1</sup>
- Bo<sub>T</sub> = Maximum methane producing capacity for manure produced by animal T m<sup>3</sup> CH<sub>4</sub> kg<sup>-1</sup> of VS
- 0.67 = Conversion factor of m<sup>3</sup> methane to kg methane
- MCF<sub>T,k</sub> = Methane conversion factors for the animal waste handling system from livestock category T of MS system k
- MS<sub>T,k</sub> = Fraction of livestock category T's manure in the animal waste management system k

Country specific default data is not available for VS, Bo, MCF and MS. Thus, IPCC 2006 and IPCC 2019 default values will be used. VS and Bo are from default value of IPCC 2006, MCF is from IPCC 2019, while MS is obtained from CMS survey. IPCC 2006 default values is used for VS except for pigs which is determined ex-post with the following equation<sup>2</sup>:

$$VS_{LT,y} = \left( \frac{W_{site}}{W_{default}} \right) \times VS_{default} \times nd \quad (11)$$

Where:

- W<sub>site</sub> = Average animal weight of a defined livestock population at the project site (kg)
- W<sub>default</sub> = Default average animal weight of a defined population, this data is sourced from IPCC 2006 guidelines (kg)
- VS<sub>default</sub> = Default value for the volatile solid excretion rate per day on a dry-matter basis for a defined livestock population (kg dm/animal/day)
- nd<sub>y</sub> = Number of days in year y where the animal manure management system is operational
- VS<sub>LT,y</sub> = Adjusted VS value for year y

During this monitoring period PP estimated baseline emissions as 55,588 tCO<sub>2</sub>e. This estimation was presented through emission reduction spreadsheet /Ref-6/, Emission reduction spreadsheet was verified in detailed for the application of formulae as well as the monitoring results in a systematic manner, there is no material error detected during this verification.

The Survey results are found to be key inputs for estimating baseline emissions, survey records were also verified by the verifier in detailed and concluded that there is no error observed which impacts conservatism of the Baseline emission calculation.

<sup>2</sup> As per equation 3 of AMS-III.D v21

|                   | Sustainable Development Goals relevant to the Baseline estimation                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | SDG Impact                | Conclusion on contribution to the SDG goals in baseline scenario.                                                                                                                                                                                                                                                                                                                                                   |
|-------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                   | Goal 2 (SDG 2.4.1)<br>Proportion of agricultural area under productive and sustainable agriculture                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 0                         | During baseline scenario contribution to the identified SDG goal not evident as there are no known sustainable agricultural practices are evident and hence it is estimated as Zero.                                                                                                                                                                                                                                |
|                   | Goal 7 (SDG 7.2.1)-<br>Proportion of population with primary reliance on clean fuels and technology                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 0                         | During baseline scenario contribution to the identified SDG goal not evident as there is no known clean fuel and technology was evident and hence it is estimated as zero.                                                                                                                                                                                                                                          |
|                   | Goal 13 (SDG 13.2.1)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 55,588 tCO <sub>2</sub> e | This is found correct as during baseline scenario there was no biogas digesters found implemented and thus entire manure was left to decay in the open atmosphere leading to methane emissions to the atmosphere also it was noted that during baseline scenario households are not using any clean fuel for cooking practices and thus it leads to the emissions to the atmosphere due to fossil fuel consumption. |
| <b>Findings</b>   | Nil                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                           |                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>Conclusion</b> | <p>Corresponding to the paragraph 9.4.25, 9.4.26 &amp; 9.4.27 of CORE DOCUMENT- Validation and Verification Standard V1.0 /Ref-9/ , Bureau Veritas can confirm that:</p> <ul style="list-style-type: none"> <li>- Data used for the determination of the emission reductions are available and monitored in accordance with the monitoring plan/<b>Ref-2/</b> contained in the registered PDD /<b>Ref-1/</b>.</li> <li>- Information and data provided in the monitoring report have been cross-checked with other sources such as Usage survey, CMS survey, PFT test, calibration records, grievance records.</li> <li>- Appropriate methods and formulae for calculating baseline emissions have been followed.</li> </ul> |                           |                                                                                                                                                                                                                                                                                                                                                                                                                     |

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

|                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Means of verification</b> | <p>Based on the review of monitoring plan section E.2, it is observed that PP has calculated project emissions considering the fossil fuel consumption during monitoring period.</p> <p>As per the registered PDD/<b>Ref-1/</b>, PP has calculated project emissions using following methodological formulae</p> $PE_{p,y} = B_{p,y} * ((f_{NRB,y} * EF_{p,fuel, CO_2}) + EF_{p,fuel, nonCO_2}) * NCV_{p,fuel}$ <p style="text-align: center;"><b>(14)</b></p> <p>Where:</p> <p><math>PE_{p,y}</math> Emissions for project scenario p during year y in tCO<sub>2</sub>e</p> |
|------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

|                                                                                                                                                                                                                                                                                                                                                                                                  | $B_{p,y}$                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Quantity of fuel consumed in project scenario p during year y, in tons, and as derived from the statistical analysis conducted on the data collected during the project performance field tests (cases when no baseline performance field test are performed, e.g. by-default baseline factors)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |            |                                                                   |                                                                                                    |                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                          |                          |                                                                                                                     |                     |      |      |          |        |       |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|-------------------------------------------------------------------|----------------------------------------------------------------------------------------------------|----------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------|--------------------------|---------------------------------------------------------------------------------------------------------------------|---------------------|------|------|----------|--------|-------|
|                                                                                                                                                                                                                                                                                                                                                                                                  | $f_{NRB,y}$                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Fraction of biomass used during year y that can be established as non-renewable biomass (drop this term from the equation when using a fossil fuel baseline scenario)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |            |                                                                   |                                                                                                    |                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                          |                          |                                                                                                                     |                     |      |      |          |        |       |
|                                                                                                                                                                                                                                                                                                                                                                                                  | $NCV_{p,fuel}$                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Net calorific value of the project fuel (IPCC default for wood fuel, 0.015 TJ/ton). This is equal to the baseline fuel NCV in projects which use the same fuel.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |            |                                                                   |                                                                                                    |                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                          |                          |                                                                                                                     |                     |      |      |          |        |       |
|                                                                                                                                                                                                                                                                                                                                                                                                  | $EF_{p,fuel,CO_2}$                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | CO <sub>2</sub> emission factor of the project fuel. This is equal to the baseline fuel EF in projects which use the same fuel, 112 tCO <sub>2</sub> /TJ for Wood/Wood Waste, or the IPCC default value of other relevant fuel                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |            |                                                                   |                                                                                                    |                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                          |                          |                                                                                                                     |                     |      |      |          |        |       |
|                                                                                                                                                                                                                                                                                                                                                                                                  | $EF_{p,fuel,nonCO_2}$                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Non-CO <sub>2</sub> emission factor of the project fuel. This is equal to the baseline fuel EF in projects which use the same fuel.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |            |                                                                   |                                                                                                    |                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                          |                          |                                                                                                                     |                     |      |      |          |        |       |
|                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | In order to estimate project emissions PP has performed PFT test during this monitoring period where Fuel usage data for the three baseline scenarios and project scenario was collected, as explained above. It is demonstrated that not all fuels will be replaced by biogas. The table below shows the outcome of the PFT that was organized for this MP and the project emissions associated:                                                                                                                                                                                                                                                                                                                                                                                                 |            |                                                                   |                                                                                                    |                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                          |                          |                                                                                                                     |                     |      |      |          |        |       |
| <b>Estimated project emissions from thermal energy use</b>                                                                                                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |            |                                                                   |                                                                                                    |                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                          |                          |                                                                                                                     |                     |      |      |          |        |       |
| <table border="1"> <thead> <tr> <th rowspan="2">Fuel i</th><th>Average per household</th><th>Calculated PE</th></tr> <tr> <th>(kg/year)</th><th>(tCO<sub>2</sub>e/yr)</th></tr> </thead> <tbody> <tr> <td>LPG</td><td>15.388</td><td>0.047</td></tr> <tr> <td>Charcoal in wood eq</td><td>0.00</td><td>0.00</td></tr> <tr> <td>Firewood</td><td>99.246</td><td>0.222</td></tr> </tbody> </table> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Fuel i     | Average per household                                             | Calculated PE                                                                                      | (kg/year)      | (tCO <sub>2</sub> e/yr)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | LPG                                                                      | 15.388                   | 0.047                                                                                                               | Charcoal in wood eq | 0.00 | 0.00 | Firewood | 99.246 | 0.222 |
| Fuel i                                                                                                                                                                                                                                                                                                                                                                                           | Average per household                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Calculated PE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |            |                                                                   |                                                                                                    |                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                          |                          |                                                                                                                     |                     |      |      |          |        |       |
|                                                                                                                                                                                                                                                                                                                                                                                                  | (kg/year)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | (tCO <sub>2</sub> e/yr)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |            |                                                                   |                                                                                                    |                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                          |                          |                                                                                                                     |                     |      |      |          |        |       |
| LPG                                                                                                                                                                                                                                                                                                                                                                                              | 15.388                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 0.047                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |            |                                                                   |                                                                                                    |                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                          |                          |                                                                                                                     |                     |      |      |          |        |       |
| Charcoal in wood eq                                                                                                                                                                                                                                                                                                                                                                              | 0.00                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 0.00                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |            |                                                                   |                                                                                                    |                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                          |                          |                                                                                                                     |                     |      |      |          |        |       |
| Firewood                                                                                                                                                                                                                                                                                                                                                                                         | 99.246                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 0.222                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |            |                                                                   |                                                                                                    |                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                          |                          |                                                                                                                     |                     |      |      |          |        |       |
| The project emissions are then, after adjustment with the usage rate and by multiplying with the number of units installed is estimated as <b>3,795 tCO<sub>2</sub></b>                                                                                                                                                                                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |            |                                                                   |                                                                                                    |                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                          |                          |                                                                                                                     |                     |      |      |          |        |       |
|                                                                                                                                                                                                                                                                                                                                                                                                  | <table border="1"> <thead> <tr> <th>Sustainable Development Goals relevant to the Project emissions</th><th>SDG Impact</th><th>Conclusion on contribution to the SDG goals in baseline scenario.</th></tr> </thead> <tbody> <tr> <td>Goal 2 (SDG 2.4.1)<br/>Proportion of agricultural area under productive and sustainable agriculture</td><td>7,973 Hectares</td><td>During Project scenario contribution to the identified SDG goal found to be calculated by PP using correct formulae<br/><math display="block">A_{bs,y} = N_{b,y} \times U_y \times \%BS_y \times A_{bs,h,y}</math>based on the calculation it is observed that on an average 0.583 Hectares of land is under productive and sustainable agriculture where slurry from biogas plan is applied as fertilizer and this enhances the quality of soil and also results in the good yield. Hence it is concluded that Project activity effectively contributes to this SDG goal and the contribution can be objectively verified during onsite verification interviews with households as well physical observations.<br/>This calculation is transparently presented in the Emission reduction spreadsheet /Ref-6/ Tab SDG2&amp;7 Cal.</td></tr> <tr> <td>Goal 7 (SDG 7.2.1)-<br/>Proportion of population with primary reliance on</td><td>66,089 number of persons</td><td>During Project scenario contribution to the identified SDG goal found to be calculated by PP using correct formulae</td></tr> </tbody> </table> | Sustainable Development Goals relevant to the Project emissions                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | SDG Impact | Conclusion on contribution to the SDG goals in baseline scenario. | Goal 2 (SDG 2.4.1)<br>Proportion of agricultural area under productive and sustainable agriculture | 7,973 Hectares | During Project scenario contribution to the identified SDG goal found to be calculated by PP using correct formulae<br>$A_{bs,y} = N_{b,y} \times U_y \times \%BS_y \times A_{bs,h,y}$ based on the calculation it is observed that on an average 0.583 Hectares of land is under productive and sustainable agriculture where slurry from biogas plan is applied as fertilizer and this enhances the quality of soil and also results in the good yield. Hence it is concluded that Project activity effectively contributes to this SDG goal and the contribution can be objectively verified during onsite verification interviews with households as well physical observations.<br>This calculation is transparently presented in the Emission reduction spreadsheet /Ref-6/ Tab SDG2&7 Cal. | Goal 7 (SDG 7.2.1)-<br>Proportion of population with primary reliance on | 66,089 number of persons | During Project scenario contribution to the identified SDG goal found to be calculated by PP using correct formulae |                     |      |      |          |        |       |
| Sustainable Development Goals relevant to the Project emissions                                                                                                                                                                                                                                                                                                                                  | SDG Impact                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Conclusion on contribution to the SDG goals in baseline scenario.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |            |                                                                   |                                                                                                    |                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                          |                          |                                                                                                                     |                     |      |      |          |        |       |
| Goal 2 (SDG 2.4.1)<br>Proportion of agricultural area under productive and sustainable agriculture                                                                                                                                                                                                                                                                                               | 7,973 Hectares                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | During Project scenario contribution to the identified SDG goal found to be calculated by PP using correct formulae<br>$A_{bs,y} = N_{b,y} \times U_y \times \%BS_y \times A_{bs,h,y}$ based on the calculation it is observed that on an average 0.583 Hectares of land is under productive and sustainable agriculture where slurry from biogas plan is applied as fertilizer and this enhances the quality of soil and also results in the good yield. Hence it is concluded that Project activity effectively contributes to this SDG goal and the contribution can be objectively verified during onsite verification interviews with households as well physical observations.<br>This calculation is transparently presented in the Emission reduction spreadsheet /Ref-6/ Tab SDG2&7 Cal. |            |                                                                   |                                                                                                    |                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                          |                          |                                                                                                                     |                     |      |      |          |        |       |
| Goal 7 (SDG 7.2.1)-<br>Proportion of population with primary reliance on                                                                                                                                                                                                                                                                                                                         | 66,089 number of persons                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | During Project scenario contribution to the identified SDG goal found to be calculated by PP using correct formulae                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |            |                                                                   |                                                                                                    |                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                          |                          |                                                                                                                     |                     |      |      |          |        |       |

|                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|-------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                   | clean fuels and technology                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |             | $P_{clean,y} = N_{b,y} \times U_y \times B_{daily} \times H_{b,y}$ <p>based on the calculation it is observed that on an average 4.76 person per household were observed during CMS Survey and thus the overall personnel availing benefits of clean fuel and technology found to be correctly applied. Hence it is concluded that Project activity effectively contributes to this SDG goal and the contribution can be objectively verified during onsite verification interviews with households as well physical observations.</p> <p>This calculation is transparently presented in the Emission reduction spreadsheet /Ref-6/ Tab SDG2&amp;7 Cal.</p>                                       |
|                   | Goal 13 (SDG 13.2.1)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | 3,795 tCO2e | <p>This is found correct as during project scenario despite of the availability of biogas as clean fuel, fossil fuel consumption for cooking purpose is not completely avoided and hence this parameter is important.</p> <p>Calculation of this impact is found to be based on the methodological formulae i.e., Eq. No 14,</p> <p>Also, it is noted that there are possible leakages from biogas plants and PP has estimated these emissions applying eq. 17 from applied methodology and hence it is found correct. PP has applied value of 0.004 tCO2/hh/year, based on this applied value overall leakage related emissions for the entire monitoring period are calculated as 54 tCO2e.</p> |
| <b>Findings</b>   | NIL                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>Conclusion</b> | <p>Corresponding to the paragraph 9.4.25, 9.4.26 &amp; 9.4.27 of CORE DOCUMENT- Validation and Verification Standard V1.0 /Ref-9/, Bureau Veritas can confirm that:</p> <ul style="list-style-type: none"> <li>- Data used for the determination of the emission reductions are available and monitored in accordance with the monitoring plan contained in the registered PDD/Ref-1/.</li> <li>- Information and data provided in the monitoring report have been cross-checked with other sources such as Usage survey, CMS survey, PFT test, calibration records, grievance records.</li> <li>- Appropriate methods and formulae for calculating baseline emissions have been followed.</li> </ul> |             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |

### E.8.3. Calculation of leakage GHG emissions

|                              |                                                                                                                                                      |
|------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Means of verification</b> | There is no leakage emissions are applicable for this project and there is no baseline equipment's are for displaced and working on other locations. |
| <b>Findings</b>              | Nil                                                                                                                                                  |
| <b>Conclusion</b>            | Not Applicable.                                                                                                                                      |

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

|                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Means of verification</b> | <p>By checking ER spreadsheet/Ref-6/ and referring to the registered PDD /Ref-1/ as well as the applied methodology it is concluded that PP has estimated emission reductions appropriately.</p> <p>PP has used equation (6) of applied methodology and this equation found to be applied correctly.</p> $ER_y = \sum_{b,p1} N_{p1,y} * U_{p,y} * (f_{NRB} * ER_{b,p,y,CO2} + ER_{b,p,y,non-CO2}) - \sum LE_{p1,y}$ <p>(6)</p> <p>Where:</p> <p><math>\sum_{b,p}</math> Sum over all relevant (Baseline b/project p) couples</p> |
|------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

|                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Np,y                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Cumulative number of biodigesters months <sup>3</sup> included in the project database for project scenario p in against baseline scenario b in year y. Np,y applied is the value of last month to allow for a 1 month period for digester starting up. This is conservative because in most cases within 2 weeks biogas is being produced |                  |                   |                  |             |    |                     |        |       |        |   |                                              |   |       |       |   |                                         |   |        |        |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|-------------------|------------------|-------------|----|---------------------|--------|-------|--------|---|----------------------------------------------|---|-------|-------|---|-----------------------------------------|---|--------|--------|
|                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Up,y                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Cumulative usage rate for technologies in project scenario p1 in year y, based on cumulative adoption rate and drop off rate (fraction)                                                                                                                                                                                                    |                  |                   |                  |             |    |                     |        |       |        |   |                                              |   |       |       |   |                                         |   |        |        |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                     | ERb,p,y,C O2                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Specific CO2 emission savings for an individual technology of project p1 against an individual technology of baseline b1, b2, b3 in year y, in tCO2/year, and as derived from the statistical analysis of the data collected from the field tests                                                                                          |                  |                   |                  |             |    |                     |        |       |        |   |                                              |   |       |       |   |                                         |   |        |        |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                     | ERb,p,y,n on-CO2                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Specific non-CO2 emission savings for an individual technology of project p1 against an individual technology of baseline b1, b2, b3 in year y, converted in tCO2/year, and as derived from the statistical analysis of the data collected from the field tests                                                                            |                  |                   |                  |             |    |                     |        |       |        |   |                                              |   |       |       |   |                                         |   |        |        |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                     | fNRB                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Fraction of biomass used that can be established as non-renewable biomass                                                                                                                                                                                                                                                                  |                  |                   |                  |             |    |                     |        |       |        |   |                                              |   |       |       |   |                                         |   |        |        |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                     | LEp1,y                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Leakage for project scenario p1 in year y (tCO2e/yr)                                                                                                                                                                                                                                                                                       |                  |                   |                  |             |    |                     |        |       |        |   |                                              |   |       |       |   |                                         |   |        |        |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                     | While calculating Emission reductions for this monitoring period PP has utilized results of surveys i.e., data and information obtained while performing Usage survey, CMS Survey as well as PFT test.                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                            |                  |                   |                  |             |    |                     |        |       |        |   |                                              |   |       |       |   |                                         |   |        |        |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                     | In ER spreadsheet /Ref-6/ tab SDG2_7_13_DB_Month, PP has provided transparent calculation of Emission reduction on monthly basis in systematic manner. Based on the data and information obtained during various survey PP calculated BEAWMS, BETHermal, PEThermal, PELeakage per household and then multiplied by the total number of biodigester installed and the usage rate monitored during this monitoring period these calculated values are then subjected to the simple ER Calculation formula<br>ER = (BEAWMS + BETHermal) – (PELeakage + PEThermal) |                                                                                                                                                                                                                                                                                                                                            |                  |                   |                  |             |    |                     |        |       |        |   |                                              |   |       |       |   |                                         |   |        |        |
| Total Emission Reduction achieved during this monitoring period are 51,739 tCO2e. This value is found be correct and hence acceptable. SDG impact assessed during this monitoring period is as below.                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                            |                  |                   |                  |             |    |                     |        |       |        |   |                                              |   |       |       |   |                                         |   |        |        |
| <table><tr><th>SDG</th><th>SDG Impact</th><th>Baseline estimate</th><th>Project estimate</th><th>Net benefit</th></tr><tr><td>13</td><td>Emission reductions</td><td>55,588</td><td>3,795</td><td>51,739</td></tr><tr><td>2</td><td>Hectares area on which bio-slurry is applied</td><td>0</td><td>7,973</td><td>7,973</td></tr><tr><td>7</td><td>Number of people benefiting from biogas</td><td>0</td><td>66,089</td><td>66,089</td></tr></table> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | SDG                                                                                                                                                                                                                                                                                                                                        | SDG Impact       | Baseline estimate | Project estimate | Net benefit | 13 | Emission reductions | 55,588 | 3,795 | 51,739 | 2 | Hectares area on which bio-slurry is applied | 0 | 7,973 | 7,973 | 7 | Number of people benefiting from biogas | 0 | 66,089 | 66,089 |
| SDG                                                                                                                                                                                                                                                                                                                                                                                                                                                 | SDG Impact                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Baseline estimate                                                                                                                                                                                                                                                                                                                          | Project estimate | Net benefit       |                  |             |    |                     |        |       |        |   |                                              |   |       |       |   |                                         |   |        |        |
| 13                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Emission reductions                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 55,588                                                                                                                                                                                                                                                                                                                                     | 3,795            | 51,739            |                  |             |    |                     |        |       |        |   |                                              |   |       |       |   |                                         |   |        |        |
| 2                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Hectares area on which bio-slurry is applied                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 0                                                                                                                                                                                                                                                                                                                                          | 7,973            | 7,973             |                  |             |    |                     |        |       |        |   |                                              |   |       |       |   |                                         |   |        |        |
| 7                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Number of people benefiting from biogas                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 0                                                                                                                                                                                                                                                                                                                                          | 66,089           | 66,089            |                  |             |    |                     |        |       |        |   |                                              |   |       |       |   |                                         |   |        |        |
| Verifier has checked the emission reduction calculations provided in the monitoring report and found satisfactory as there are no material errors detected in the dataset used for calculating Emission reductions as well as SDG Contribution.                                                                                                                                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                            |                  |                   |                  |             |    |                     |        |       |        |   |                                              |   |       |       |   |                                         |   |        |        |
| Findings                                                                                                                                                                                                                                                                                                                                                                                                                                            | NIL                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                                                                            |                  |                   |                  |             |    |                     |        |       |        |   |                                              |   |       |       |   |                                         |   |        |        |
| Conclusion                                                                                                                                                                                                                                                                                                                                                                                                                                          | Corresponding to the paragraph 9.4.25, 9.4.26 & 9.4.27 of CORE DOCUMENT- Validation and Verification Standard V1.0 /Ref-9/, Bureau Veritas can confirm that:<br><br>- Data used for the determination of the emission reductions are available and monitored in accordance with the monitoring plan contained in the registered PDD/Ref-1/.<br><br>- Information and data provided in the monitoring report have been cross –                                                                                                                                  |                                                                                                                                                                                                                                                                                                                                            |                  |                   |                  |             |    |                     |        |       |        |   |                                              |   |       |       |   |                                         |   |        |        |

|  |                                                                                                                                                                                                                                                               |
|--|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | <p>checked with other sources such as invoices, calibration records, written check-sheets and operation logs.</p> <ul style="list-style-type: none"> <li>- Appropriate methods and formulae for calculating baseline emissions have been followed.</li> </ul> |
|--|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

#### 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 Verification activity was performed along with the validation of the project which is acceptable by the Gold Standard. During validation VVB validated ex ante calculation of Baseline emissions and Emission reduction based on the feasibility report and methodological calculations and confirmed that on an average Project can generate maximum of 81,585 tCO<sub>2</sub>e emission reductions during year i.e. 365 days of operations.</p> <p>Based on this emission reduction achieved and presented during this monitoring period in the monitoring report PP has accounted 51,7339 tCO<sub>2</sub>e emission reduction during 365 days in year 2023 (01/01/2023 – 31/12/2023).</p> <p>While performing vintage comparison between estimated ER V/s Actual ER Achieved during this monitoring period following formulae was applied.</p> <p>% Difference = {(Estimated ER in PDD x Total Days during This monitoring period / Total Days in a year) – Actual emission reduction calculated during this monitoring period} / Estimated ER in PDD</p> <p>= {81,585 tCO<sub>2</sub>e – 51,739 tCO<sub>2</sub>e } / 81,585 tCO<sub>2</sub>e<br/>= 0.366<br/>= 36.6%</p> <p>That means Project achieved 36.6% lower emission reductions during vintage period 01/01/2023 – 31/12/2023 than the estimated emission reductions presented in the registered PDD/<b>Ref-1/</b>.</p> <p>PP has described the comparison of ER Achieved during this monitoring period in the monitoring report Section E.5</p> |                                                                                    |                                                                                    |                                                      |    |                           |                           |   |                 |                |   |                |               |
|-----------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------|------------------------------------------------------------------------------------|------------------------------------------------------|----|---------------------------|---------------------------|---|-----------------|----------------|---|----------------|---------------|
|                       | <table><tr><th>SDG</th><th>Values estimated in ex ante calculation of approved PDD for this monitoring period</th><th>Actual values achieved during this monitoring period</th></tr><tr><td>13</td><td>81,585 tCO<sub>2</sub>e</td><td>51,739 tCO<sub>2</sub>e</td></tr><tr><td>2</td><td>50,105 hectares</td><td>7,973 hectares</td></tr><tr><td>7</td><td>122,204 People</td><td>66,089 people</td></tr></table>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | SDG                                                                                | Values estimated in ex ante calculation of approved PDD for this monitoring period | Actual values achieved during this monitoring period | 13 | 81,585 tCO <sub>2</sub> e | 51,739 tCO <sub>2</sub> e | 2 | 50,105 hectares | 7,973 hectares | 7 | 122,204 People | 66,089 people |
|                       | SDG                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Values estimated in ex ante calculation of approved PDD for this monitoring period | Actual values achieved during this monitoring period                               |                                                      |    |                           |                           |   |                 |                |   |                |               |
|                       | 13                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | 81,585 tCO <sub>2</sub> e                                                          | 51,739 tCO <sub>2</sub> e                                                          |                                                      |    |                           |                           |   |                 |                |   |                |               |
|                       | 2                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 50,105 hectares                                                                    | 7,973 hectares                                                                     |                                                      |    |                           |                           |   |                 |                |   |                |               |
| 7                     | 122,204 People                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 66,089 people                                                                      |                                                                                    |                                                      |    |                           |                           |   |                 |                |   |                |               |
| Findings              | Nil                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                    |                                                                                    |                                                      |    |                           |                           |   |                 |                |   |                |               |
| Conclusion            | <p>Corresponding to the paragraph 9.4.25, 9.4.26 &amp; 9.4.27 of CORE DOCUMENT- Validation and Verification Standard V1.0 /Ref-9/, Bureau Veritas can confirm that:</p> <p>Assumptions, emission factors and default values that were applied in the calculations have been justified.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                    |                                                                                    |                                                      |    |                           |                           |   |                 |                |   |                |               |

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

|                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Means of verification</b> | <p>Based on the verification of survey results, Emission reduction calculation and observations noted during onsite verification visit it is concluded that the reasons for the difference from estimated values of emission reduction and SDG Impacts are correctly representing the project scenario.</p> <p>In Monitoring report section E.6 PP has provided remarks that emission reductions and SDG impacts achieved during this monitoring period are lesser than that of the</p> |
|------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

|                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|-------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                   | estimated values at the time of registration (As per registered PDD/ <b>Ref-1</b> /).<br><br>This decrease in the emission reductions is attributable mainly to the social and lifestyle changes, such as reducing animal-raising households and increasing access to cooking technology. This led to reduced sale, usage rate, and farm application of bio-slurry, directly proportional to SDG impacts.                                                                                                           |
| <b>Findings</b>   | Nil                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>Conclusion</b> | Corresponding to the paragraph 9.4.25, 9.4.26 & 9.4.27 of CORE DOCUMENT- Validation and Verification Standard V1. <b>/Ref-9/</b> , Bureau Veritas can confirm that: the variation in the actual achievement of emission reduction and other SDG Goals is to the change in life style, change in the trend of animal raising and usage rate during current monitoring period Verification team confirms that there are no changes to the project activity equipment since the commissioning of the project activity. |

#### 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

|                              |                |
|------------------------------|----------------|
| <b>Means of verification</b> | Not Applicable |
| <b>Findings</b>              | Not Applicable |
| <b>Conclusion</b>            | Not Applicable |

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

| Means of verification                                                                              | Based on the verification of the registered PDD/Ref-1/, Monitoring report, survey results verifier concluded that the project has demonstrated contribution of identified SDG Goals. The verification details are provided below.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |            |                                                                   |                                                                                                    |                 |                |
|----------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|-------------------------------------------------------------------|----------------------------------------------------------------------------------------------------|-----------------|----------------|
|                                                                                                    | PP has identified 3 SDG goals to demonstrate contribution of the project activity towards sustainable development and established suitable monitoring arrangements to gather data and information which confirms that the target of SDG Goal is achieved.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |            |                                                                   |                                                                                                    |                 |                |
|                                                                                                    | <table><thead><tr><th>Sustainable Development Goals relevant to the project activity implementation</th><th>Estimation as per registered PDD</th><th>SDG Impact</th><th>Conclusion on contribution to the SDG goals in baseline scenario.</th></tr></thead><tbody><tr><td>Goal 2 (SDG 2.4.1)<br/>Proportion of agricultural area under productive and sustainable agriculture</td><td>50,105 Hectares</td><td>7,973 Hectares</td><td><p>During Project scenario contribution to the identified SDG goal found to be calculated by PP using correct formulae</p><math display="block">A_{bs,y} = N_{b,y} \times U_y \times \%BS_y \times A_{bs,h,y}</math><p>based on the calculation it is observed that on an average 0.583 Hectares of land is under productive and sustainable agriculture where slurry from biogas plant is applied as fertilizer and this enhances the quality of soil and also results in the good yield. Hence it is concluded that Project activity effectively contributes to this SDG goal and the contribution can be objectively verified during onsite verification interviews with households as well physical observations.</p><p>This calculation is transparently presented in the Emission reduction spreadsheet /Ref-6/ Tab SDG2&amp;7_Cal.</p><p>The contribution towards this SDG Goal found to be significantly low as many households are not using slurry as fertilizers in the field and hence actual SDG impact estimated is not as expected at the time of registration.</p></td></tr></tbody></table> | Sustainable Development Goals relevant to the project activity implementation | Estimation as per registered PDD                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | SDG Impact | Conclusion on contribution to the SDG goals in baseline scenario. | Goal 2 (SDG 2.4.1)<br>Proportion of agricultural area under productive and sustainable agriculture | 50,105 Hectares | 7,973 Hectares |
| Sustainable Development Goals relevant to the project activity implementation                      | Estimation as per registered PDD                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | SDG Impact                                                                    | Conclusion on contribution to the SDG goals in baseline scenario.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |            |                                                                   |                                                                                                    |                 |                |
| Goal 2 (SDG 2.4.1)<br>Proportion of agricultural area under productive and sustainable agriculture | 50,105 Hectares                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 7,973 Hectares                                                                | <p>During Project scenario contribution to the identified SDG goal found to be calculated by PP using correct formulae</p> $A_{bs,y} = N_{b,y} \times U_y \times \%BS_y \times A_{bs,h,y}$ <p>based on the calculation it is observed that on an average 0.583 Hectares of land is under productive and sustainable agriculture where slurry from biogas plant is applied as fertilizer and this enhances the quality of soil and also results in the good yield. Hence it is concluded that Project activity effectively contributes to this SDG goal and the contribution can be objectively verified during onsite verification interviews with households as well physical observations.</p> <p>This calculation is transparently presented in the Emission reduction spreadsheet /Ref-6/ Tab SDG2&amp;7_Cal.</p> <p>The contribution towards this SDG Goal found to be significantly low as many households are not using slurry as fertilizers in the field and hence actual SDG impact estimated is not as expected at the time of registration.</p> |            |                                                                   |                                                                                                    |                 |                |

|                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                           |                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|-------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------|--------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                   | Goal 7 (SDG 7.2.1)- Proportion of population with primary reliance on clean fuels and technology                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 122,204 number of persons | 66,089 number of persons | <p>During Project scenario contribution to the identified SDG goal found to be calculated by PP using correct formulae</p> $P_{clean,y} = N_{hh,y} \times U_y \times B_{daily} \times H_{st}$ <p>based on the calculation it is observed that on an average 4.76 person per household were observed during CMS Survey and thus the overall personnel availing benefits of clean fuel and technology found to be correctly applied. Hence it is concluded that Project activity effectively contributes to this SDG goal and the contribution can be objectively verified during onsite verification interviews with households as well physical observations.</p> <p>This calculation is transparently presented in the Emission reduction spreadsheet /Ref-6/ Tab SDG2&amp;7_Cal.</p> <p>Since the Number of biodigesters installed are lower than planned number of Biodigesters the impact could not be achieved as expected at the time of registration of this project activity.</p> |
|                   | Goal 13 (SDG 13.2.1) "Number of countries that have communicated the establishment or operationalisation of an integrated policy/strategy/plan which increases their ability to adapt to the adverse impacts of climate change, and foster climate resilience and low greenhouse gas emissions development in a manner that does not threaten food production                                                                                                                                                                                                                                                                                                                                                                                          | 81,585 tCO2e              | 51,739 tCO2e             | <p>Based on the estimation of emission reduction presented in the ER Spreadsheet /Ref-6/, it is confirmed that the emission reduction achieved during this monitoring period is correct and relevant to the current situation observed during site visit by the verifier.</p> <p>During entire monitoring period i.e. 01/01/2023 – 31/12/2023, PP could achieve 36.6% lower emission reductions as compared to the estimation presented in the registered PDD/<b>Ref-1/</b>. This reduction is justified appropriately by the PP in the monitoring report.</p> <p>It is confirmed that the total Biogas digesters installed by PP are 28,975, however number of animals reared found to be reducing which results in lower emission reductions as compare to the estimated value in the registered PDD/<b>Ref-1/</b>.</p>                                                                                                                                                                 |
|                   | Based on above verification results it is concluded that the project activity contributes towards sustainable development, however the estimated impacts at the time of registration could not be achieved.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                           |                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <b>Findings</b>   | Nil                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                           |                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <b>Conclusion</b> | <p>Based on the above verification of monitoring arrangements implemented by PP for assessing the impacts towards SDG Goals as well as physical site visit observations, it is confirmed that the reported outcome on contribution of project towards sustainable development found to be meeting following criteria,</p> <ul style="list-style-type: none"> <li>✓ Core Document- Safeguarding Principles And Requirements V2.1</li> <li>✓ Gold Standard For The Global Goals Programme Of Activities Requirements Version 1.2 – Published October 2019/<b>Ref-7/</b></li> <li>✓ Para 9,4,7,9.7.2, 9.7.6,10.1.4, 10.1.9,of CORE DOCUMENT- Validation and Verification Standard V1.0/<b>Ref-9/</b></li> <li>✓ Applied Metodology TPDDTEC 3.1</li> </ul> |                           |                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |

**E.10. Global stakeholder consultation**

|                              |                                                                                                                                                                     |
|------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Means of verification</b> | Information provided by PP in the monitoring report section G.1, G.2 and G3 as well as the data of grievances / <b>Ref-18/</b> maintained by PP was assessed during |
|------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|

|                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|-------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                   | <p>verification site visit and it is confirmed that</p> <ul style="list-style-type: none"> <li>- PP has established suitable mechanism to obtain grievances from various stakeholders involved in the project activity, predominantly household operating, maintaining biodigesters to utilize the biogas for cooking purpose.</li> <li>- PP collects the grievances through phone, WhatsApp and verbal feedback to field staff of NBP. These grievances are appropriately recorded and actions taken to mitigate the risk of gross dissatisfaction of stakeholder.</li> <li>- It is observed from the grievance data that complaints received from household related to the breakdown of biodigester or breakdown of cookstoves. During this monitoring period totally 25 cases were grievances were reported and immediate actions were taken.</li> <li>- During verification site visit, verifier took due diligence of the grievance process and checked with household owner about the grievance mechanism, it is understood that all households are aware of the grievance process and how to report concerns to NBP.</li> <li>- All 25 grievance cases are found to be addressed effectively and there is no pending case observed during this monitoring period.</li> </ul> |
| <b>Findings</b>   | Nil                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>Conclusion</b> | <p>Based on the Local Stakeholder Consultation process conducted by the PP and the solicitation of stakeholder comments obtained during the Local stakeholder consultation arrangements and outcome of grievance process as presented in the monitoring report section G1, G2 and G3, it is confirmed that the procedure adopted for the Local Stakeholder consultation is in accordance with following specific requirements.</p> <ul style="list-style-type: none"> <li>✓ Gold Standard for the Global Goals Stakeholder Consultation &amp; Engagement Procedure, Requirements &amp; Guidelines, Version 1.2</li> <li>✓ Gold Standard For The Global Goals Programme Of Activities Requirements/<b>Ref-7/</b></li> <li>✓ CORE DOCUMENT- Validation and Verification Standard V1.0 /<b>Ref-9/</b></li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |

## SECTION F. Internal quality control

The verification report underwent an Internal Technical Review (ITR) before requesting issuance of VERs for the project activity.

The ITR is an independent process performed to examine thoroughly that the process of verification has been carried out in conformance with the requirements of the verification scheme as well as internal Bureau Veritas procedures.

The Team Leader provides a copy of the verification report to the reviewer, including any necessary verification documentation. The reviewer reviews the submitted documentation for conformance with the verification scheme. This will be a comprehensive review of all documentation generated during the verification process.

When performing an Internal Technical Review, the reviewer ensures that:

- The verification activity has been performed by the team by exercising utmost diligence and complete adherence to the Gold Standard and applicable CDM rules and requirements.
- The review encompasses all aspects related to the project which includes project design, baseline, additionality, monitoring plans and emission reduction calculations, internal quality assurance systems of the project participant as well as the project activity, review of the stakeholder comments and responses, closure of CARs, CLs and FARs during the verification exercise, review of sample documents.

The reviewer may raise Clarification Requests to the verification team and discusses these matters with Team Leader.

After the agreement of the responses on the Clarification Requests from the verification team as well as the PP (s), the finalized verification report is accepted for further processing such as submitting to the Gold Standard for review and issuance.

## SECTION G. Verification opinion

Bureau Veritas Certification has performed the 5<sup>th</sup> Monitoring period of National Biodigester Programme, Cambodia, Gold Standard Project reference Number GS751, which is located in host country Cambodia, and applying The Gold Standard methodology TPDDTEC 3.10. The verification was performed based on the requirements set by the Gold Standard Principles & requirements as well as its guidance, rules and Activity requirement.

The verification consisted of the following three phases: i) desk review of the project design, the baseline and monitoring plan; ii) follow-up interviews with project stakeholders; iii) resolution of outstanding issues and the issuance of the final verification report and opinion.

The management of National Biodigester Programme, Cambodia is responsible for the preparation of the GHG emissions data and the reported GHG emission reductions of the project on the basis set out within the monitoring plan/**Ref-2/** contained in the PDD/**Ref-1/**. The development and maintenance of records and reporting procedures in accordance with that plan, including the calculation and determination of GHG emission reductions from the project, is the responsibility of the management of the project.

Bureau Veritas Certification has verified the project Monitoring Report version 2.0 dated 26/07/2024 for the reporting period as indicated below. Bureau Veritas Certification confirms that the project is implemented as described in the validated and registered project design documents. Installed equipment being essential for generating emission reductions run reliably and are calibrated appropriately. The monitoring system is in place and the Project is generating GHG emission reductions as a Gold Standard project.

Bureau Veritas Certification can confirm that the GHG emission reductions are calculated without material misstatements. Our opinion relates to the projects' GHG emissions and resulting GHG emission reductions reported and related to the validated and registered project baseline, approved monitoring plan and its associated documents.

Based on the evidence and information that are considered necessary to guarantee that GHG emission reductions are appropriately calculated, Bureau Veritas Certification confirms the following statement:

## SECTION H. Certification statement

Based on the evidence and information that are considered necessary to guarantee that GHG emission reductions are appropriately calculated, Bureau Veritas Certification confirms the following statement:

| Reporting period:    |        | 01/01/2023 to 31/12/2023     |  |  |
|----------------------|--------|------------------------------|--|--|
| Baseline emissions:  | 55,588 | tCO <sub>2</sub> equivalents |  |  |
| Project emissions:   | 3,849  | tCO <sub>2</sub> equivalents |  |  |
| Leakage emissions:   | 00,000 | tCO <sub>2</sub> equivalents |  |  |
| Emission Reductions: | 51,739 | tCO <sub>2</sub> equivalents |  |  |

| Year<br>(Monitoring<br>period)     | Baseline<br>emissions<br>(tCO <sub>2</sub> e) | Project<br>emissions<br>(tCO <sub>2</sub> e) | Leakage<br>emissions<br>(tCO <sub>2</sub> e) | Emission Reductions<br>(tCO <sub>2</sub> e) |
|------------------------------------|-----------------------------------------------|----------------------------------------------|----------------------------------------------|---------------------------------------------|
| <b>01/01/2023 –<br/>31/12/2023</b> | 55,588.00                                     | 3,849.00                                     | 00,000.00                                    | 51,739.00                                   |

## Appendix 1. Abbreviations

| Abbreviations | Full texts                                                                            |
|---------------|---------------------------------------------------------------------------------------|
| AWMS          | Animal Waste Management System                                                        |
| BCA           | Biodigester Company Agencies                                                          |
| BFT           | Baseline Fuel Test                                                                    |
| BV            | Bureau Veritas India Pvt. Ltd                                                         |
| CAR           | Corrective action request                                                             |
| CDM           | Clean Development Mechanism                                                           |
| CL            | Clarification                                                                         |
| CMP           | Conference of the Parties serving as the meeting of the Parties to the Kyoto Protocol |
| CMS           | Carbon monitoring survey                                                              |
| EB            | Executive Board                                                                       |
| ER            | Emission Reductions                                                                   |
| FAR           | Forward Action Request.                                                               |
| GHG           | Green House Gas                                                                       |
| GS            | Gold Standard                                                                         |
| GS4GG         | Gold Standard 4 Global Goals                                                          |
| IAF           | International Accreditation Forum                                                     |
| IEC           | International Electrotechnical Commission                                             |
| IPCC          | Intergovernmental Panel on Climate Change                                             |
| ISO           | International Organization for Standardization                                        |
| ITR           | Internal Technical Review                                                             |
| LPG           | Liquefied petroleum gas                                                               |
| MAFF          | Ministry of Agriculture, Forestry and Fisheries                                       |
| MR            | Monitoring Report                                                                     |
| NBP           | National Biodigester Programme                                                        |
| PP            | Project Participant                                                                   |
| PDD           | Project Design Document                                                               |
| PFT           | Project Fuel Test                                                                     |
| QA/QC         | Quality Assurance / Quality Control                                                   |
| SDG           | Sustainable Development Goals                                                         |
| UNFCCC        | United Nations Framework convention on Climate Change                                 |
| VS            | Volatile solids                                                                       |
| VVB           | Validation and Verification Body                                                      |

## Appendix 2. Competence of team members and technical reviewers

|           |                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|-----------|--------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Ram Desai | M. Bureau Veritas Brunei | <p><b>Team Leader, Climate Change Lead Verifier,</b><br/> <i>Environmental Engineer with over all 13 years of experience in various industries related to Fuel consumption &amp; Waste Fuel consumption engineering design, installation &amp; Commissioning, Integrated Facility Management for Environmental Services operations in various industries i.e Automotive, Pharmaceutical , IT &amp; Electronics (With Clean Room).</i></p> <p><i>Management System Implementation and Maintenance, Green Building concept implementation, Lean Management Implementation, Fuel consumption &amp; Waste Fuel consumption engineering Design &amp; project Management, Project Environmental Compliance etc for a construction company.</i></p> <p><i>He is the lead auditor for Environment management system, Quality management system and Occupational health and safety management system and his auditing experience</i></p> |
|-----------|--------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

|                      |                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|----------------------|------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                      |                        | <i>spans for 3 year with BVCI &amp; BVCS. He has undergone intensive training on Clean Development Mechanism and was trained as Lead Verifier for CDM in the year 2005 and working as a lead Verifier for validation and verification of CDM/VCS and gold Standard projects</i>                                                                                                                                                                                                               |
| Mr. Hong Linh Nguyen | Bureau Veritas Vietnam | <b>Technical Reviewer, Climate change Lead Verifier:</b><br><i>He has graduated in Environmental Studies and had a Master Degree of Quality Management. He has undergone intensive training on Clean Development Mechanism. His working experience includes more than 7 years of auditing works in the field of Quality Management System and Environmental Management System. He has been involved in the validation / verification / technical review work of more than 30 GHG projects</i> |

### Appendix 3. Documents reviewed or referenced

| No. | Author | Title                                                                                   | References to the document | Provider   |
|-----|--------|-----------------------------------------------------------------------------------------|----------------------------|------------|
| 1   | PP     | Registered GS PDD                                                                       | version 2.2                | GS Website |
| 2   | PP     | Monitoring plan registered                                                              | version 2.2                | GS Website |
| 3   | PP     | Monitoring report                                                                       | version 1.0                | PP         |
| 4   | PP     | Monitoring report                                                                       | version 2.0                | PP         |
| 5   | PP     | Usage Survey spreadsheet                                                                |                            | PP         |
| 6   | PP     | 17June24_GS751_NBP_CPIII_MPV_ER_Cal V1.0                                                | version 1.0                | PP         |
| 7   | GS     | Gold Standard for the global Goals, Principles and Requirements                         | version 1.2                | GS Website |
| 8   | GS     | Gold Standard for the Global Goals, Community Services Activities Requirements          | version 1.2                | GS Website |
| 9   | GS     | Gold Standard - CORE DOCUMENT- Validation and Verification Standard V1.0                | Version 1.0                | GS Website |
| 10  | UNFCCC | CDM Validation and Verification Standard for programmes of activities                   | Version 03.0               | UNFCCC     |
| 11  | AENOR  | GS Verification and Certification report previous monitoring period                     | Version 2                  | GS Website |
| 12  | PP     | NBP 2023 annual report Executive summary                                                | 31/12/2021                 |            |
| 13  | GS     | Template Guide - Monitoring report                                                      | Version 1.1                | GS Website |
| 14  | GS     | Technologies and Practices to Displace Decentralized Thermal Energy Consumption         | version 3.1                | GS Website |
| 15  | IPCC   | 2006 IPCC Guidelines on National GHG Inventories                                        | 2006                       | IPCC       |
| 16  | PP     | Plant Repair In 2023 Final                                                              | 2021                       | PP         |
| 17  | IPCC   | Assessment Report 4                                                                     | 2007                       | IPCC       |
| 18  | PP     | Grievance list 2023 sheet                                                               |                            | PP         |
| 19  | PP     | fNRB assessment Cambodia report                                                         | Version 1.1                | PP         |
| 20  | PP     | 10aug22 NRB assessment NBP spreadsheet                                                  | Version 1.0                | PP         |
| 21  | PP     | Usage Training Report                                                                   | February 2024              | PP         |
| 22  | PP     | Usage Survey Questionnaire                                                              |                            | PP         |
| 23  | Nexus  | CMS-2024 training report                                                                | February 2024              | PP         |
| 24  | UNFCCC | Guideline: Sampling and surveys for CDM project activities and programmes of activities | Version 04.0               | UNFCCC     |
| 25  | UNFCCC | Standard Sampling and surveys for CDM project activities and programmes of activities   | Version 09.0               | UNFCCC     |
| 26  | BSP    | Study report on Combustion efficiency of the biogas stove - Centre for Energy Studies,  |                            | BSP        |

|    |        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |  |            |
|----|--------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|------------|
|    |        | Institute of Engineering for the Nepal Biogas Support Programme (BSP)<br><a href="https://www.researchgate.net/profile/Asheesh_Kumar_4/post/what-are-all-the-methods-that-we-can-employ-to-increase-the-combustion-efficiency-when-L-PG-is-used-as-the-fuel/attachment/59d6207e79197b807797ef48/AS%3A273821083340822%401442295441788/download/efficiency_measurement_of_biog_as_kerosene_and_lpg_stoves_nepal_2001.pdf">https://www.researchgate.net/profile/Asheesh_Kumar_4/post/what-are-all-the-methods-that-we-can-employ-to-increase-the-combustion-efficiency-when-L-PG-is-used-as-the-fuel/attachment/59d6207e79197b807797ef48/AS%3A273821083340822%401442295441788/download/efficiency_measurement_of_biog_as_kerosene_and_lpg_stoves_nepal_2001.pdf</a> |  |            |
| 27 | PP     | PFT_Scale_Calibration_2024_EN.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |  | PP         |
| 28 | PP     | Combined_Data_NBP_US-CMS-PFT_CP3MP5_2024 (5)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |  | PP         |
| 29 | UNFCCC | CDM-EB69-A06-GUID, Para 13 (a - d                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |  | UNFCCC     |
| 30 | PP     | Validation Report at the at the time of registration                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |  | GS Website |
|    |        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |  |            |
|    |        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |  |            |

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

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

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

Table 2. CL from this verification

| CL ID                                                                                                                                                                                                                                                                                                                                                                                                     | 01 | Section no. | Usage Survey records. | Date: 27/06/2024 |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----|-------------|-----------------------|------------------|
| Description of CL                                                                                                                                                                                                                                                                                                                                                                                         |    |             |                       |                  |
| The survey shows that 70 households, which is 21.88% of the total surveyed households, use stoves that are not NBP models with a combustion efficiency of 99.4%. Please clarify how this survey result should be interpreted to adjust the efficiency value.                                                                                                                                              |    |             |                       |                  |
| Project participant response                                                                                                                                                                                                                                                                                                                                                                              |    |             |                       | Date: 28/07/2024 |
| To justify the combustion efficiency of NBP and non-NBP model stove, PD apply the weighted average of the efficiency of both models. While the combustion efficiency of NBP stove model is 99.4 %, the non-NBP one is 98% (default value from GS methodology). Thus, the weighted average efficiency is calculated as:<br>=98%*21% + 99.4%*79% = 99.09%.<br>PD has revised the MR to reflect this change. |    |             |                       |                  |
| Documentation provided by project participant                                                                                                                                                                                                                                                                                                                                                             |    |             |                       |                  |
| Revised Monitoring Report Version 2.0 Dtd. 26/07/2024                                                                                                                                                                                                                                                                                                                                                     |    |             |                       |                  |
| DOE assessment                                                                                                                                                                                                                                                                                                                                                                                            |    |             |                       | Date: 10/08/2024 |
| Ok, the clarification found to be suitable, and the correction applied in the monitoring report found to be appropriate to ensure that the conservative estimation of emission reduction is achieved. Based on the clarification as well as correction to the MR and other relevant data the reported CL is formally closed.                                                                              |    |             |                       |                  |

| CL ID             | 02 | Section no. | D.1 | Date: 27/06/2024 |
|-------------------|----|-------------|-----|------------------|
| Description of CL |    |             |     |                  |

On Page 20 of Monitoring report PD has explained the data & parameter  $LE_{p,y}$  on account of Baseline Technology usage / Transfer and value applied is Zero, however it is not clear how this value is arrived as source of data is mentioned as N/A and Choice of data or Measurement methods and procedures is also mentioned as N/A

**Project participant response****Date:** 28/07/2024

The monitoring on leakage in project scenario is not monitored as the leakage source is negligible based on the leakage assessment stated in section B.6.2 table 6 of the PDD. To be clear, PD has added "Monitoring on the project leakage source is not required as explained in the below additional comment row." in the source of data as seen in the revised MR.

**Documentation provided by project participant**

Revised Monitoring Report Version 2.0 Dtd. 26/07/2024

**DOE assessment****Date:** 10/08/2024

The clarification provided by PD is found acceptable. Verifier reviewed additional statement in the revised monitoring report and found satisfactory and hence the CL is formally closed.

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |    |                    |     |                         |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----|--------------------|-----|-------------------------|
| <b>CL ID</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 03 | <b>Section no.</b> | E.1 | <b>Date:</b> 27/06/2024 |
| <b>Description of CL</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |    |                    |     |                         |
| On page 49 of Monitoring report, it is observed that PP has provided justification that due to the animal behavior it is not possible to measure all sow in the sampling population, hence 25% population is only measured. Please justify how 25% sampling is reasonable as the age of sow at different household are not uniform. Also, while reviewing the master survey data, it is observed that Household US14 there are totally 5 Sow sampled for measurement of Girth and Length, however, in sheet Data_CMS_PFT, only 4 Sow considered.                                                                             |    |                    |     |                         |
| <b>Project participant response</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |    |                    |     | <b>Date:</b> 28/07/2024 |
| During this monitoring period, PD has managed to measure up to 68% of the available sows which is more than 25% recommended in the PDD. It should be noted that 25% was suggested in the registered PDD based on previous experience of PD in measuring sows. Furthermore, with 68% of measurement, PD has checked its validity of the sow weight with 90/30 rule. The error is 8.2% which is far below the tolerant error of 30% (see Combined_Data_NBP_US-CMS-PFT_CP3MP5_2024, Tab: Data_CMS_PFT, cell BL343). Thus, the calculated sow weight is valid based on 90/30 rule which in line with the applied GS methodology. |    |                    |     |                         |
| Regarding household US14, PD has checked this point and couldn't find any different between the Master_US&CMS and Data_CMS_PFT where the measurement was made for 4 sows out of 6 available sows (2 sows were not measured due to their aggressive behaviour).                                                                                                                                                                                                                                                                                                                                                               |    |                    |     |                         |
| <b>Documentation provided by project participant</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |    |                    |     |                         |
| NA                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |    |                    |     |                         |
| <b>DOE assessment</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |    |                    |     | <b>Date:</b> 10/08/2024 |
| Ok, noted that PD has performed more than 25% samples of SOW for the physical measurement for establishment of VS of excretions.<br>Since this is meeting the applied methodological requirement, it is acceptable. Based on the clarification provided by PD it is concluded that the CL to be formally closed.                                                                                                                                                                                                                                                                                                             |    |                    |     |                         |

|                                                                                                                                                                                                                                                                                            |    |                    |                      |                         |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----|--------------------|----------------------|-------------------------|
| <b>CL ID</b>                                                                                                                                                                                                                                                                               | 04 | <b>Section no.</b> | PFT and CMS records. | <b>Date:</b> 27/06/2024 |
| <b>Description of CL</b>                                                                                                                                                                                                                                                                   |    |                    |                      |                         |
| Please provide the PFT Assessment results as prescribed by the approved gold standard methodology section C. On-going Monitoring Studies, Project FT Update - Completed every other year, or more frequently. Please explain when this PFT was conducted to meet the prescribed frequency. |    |                    |                      |                         |
| <b>Project participant response</b>                                                                                                                                                                                                                                                        |    |                    |                      | <b>Date:</b> 28/07/2024 |

The result of PFT is described in section D, the data and parameters monitored of the MR, the value of  $B_{p,y}$  and  $B_{p,LPG}$  are shown in the below table. The PFT was conducted concurrently with Usage and CMS survey in Feb/Mar 2024 while the previous one was conducted in Feb/Mar 2022. Thus, PFT is conducted in accordance with the methodology requirement, every other year or more frequently.

| Bb,y                | Average per household (kg/year) |
|---------------------|---------------------------------|
| LPG                 | 15.388                          |
| Charcoal in wood eq | 0.000                           |
| Firewood            | 99.246                          |

**Documentation provided by project participant**

Combined\_Data\_NBP\_US-CMS-PFT\_CP3MP5\_2024 (5)

**DOE assessment**

Date: 10/08/2024

Ok, Noted. The PFT results submitted by PD in response to the reported CL and it is found to be transparent and hence acceptable. The reported CL is closed formally.

| CL ID                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 05 | Section no. | E.3 | Date: | 27/06/2024       |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----|-------------|-----|-------|------------------|
| <b>Description of CL</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |    |             |     |       |                  |
| Methodological requirement Section C Ongoing Monitoring Studies, Leakage Assessment, prescribes to complete the leakage assessment every other year, starting on time for the first verification. Please provide the result of the assessment done as per the prescribed frequency for the cooking technology related leakages. As during site visit it is observed that households are still using Wood and LPG. – CL-5                                                                                                                                                                      |    |             |     |       |                  |
| <b>Project participant response</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |    |             |     |       | Date: 28/07/2024 |
| Based on the leakage assessment stated in section B.6.2 table 6 of the PDD, some sources of leakage are negligible while some are included in the project emission including physical leakage emission and emission due to continued used of baseline fuels.<br>- Physical leakage emission from biodigester and from stove is estimated to be 0.004tCO <sub>2</sub> e/hh/year as detail in ER sheet (Tab: ER_AWMS, Cell E70)<br>Project emission due to continue used of baseline fuels is estimated to be 0.209 tCO <sub>2</sub> e/hh/year as details in ER sheet (Tab: ER_FUEL, Cell K36). |    |             |     |       |                  |
| <b>Documentation provided by project participant</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |    |             |     |       |                  |
| NA                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |    |             |     |       |                  |
| <b>DOE assessment</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |    |             |     |       | Date: 10/08/2024 |
| Clarification provided found in accordance with the applied methodology hence found satisfactory. The reported CL is no closed.                                                                                                                                                                                                                                                                                                                                                                                                                                                               |    |             |     |       |                  |

**Table 3. CAR from this verification**

| CAR ID                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 01 | Section no. | D.2 and ER Spreadsheet | Date: | 27/06/2024       |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----|-------------|------------------------|-------|------------------|
| <b>Description of CAR</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |    |             |                        |       |                  |
| While Reviewing Emission Reduction calculations it is observed that PD has applied Leakage emissions as default value of 10% from Methodology, however survey result used to calculate overall leakage emissions and applied only 0.4% which is not in accordance with the methodological requirement. In Section D.2 it is clarified that where %BDleak = the share of households with a leaking biodigester and 10% is the IPCC default value for physical leakage. In case the PP does not measure the leakage, %BDleak is 100% meaning that all plants are assumed to leak as per IPCC estimate. Hence 0.4% value is not correct. |    |             |                        |       |                  |
| <b>Project participant response</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |    |             |                        |       | Date: 28/07/2024 |
| PD conducted the survey to measure the share of biodigester leak which is in line with the approved PDD (Page 45): in case households report that their digester leak, in case there is an obvious biogas smell, or when there is visible leakage, i.e. bubbling, it is assumed that the biodigester leaks. Thus, Physical leakage of the biodigester (PL) is therefore calculated as:<br>$PL = 10\% * \%BDleak$ $PL = 10\% * 4\% = 0.4\%$                                                                                                                                                                                            |    |             |                        |       |                  |
| Thus, the calculation is correct and in line with the approved method mentioned in the approved PDD. PD has revised the MR to clarify this calculation.                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |    |             |                        |       |                  |

|                                                                                                            |                         |
|------------------------------------------------------------------------------------------------------------|-------------------------|
| <b>Documentation provided by project participant</b>                                                       |                         |
| <i>Revised Monitoring Report Version 2.0 Dtd. 26/07/2024</i>                                               |                         |
| <b>DOE assessment</b>                                                                                      | <b>Date:</b> 10/08/2024 |
| The correction in the Monitoring report verified and found satisfactory, hence the reported CAR is closed. |                         |

Table 4. FAR from this verification

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

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**Document information**

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