




Validation report form for post-registration changes for component project activities

(Version 02.0)

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

BASIC INFORMATION

| | |
|---|--|
| Title and UNFCCC reference number of the component project activity (CPA) | Title: CPA-2: Methane recovery and combustion with renewable energy generation from anaerobic animal manure management systems under the Land Bank of the Philippines' (LBP) Carbon Finance Support Facility Reference Number: 5979-P1-0002-CP1 |
| Version number of the validation report | 1.2 |
| Completion date of the validation report | 21/06/2021 |
| Version number of PoA-DD and CPA-DD applicable to this validation report | PoA-DD: v.16 CPA-DD: v.13 |
| Title and UNFCCC ref. no. of the registered PoA into which the CPA is included | Title: „Methane recovery and combustion with renewable energy generation from anaerobic animal manure management systems under the Land Bank of the Philippines's (LBP) Carbon Finance Support Facility” Reference Number: 5979 |
| Type(s) of CPA PRCs | <input type="checkbox"/> Temporary deviations from the registered monitoring plan, applied methodologies, standardized baselines or other methodological regulatory documents <input checked="" type="checkbox"/> Corrections <input type="checkbox"/> Changes to the start date of the crediting period <input type="checkbox"/> Inclusion of monitoring plan <input type="checkbox"/> Permanent changes to the registered monitoring plan, or permanent deviation of monitoring from the applied methodologies, standardized baselines, or other methodological regulatory documents <input checked="" type="checkbox"/> Changes to the project design <input type="checkbox"/> Changes specific to afforestation and reforestation activities |
| Coordinating/managing entity (CME) | Land Bank of the Philippines |
| Host Parties | Republic of the Philippines |
| Applied methodologies and standardized baselines | AMS-III.D version 17.0, Methane recovery in animal manure management systems AMS-I.F version 2.0, Renewable electricity generation for captive use and mini-grid |
| Mandatory sectoral scopes | Sectoral scope 13: Waste handling and disposal Sectoral scope 1: Energy industries (renewable / non-renewable sources) |
| Conditional sectoral scopes, if applicable | - |

| | |
|--|---|
| Name and UNFCCC reference number of the DOE | Name: TÜV NORD CERT GmbH (TÜV NORD) Ref. No.: E-0022 |
| Name, position and signature of the approver of the validation report |  Alexandra Nuske Final Approval |

SECTION A. Executive summary

The International Bank for Reconstruction (IBRD) and Development as Trustee of the Spanish Carbon Fund (SCF) has commissioned the TÜV NORD JI/CDM Certification Program (CP) to assess post registration changes of the CPA (UNFCCC Reference: 5979-P1-0002-CP1)

“CPA-2: Methane recovery and combustion with renewable energy generation from anaerobic animal manure management systems under the Land Bank of the Philippines’ (LBP) Carbon Finance Support Facility”

The appropriateness of the proposed post registration changes at CPA level is assessed in this report.

The project reduces GHG emissions due to replacement of an open anaerobic manure management system with an enclosed anaerobic digestion system with methane recovery and combustion, and/or a flare system. Through construction of the wastewater methane recovery systems, the CPA will reduce GHG emissions from methane compared to the emissions that would have occurred with the open anaerobic system. With the installation of electricity generation units, GHG emissions will be further reduced by replacing grid electrical power sourced from fossil fuel plants with renewable energy from the recovered methane, for captive use at the project site.

Essential data of the project is presented in the following Table 1.

Table 1: Project Characteristics

| No. CPA # 2 | Project Location |
|---------------------------|--|
| UNFCCC number | 5979-P1-0002-CP1 |
| Title | CPA-02: Methane recovery and combustion with renewable energy generation from anaerobic animal manure management systems under the Land Bank of the Philippines’ (LBP) Carbon Finance Support Facility |
| Host Country | The Philippines |
| Region: | South Cotabato |
| Project location address: | Biotech Farms: Barrio 6, Barangay San Vicente, Banga |
| Latitude: | 124.8014 |
| Longitude: | 6.4469 |

The CPA implementer considered a phased implementation w.r.t. the gas engine sets.

As per provided documents since 2019, four Jenbacher J420 engines have been installed additionally with 1,429 kW capacity each. The engines do not operate all at the same time but operate back-to-back (only two engines are in operation at a time while the others are in stand-by (cool down, maintenance, repair or back-up)

However, currently the total installed capacity since 2019 is $4 \times 1,429 + 2 \times 1,059 \text{ kW} + 1 \times 1,000 \text{ kW}$ equal to 8.834 MW. The two Jenbacher and one Capstone (1,000 kW) engines are however only for emergency cases but considered as installed capacity as still connected and operational. A 800 kW engines broke down in 2016 and was not in operation since then for now four years: based on that and that even new engines have been bought meanwhile the 800 kW engine, even though still at site, are not considered as installed capacity. The four J420 are used back-to-back, meaning always two are in operation at a time.

In general, the engine-generator sets are assumed to operate 24 hours a day, 365 days a year with down times for maintenance. The maintenance downtime is considered to be 15 days a year. Therefore, the total annual operation hours are 8,400 hours. Additionally, an operating rate of 80% is considered.

Based on the above the expected annual electricity for use at the farm is considered at 19,205 MWh/year ($5.716 / 2 \times 8,400 \times 80\%$) from year 2019 onwards based on operation of two

J420 engines at a time. Besides, a flare system is installed for any emergency cases as per verification report for first monitoring period.

The flare capacity is updated as per below.

The key parameters of CPA2 are given in Table A-2.2 below:

Table A-2.2: Technical data of current installed main technical equipment of the CPA

| Parameter | Unit | Value |
|---|--------------------|--|
| Engine Type 1 | - | Jenbacher |
| Engine capacity | kW | 1,429 |
| Number of units | - | 4 |
| Model number | | JMS 420 GS - B.L |
| Serial number | | 1388523, 1388546, 1388580, 1388627 |
| Engine Type 2 | - | Jenbacher |
| Engine capacity | kW | 1,059 |
| Number of units | - | 2 |
| Model number | | JMC 320 C81 60 |
| Serial number | | 1180055, 1180074 |
| Engine Type 3 | - | Capstone |
| Engine capacity | kW | 1,000 |
| Number of units | - | 1 |
| Model number | | 1000R-AG4-BU00 |
| Serial number | | 007188 |
| Engine Type 3 | - | Capstone (Broke down in 2016, not used since, still at site) |
| Engine capacity | kW | 800 |
| Number of units | - | 1 |
| Serial number | | 006694 |
| Total installed capacity since 2019 | kW | $4 \times 1,429 + 2 \times 1,059 + 1 \times 1000 =$ 8,834 |
| Flare Type | - | LTC 8.7 |
| Flare capacity | Nm ³ | 1500 max |
| Combustion capacity | MW | 8.7 |
| Combustion temperature | °C | 800-900 |
| Calorific value of gas | kWh/m ³ | 5.2 |
| Digester | | |
| Number of digesters | - | 8 |
| Effective Volume | m ³ | 4,830 |
| Total installed effective digester volume | m ³ | 38,640 |

SECTION B. Validation team, technical reviewer and approver

On the basis of a competence analysis and individual availabilities an assessment team, consistent of one team leader and team leader is also the team member, were appointed. Furthermore, also the personnel for the technical review and the final approval were determined.

The list of involved personnel, the tasks assigned and the qualification status are summarized in the following table below.

B.1. Validation team member

| No. | Role | Type of resource | Last name | First name | Affiliation (e.g. name of central or other office of DOE or outsourced entity) | Involvement in | | | |
|-----|------------------------------|------------------|-----------|------------|---|-----------------|--------------------|------------|---------------------|
| | | | | | | Document review | On-site inspection | Interviews | Validation findings |
| 1. | Team Leader/Technical Expert | IR | Winter | Stefan | TN CERT GmbH | x | - | x | x |

B.2. Technical reviewer and approver of the validation report on CPA PRCs

| No. | Role | Type of resource | Last name | First name | Affiliation (e.g. name of central or other office of DOE or outsourced entity) |
|-----|--------------------|------------------|-----------|------------|---|
| 1. | Technical Reviewer | EI | Lubanga | David | - |
| 2. | Approver | IR | Nuske | Alexandra | TN CERT GmbH |

SECTION C. Means of validation**C.1. Document review**

The assessment of post registration changes consisted of the following steps:

- Appointment of team members and technical reviewers
- A desk review of the registered and revised PoA-DD, which includes the generic CPA-DD, CPA2 CPA-DD submitted by the client and additional supporting documents
- Background investigation and follow-up interviews with personnel of the project developer
- Resolution of corrective actions (CARs / CLs) (if any)
- Final reporting
- Technical review
- Final approval.

The registered as well as the revised PoA-DD and CPA-DD and supporting background documents related to the project design and the post registration changes were reviewed.

As far as required the assessment team used additional documentation by third parties like host party legislation, technical reports referring to the project design or to the basic conditions and technical data.

A list all documents reviewed or referenced during this validation is presented in Appendix 3.

C.2. On-site inspection

| Duration of on-site inspection: - | | | | |
|-----------------------------------|----------------------------|---------------|------|-------------|
| No. | Activity performed on-site | Site location | Date | Team member |
| 1. | - | - | - | - |

It is noted that based on PoA-VVS §183 an onsite inspection is not mandatorily required for this project activity due to reason that project size of less than 100,000 tCO₂e annual average GHG emission reductions.

Besides,

On the basis of the information note issued by the CDM EB on 20/03/2020 titled "CDM Executive Board agrees to relax mandatory site visits by DOEs until 31st December 2020 due to COVID-19 pandemic"^{/COVID/}, and on the basis of the following considerations

- due to the recent COVID-19 pandemic and Philippines as well as German travel restrictions, the team leader who is based in Germany was not able to conduct a physical on-site inspection activity in Philippines.
- The site visit could not be postponed due to the reason that travel restriction and 14-day quarantine measures for returning team leader are not considered to be lifted within near future.
- other experienced personnel from outside Philippines was not available, due to travel restrictions from Germany / EU and to Philippines.

However, the team leader applied alternative means as following:

Team leader conducted a remote audit via video-conference, phone and emails.

Besides, TUV NORD and the team leader has already conducted the inclusion of thirty-one CPAs and has been onsite to 24 CPAs during that time.

C.3. Interviews

| No. | Interviewee | | | Date | Subject | Team member |
|-----|--------------|------------|---------------------------|---------------------------------|--|---------------|
| | Last name | First name | Affiliation | | | |
| 1. | Calado | Prudencio | LBP | 17/01/2020 and 07/07/2020 | General set up of the PoA Changes to the PoA or any CPA therein Status of PoA Renewal auditing plan Application of new methodology version Related host country legislation and updates thereof Discussion on open issues and additionality approach decision, potential PRC | Stefan Winter |
| 2. | Chua | Susana | The World Bank consultant | | | |
| 3. | Segarra | Amelito | LBP | | | |
| 4. | Ashida | Keiko | The World Bank | | | |
| 5. | Van den Berg | Katelijn | The World Bank | 17/01/2020 | General set up of the PoA Changes to the PoA or any CPA therein Status of PoA | |
| 6. | Granadino | Renee | LBP | | | |

| | | | | | | |
|--|--|--|--|--|-----------------------|--|
| | | | | | Renewal auditing plan | |
|--|--|--|--|--|-----------------------|--|

There was a general video conference on 17/01/2020 on the contracting issues and PoA/CPA-Status and changes due to ongoing PoA/CPA e.g. PoA management, methodology and legislation. A second conference call via WebEx has been conducted on 07/07/2020 to discuss remaining open issues and additionality approach of the PoA and CPA. Besides the related requests, issues and questions have been exchanged via Email due to time difference between PP (The World Bank), DOE and CME (Philippines).

C.4. Clarification requests, corrective action requests and forward action requests raised

| Areas of validation findings | No. of CL | No. of CAR | No. of FAR |
|---|-----------|------------|------------|
| Compliance with CPA-DD form | 0 | 1 | 0 |
| Temporary deviations from the registered monitoring plan, applied methodologies or applied standardized baselines | 0 | 0 | 0 |
| Corrections | 0 | 1 | 0 |
| Changes to the start date of the crediting period | 0 | 0 | 0 |
| Inclusion of monitoring plan | 0 | 0 | 0 |
| Permanent changes to the registered monitoring plan, or permanent deviation of monitoring from the applied methodologies, standardized baselines, or other applied standards or tools | 0 | 0 | 0 |
| Changes to the project design | 1 | 0 | 0 |
| Changes specific to afforestation and reforestation project activities | 0 | 0 | 0 |
| Others (please specify) | 0 | 0 | 0 |
| Total | 1 | 2 | 0 |

SECTION D. Validation findings

D.1. Compliance with CPA-DD form

| | | |
|--|--|---|
| Means of validation | <p>The project participants used a latest version of the CPA-DD form for the revised CPA-DD than the version of the CPA-DD form of the registered CPA-DD. By means of checking updated CPA-DD with the latest applicable and available CPA-DD template form the validation team can confirm that the information transferred to the later version of the CPA-DD form is materially the same as that in the registered CPA-DD besides those changes in track change and assessed under this report.</p> <p>Further it has been checked whether the latest instructions for filling out the CPA-DD template have been followed. Every section has been checked against the respective guidance.</p> <p>The following sources of information have been used in this context:</p> <ul style="list-style-type: none"> • /CPADDT/ • /CPA-DD/ • /unfccc/ | |
| Findings | <input type="checkbox"/> | The latest reporting template CDM-CPA-DD-FORM as listed on the UNFCCC website has been used for the CPA-DD. |
| | <input type="checkbox"/> | The latest instructions for filling out the CPA-DD have been followed. No adverse finding has been identified in the course of this validation. |
| | <input checked="" type="checkbox"/> | The respective requirements have widely been complied with; however; the following issues needed to be addressed in this context: CAR 01, CAR 02 |
| Conclusion | <input type="checkbox"/> | No CARs/CLs have been raised in this context. No correction was required in the context. The project is in line with the respective requirements. |
| | <input checked="" type="checkbox"/> | The raised CARs/CLs have been addressed appropriately. The PP has carried out the requested corrections. All respective findings could be closed out. For details please refer to Appendix 4. |
| The updated CPA-DD both in tracked-change and clean version is in line with the latest applicable CPA-DD form. The validation team can conclude that the information | | |

| | |
|--|---|
| | transferred to the later valid version of the form is materially the same as that in the included CPA-DD. |
|--|---|

D.2. Temporary deviations from the registered monitoring plan, applied methodologies, standardized baselines or other methodological regulatory documents

| | | | |
|--|---|--|---|
| Means of validation | Type of change(s): | <input type="checkbox"/> | <i>Temporary Deviation from Monitoring Plan</i> |
| | | <input type="checkbox"/> | <i>Temporary Deviation from applied methodology</i> |
| | | <input type="checkbox"/> | <i>Temporary Deviation from standardized baselines</i> |
| | | <input type="checkbox"/> | <i>Temporary Deviation from other regulatory documents</i> |
| | Description of post registration change | | |
| | Start Date: Please provide the start date of the change | | End Date: Please provide the end date of the change, if applicable |
| | Description: Please give a detailed description of the change(s) | Not applicable | |
| | Assessment of post registration change – Temporary deviations from MP or applied methodology, standardized baseline or other regulatory documents | | |
| | Accuracy: Please give a detailed assessment whether the deviation is likely to lead to a reduction in the accuracy of the ER calculation. | | |
| | Conservative-ness: Please give a detailed assessment whether conservative assumptions or discount factors have been applied to ensure that ER will not be overestimated. | | |
| Appendix 2 PoA-PS: Check if the changes fall under one of the scenarios of appendix 2 of the PoA-PS. | The issue does not fall under any point as described under Appendix 2 of PoA-PS. | | |
| Findings | | | |
| Conclusion | Based on the above the temporary deviation(s) from the registered monitoring plan, applied monitoring methodology and/or applied standardized baseline are in accordance with applicable validation requirements related to the temporary deviations from the registered monitoring plan, monitoring methodology or standardized baseline in the VVS. | | |
| | Revised CPA-DD | | |
| | Rev. of CPA-DD: Check whether the changes have been fully addressed in a revised CPA-DD. | <input type="checkbox"/> | The changes have correctly been reflected in the revised CPA-DD. |
| | | <input type="checkbox"/> | A revision of the CPA-DD is not required (in case of temp. changes). |
| | | <input type="checkbox"/> | The revised CPA-DD has been forwarded in (i) track-change and (ii) clean version. |
| | Prior Approval | | |
| | Prior approval: Assess whether the change requires prior approval of the board | <input type="checkbox"/> | The post registration change requires prior approval |
| <input type="checkbox"/> | | The post registration change does not require prior approval | |

D.3. Corrections

| | |
|----------------------------|--|
| Means of validation | Description of post registration change |
|----------------------------|--|

| | | | | |
|--|--|--|---|---|
| | Start Date: Please provide the start date of the change | 15/07/2019 | End Date: Please provide the end date of the change, if applicable | - |
| | Description: Please give a detailed description of the change(s) | Editorial corrections including typo mistakes, incorrect sentences and inconsistencies. This includes update of data based on current information and subsequent changes which occurred during the update for the capacity increase. Corrections to the CPA-DD esp. B.3, B.4.3, B.5.1 to be in line with latest generic CPA-DD as per Part II of PoA-DD version 16 dated 31/05/2017. /PoADD/ Besides, footnote 2 as per CPA-DD has been corrected to the current actual link. | | |
| | Assessment of post registration change – Corrections | | | |
| | Accuracy: Please give a detailed assessment whether the deviation is likely to lead to a reduction in the accuracy of the ER calculation. | All related updates in the CPA-DD are correct. No adverse information was available which showed that the changes are not correct. The changes are made to correct CPA-DD against current actual status and there this leads to higher accuracy of ER calculation. /TD//BP/ECC//DP/ As changes are also in response to the design change below the start date of the change is set to the date of the design change. | | |
| | Conservative-ness: Please give a detailed assessment whether conservative assumptions or discount factors have been applied to ensure that ER will not be overestimated. | ER calculation is based on common practice in the host country and related official data besides, farm data and default values e.g. IPCC. Based on supporting documents provided /TD//CENSUS//GEN/ the information provided is correct and reflects actual circumstances. Therefore, it is highly unlikely that ER are overestimated. | | |
| Appendix 2 PS: Check if the changes fall under one of the scenarios of Appendix 2 of the PS for PoA. | Yes, these changes fall under Appendix 2 of PoA-PS. | | | |
| Findings | CAR 02, CAR 03 | | | |
| Conclusion | Based on the above stated the corrections to the registered PDD are in accordance with applicable validation requirements related to the corrections in the VVS for PoA. | | | |
| | Revised CPA-DD | | | |
| | Rev. of CPA-DD: Check whether the changes have been fully addressed in a revised CPA-DD. | <input checked="" type="checkbox"/> | The changes have correctly been reflected in the revised CPA-DD. | |
| | | <input type="checkbox"/> | A revision of the CPA-DD is not required (in case of temp. changes). | |
| | | <input checked="" type="checkbox"/> | The revised CPA-DD has been forwarded in (i) track-change and (ii) clean version. | |
| | Prior Approval | | | |
| Prior approval: Assess whether the change requires prior approval of the board | <input type="checkbox"/> | The post registration change requires prior approval | | |
| | <input checked="" type="checkbox"/> | The post registration change does not require prior approval | | |

D.4. Changes to the start date of the crediting period

| | | | |
|----------------------------|---|------------|--|
| Means of validation | Description of post registration change | | |
| | Start Date: Please provide the registered start date of the CP. | DD/MM/YYYY | Revised Start Date: Please provide the proposed revised start date of the CP |

| | | | |
|--------------------------|--|---|---|
| | Description: Please give a detailed description /reasoning of the requested revision of CP starting date: | | N/A |
| | LDC: Please check if the host country is an LDC. In case of LDCs the timeframes of the below defined categories are to be doubled. | <input type="checkbox"/> | The host country is a LDC |
| | | <input type="checkbox"/> | The host country is not a LDC |
| | Categories: Please check under which category - as defined below - the requested changes fall. In case of LDCs the timeframes are to be doubled. | <input type="checkbox"/> | Category A: $> \pm 2$ a |
| | | <input type="checkbox"/> | Category B: $< \pm 1$ a; not before registration date |
| | | <input type="checkbox"/> | Category C: $(SD_{old} \pm 1 \text{ a}) \leq SD_{new} \leq (SD_{old} \pm 2 \text{ a})$ |
| | Assessment of post registration change | | |
| | Cat. A: $> \pm 2$ a Changes of start date of more than 2 years (4 years for LDCs) are not allowed as per the PS. | <input type="checkbox"/> | The change is a cat. A case. The change of the CP start date as requested by the PP is not allowed as per the PS. Thus, a corresponding CAR has been raised. |
| | Cat. B: $< \pm 1$ a Prior notification is not required if changes of less than 1 year are requested. The CP start date shall not be earlier than the date of the project registration. | <input type="checkbox"/> | The change is a cat. B case. The proposed new CP start date differs less than ± 1 year (2 years in case of LDCs) from the registered CP start date. Furthermore, it is confirmed that the proposed new CP start date is not before the registration date of the PA. Thus, a prior approval is not required. |
| | Cat. B: $\pm 1 \text{ a} < SD < \pm 2 \text{ a}$ Check whether the project falls under this category. If yes prior approval is required. The assessment team shall assess on the basis of a demonstration by the PPs whether the conservativeness of the baseline is not affected by changes that have occurred in-between. Further it has to be assessed, whether substantive progress has been made by the PPs to start the project activity. | <input type="checkbox"/> | The change is a cat. C case. |
| <input type="checkbox"/> | | The PPs have provided the assessment team with a sufficient demonstration regarding (i) potential effects on the baseline and (ii) progress made to start the project. | |
| <input type="checkbox"/> | | On the basis of a detailed analysis of the PP's demonstration as well as background investigation (incl. on-site inspection) the assessment team confirms that no changes have occurred to the PA which would result in a less conservative baseline. This assessment is based on the following considerations: | |
| | <input type="checkbox"/> | On the basis of a detailed analysis of the PP's demonstration as well as background investigation (incl. on-site inspection) the assessment team confirms that substantive progress has been made by the PPs to start the PA. This assessment is based on the following considerations: | |
| Findings | N/A | | |
| Conclusion | Based on the assessment above the changes to the start date of the crediting period are in accordance with applicable validation requirements related to the changes to the start date of the crediting period in the VVS for PoA. | | |
| | Revised PoA DD and/or CPA DD | | |
| | Rev. of PoA DD and/or CPA DD: Check whether the changes have been | <input type="checkbox"/> | The changes have correctly been reflected in the revised PoA DD and/or CPA DD. |
| | <input type="checkbox"/> | A revision of the PoA DD and/or CPA DD is not required (in case of temp. changes). | |

| | | | |
|--|--|--------------------------|---|
| | fully addressed in a revised PoA DD and/or CPA DD. | <input type="checkbox"/> | The revised PoA DD and/or CPA DD has been forwarded in (i) track-change and (ii) clean version. |
| | Prior Approval | | |
| | Prior approval: | <input type="checkbox"/> | The post registration change requires prior approval |
| | Assess whether the change requires prior approval of the board | <input type="checkbox"/> | The post registration change does not require prior approval |

D.5. Inclusion of monitoring plan

| | | | | |
|----------------------------|---|------------|--|------------|
| Means of validation | Description of post registration change | | | |
| | Start Date: Please provide the start date of the change | DD/MM/YYYY | End Date: Please provide the end date of the change, if applicable | DD/MM/YYYY |
| | Description: Please give a detailed description of the change(s) | N/A | | |
| | Assessment of post registration change – Inclusion of a MP | | | |
| | MM compliance: Please check in case of changes to the registered MP, whether they are in compliance with the MM. | | | |
| | Later version of MM: Please check in cases where compliance with a later version of the MM is demonstrated that the conservativeness of the monitoring and verification is not affected. | | | |
| | Accuracy: Please give a detailed assessment whether the deviation is likely to lead to a reduction in the accuracy of the ER calculation. | | | |
| | Conservative-ness: Please give a detailed assessment whether conservative assumptions or discount factors have been applied to ensure that ER will not be overestimated. | | | |
| | Appendix 2 PS: Check if the changes fall under one of the scenarios of Appendix 2 of the PS for PoA. | | | |
| Findings | | | | |
| Conclusion | Based on the above stated the inclusion of a monitoring plan to the registered project activity is in accordance with applicable validation requirements related to the inclusion of a monitoring plan to a registered project activity in the VVS for PoA. | | | |
| | Revised PoA DD and/or CPA DD | | | |

| | | | |
|--|--|--------------------------|---|
| | Rev. of PoA DD and/or CPA DD: Check whether the changes have been fully addressed in a revised PoA DD and/or CPA DD. | <input type="checkbox"/> | The changes have correctly been reflected in the revised PoA DD and/or CPA DD. |
| | | <input type="checkbox"/> | A revision of the PoA DD and/or CPA DD is not required (in case of temp. changes). |
| | | <input type="checkbox"/> | The revised PoA DD and/or CPA DD has been forwarded in (i) track-change and (ii) clean version. |
| | Prior Approval | | |
| | Prior approval: Assess whether the change requires prior approval of the board | <input type="checkbox"/> | The post registration change requires prior approval |
| | | <input type="checkbox"/> | The post registration change does not require prior approval |

D.6. Permanent changes to the registered monitoring plan, or permanent deviation of monitoring from the applied methodologies, standardized baselines, or other methodological regulatory documents

| | | | | |
|---|--|--------------------------|--|------------|
| Means of validation | Type of change(s): | <input type="checkbox"/> | Permanent Change from Monitoring Plan | |
| | | <input type="checkbox"/> | Permanent Change from the applied methodologies | |
| | | <input type="checkbox"/> | Permanent Change from standardized baselines | |
| | | <input type="checkbox"/> | Permanent Change from other applied standards or tools | |
| | Description of post registration change | | | |
| | Start Date: Please provide the start date of the change | DD/MM/YYYY | End Date: Please provide the end date of the change, if applicable | DD/MM/YYYY |
| | Description: Please give a detailed description of the change(s) | N/A | | |
| | Assessment of post registration change – Permanent changes from MP or MM | | | |
| | MM compliance: Please check in case of changes to the registered MP, whether they are in compliance with the MM. | | | |
| | Later version of MM: Please check in cases where compliance with a later version of the MM is demonstrated that the conservativeness of the monitoring and verification is not affected. | | | |
| Accuracy: Please give a detailed assessment whether the deviation is likely to lead to a reduction in the accuracy of the ER calculation. | | | | |
| Conservative-ness: | | | | |

| | | | | | | | | | | | | | | | | | | | | |
|--|---|---|-----------------------|--|--|--|--------------------------|--|--------------------------|--|--------------------------|---|-----------------------|--|--|--|--------------------------|--|--------------------------|--|
| | Please give a detailed assessment whether conservative assumptions or discount factors have been applied to ensure that ER will not be overestimated. | | | | | | | | | | | | | | | | | | | |
| | Appendix 2 PS: Check if the changes fall under one of the scenarios of Appendix 2 of the PS for PoA. | | | | | | | | | | | | | | | | | | | |
| Findings | | | | | | | | | | | | | | | | | | | | |
| Conclusion | <p>Based on the above stated the permanent changes from the registered monitoring plan, applied monitoring methodology and/or applied standardized baseline are in accordance with applicable validation requirements related to the permanent changes from the registered monitoring plan, monitoring methodology and/or standardized baseline in the VVS for PoA.</p> <table border="1"> <tr> <td colspan="3">Revised CPA-DD</td> </tr> <tr> <td rowspan="3">Rev. of CPA-DD: Check whether the changes have been fully addressed in a revised CPA-DD.</td> <td><input type="checkbox"/></td> <td>The changes have correctly been reflected in the revised CPA-DD.</td> </tr> <tr> <td><input type="checkbox"/></td> <td>A revision of the CPA-DD is not required (in case of temp. changes).</td> </tr> <tr> <td><input type="checkbox"/></td> <td>The revised CPA-DD has been forwarded in (i) track-change and (ii) clean version.</td> </tr> <tr> <td colspan="3">Prior Approval</td> </tr> <tr> <td rowspan="2">Prior approval: Assess whether the change requires prior approval of the board</td> <td><input type="checkbox"/></td> <td>The post registration change requires prior approval</td> </tr> <tr> <td><input type="checkbox"/></td> <td>The post registration change does not require prior approval</td> </tr> </table> | | Revised CPA-DD | | | Rev. of CPA-DD: Check whether the changes have been fully addressed in a revised CPA-DD. | <input type="checkbox"/> | The changes have correctly been reflected in the revised CPA-DD. | <input type="checkbox"/> | A revision of the CPA-DD is not required (in case of temp. changes). | <input type="checkbox"/> | The revised CPA-DD has been forwarded in (i) track-change and (ii) clean version. | Prior Approval | | | Prior approval: Assess whether the change requires prior approval of the board | <input type="checkbox"/> | The post registration change requires prior approval | <input type="checkbox"/> | The post registration change does not require prior approval |
| Revised CPA-DD | | | | | | | | | | | | | | | | | | | | |
| Rev. of CPA-DD: Check whether the changes have been fully addressed in a revised CPA-DD. | <input type="checkbox"/> | The changes have correctly been reflected in the revised CPA-DD. | | | | | | | | | | | | | | | | | | |
| | <input type="checkbox"/> | A revision of the CPA-DD is not required (in case of temp. changes). | | | | | | | | | | | | | | | | | | |
| | <input type="checkbox"/> | The revised CPA-DD has been forwarded in (i) track-change and (ii) clean version. | | | | | | | | | | | | | | | | | | |
| Prior Approval | | | | | | | | | | | | | | | | | | | | |
| Prior approval: Assess whether the change requires prior approval of the board | <input type="checkbox"/> | The post registration change requires prior approval | | | | | | | | | | | | | | | | | | |
| | <input type="checkbox"/> | The post registration change does not require prior approval | | | | | | | | | | | | | | | | | | |

D.7. Changes to the project design

#1

| | | | | |
|----------------------------|--|---|--|------------|
| Means of validation | Type of change(s): | <input checked="" type="checkbox"/> | <i>Changes to the project design</i> | |
| | Description of post registration change | | | |
| | Start Date: Please provide the start date of the change | 01/02/2018 | End Date: Please provide the end date of the change, if applicable | 31/05/2019 |
| | Description: Please give a detailed description of the change(s) | <p>The reason for considering the manure from poultry farming in the description and ER calculation is that the poultry manure is also treated by the same WWT system than the manure from piggery within the livestock farm which includes the downstream biogas system. There are no distinct WWT system for both manure streams. Therefore, the related biogas generation includes biogas which is originating from poultry manure as well and not solely from piggery manure. The methane emissions from the poultry manure was previously released into the atmosphere due to the use of the same baseline system, it is also captured and destroyed by the project activity WWT system. The same is considered in the CPA-DD.</p> <p>The PoA-DD for the 2nd crediting period has been changed already in that way and does not refer to piggery farms and related manure but generally to "livestock farms" and related manure which includes all types of animals mainly piggery but also poultry. Hence, from start date of 2nd crediting period this is already considered by the PoA and for the remaining time</p> | | |

| | | |
|--|---|--|
| | | until the end of the 1 st CP this project change for this CPA is submitted. |
| | Applicability and application of the Approved Baseline Methodology | |
| | Description: Please give a detailed description on how the changes affect the applicability and application of the approved Baseline Methodology. Check if the actual changes would adversely affect the conclusions during validation. | 1. The changes do not affect the applicability and application of the approved baseline methodology. 2. The actual changes have not affected the conclusions during the initial validation. |
| | Additionality assessment | |
| | Description: Please give a detailed description re-assessment of additionality, Check whether the actual changes would adversely affect the conclusions during validation. If required please make use of the assessment tables in the annex. | <p>The additionality is demonstrated via Barrier analysis. The typical CPA is additional due to the following barriers: a) Access to Finance, b) Technological barrier, and c) Common practice. Accordingly, the eligibility criteria have been established. The eligibility criteria to demonstrate additionality at inclusion are</p> <p>First:</p> <p>The farm is operating an open anaerobic wastewater system in the baseline and the project technology involves higher costs of installation and operation to the farm owner coupled with higher technical requirements for construction, operation and maintenance than continued operation of the open system. Hence this shall be demonstrated through:</p> <p>1- Project technology involves the installation of a biogas collection and flare/use system</p> <p>2- Project needs to be financed with future carbon revenues, used as securities to repay the loan.</p> <p>Second:</p> <p>The farm is compliant with the applicable Philippine environmental rules and regulations.</p> <p>Based on that, no financial barrier is to be met and no financial analysis has to be redone and assessed.</p> <p>Assessment w.r.t. first EC:</p> <p>As per documents provided such as commissioning reports the process and instrument diagram the CPA involves the implementation of a biogas capture and destruction system. This system has been extended.</p> <p>By this extension further investment was required and as per provided letter by Land Bank of the Philippines the CPA implementer had still an ongoing loan of approx. 10.4 Billion Philippine Pesos^{TD//FL//CPADD//POADD/}.</p> <p>Therefore, this criterion is still met.</p> <p>Assessment w.r.t. second EC:</p> <p>All related required permits have been provided for the assessment of this PRC. DOE has checked related Mayor Permits for Piggery, poultry and Biogas system, discharge permits and Env. Compliance Certificates. Based on that DOE can confirm that the CPA implementer is in possession of all</p> |

| | | <p>required and latest permits and therefore in compliance with applicable Philippine Env. Rules and regulations^{/BP//DP//ECC//LAW/}.</p> <p>Therefore, this criterion is still met.</p> <p>The change in biogas system or bigger flare has no impact on additionality. It further shows that additional investment is required. Further, it is also reasonable and plausible to install a bigger flare if capacity is increased to ensure that all biogas generated is destroyed e.g. if all engines are down due to any reason.</p> <p>As the CPA is still in compliance with both ECs the additionality of the CPA is not adversely impacted.</p> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|-------------------------------|---|--|---------------------------------------|-------------|-------|------|--------------------|--------------------------|----|-------------------------------------|------------------|-------------------------|---------|------------------|-----------------|--|------|---|------------------------------|--|------|---|------------------------|--|------|---------------------------------------|-------------------------------|--|------|---------------|----------------------------|--------------------------------|-----|----|---------------------|--|---|---|-----------------|---|-----|------|----|------------------|----|
| | Scale of the Project activity | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | <p>Description:</p> <p>Please give a detailed regarding the effect of the changes on the scale of the PoA (i.e. LSC or SSC).</p> | <p>The design changes do not affect the scale of the CPA. The related methodology for the power generation is a type I methodology AMS-I.F. Therefore, the related SSC threshold is 15 MW. As stated above and confirmed by the commissioning reports, the current installed capacity is $4 \times 1,429 + 2 \times 1,059 \text{ kW} + 1 \times 1,000 \text{ kW} + 1 \times 800 \text{ kW}$ equal to 8.834 MW. The two Jenbacher and one Capstone (1,000 kW) engines are however only for emergency cases but considered as installed capacity as still connected and operational. A 800 kW engines broke down in 2016 and was not in operation since then for now four years: based on that and that even new engines have been bought meanwhile the 800 kW engine, even though still at site, are not considered as installed capacity. The four J420 are used back-to-back, meaning always two are in operation at a time. Further, DOE checked related ECC which limits the installed capacity to 12.39 MW^{/ECC/} also lower than the type I threshold.</p> <p>The following values as per methodology, tool or IPCC have been applied for the poultry part of Type III ER calculation to demonstrate that related emissions are very low:</p> <table border="1"> <thead> <tr> <th>Parameter</th><th>Description</th><th>Value</th><th>Unit</th></tr> </thead> <tbody> <tr> <td>GWP_{CH4}</td><td>Global warming potential</td><td>25</td><td>tCO₂e/tCH₄</td></tr> <tr> <td>D_{CH4}</td><td>CH₄ density</td><td>0.00067</td><td>t/m³</td></tr> <tr> <td>UF_b</td><td>Model correction factor to account uncertainties</td><td>0.94</td><td>-</td></tr> <tr> <td>MCF_j (for Layer)</td><td>Methane conversion factor - DEVELOPING</td><td>0.02</td><td>-</td></tr> <tr> <td>B_{O LAYER,y}</td><td>Maximum methane producing potential - DEVELOPING</td><td>0.24</td><td>m³ CH₄/kg VS</td></tr> <tr> <td>VS_{default LAYER,y}</td><td>Volatile solids in year "y" - DEVELOPING</td><td>0.02</td><td>kg/animal/day</td></tr> <tr> <td>W_{default LAYER}</td><td>Default average weight - LAYER</td><td>1.8</td><td>kg</td></tr> <tr> <td>MS%_{BI,j}</td><td>Fraction of manure treated in anaerobic system</td><td>1</td><td>-</td></tr> <tr> <td>nd_y</td><td>Number of Days where the animal manure management system is operational</td><td>365</td><td>days</td></tr> <tr> <td>FE</td><td>Flare efficiency</td><td>90</td><td>%</td></tr> </tbody> </table> <p>GWP_{CH4}, D_{CH4} and UF_b have been derived for the applied methodology AMS-III.D and are identical with the ER calculation for the piggery manure.</p> <p>The parameters MCF_j, B_{O LAYER,y} and VS_{LAYER,y} and W_{default LAYER} are derived from IPCC 2006 table 10A-9, chapter 10, volume 4. B_{O LAYER,y} and VS_{LAYER,y} have been derived for</p> | Parameter | Description | Value | Unit | GWP _{CH4} | Global warming potential | 25 | tCO ₂ e/tCH ₄ | D _{CH4} | CH ₄ density | 0.00067 | t/m ³ | UF _b | Model correction factor to account uncertainties | 0.94 | - | MCF _j (for Layer) | Methane conversion factor - DEVELOPING | 0.02 | - | B _{O LAYER,y} | Maximum methane producing potential - DEVELOPING | 0.24 | m ³ CH ₄ /kg VS | VS _{default LAYER,y} | Volatile solids in year "y" - DEVELOPING | 0.02 | kg/animal/day | W _{default LAYER} | Default average weight - LAYER | 1.8 | kg | MS% _{BI,j} | Fraction of manure treated in anaerobic system | 1 | - | nd _y | Number of Days where the animal manure management system is operational | 365 | days | FE | Flare efficiency | 90 |
| Parameter | Description | Value | Unit | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| GWP _{CH4} | Global warming potential | 25 | tCO ₂ e/tCH ₄ | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| D _{CH4} | CH ₄ density | 0.00067 | t/m ³ | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| UF _b | Model correction factor to account uncertainties | 0.94 | - | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| MCF _j (for Layer) | Methane conversion factor - DEVELOPING | 0.02 | - | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| B _{O LAYER,y} | Maximum methane producing potential - DEVELOPING | 0.24 | m ³ CH ₄ /kg VS | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| VS _{default LAYER,y} | Volatile solids in year "y" - DEVELOPING | 0.02 | kg/animal/day | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| W _{default LAYER} | Default average weight - LAYER | 1.8 | kg | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| MS% _{BI,j} | Fraction of manure treated in anaerobic system | 1 | - | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| nd _y | Number of Days where the animal manure management system is operational | 365 | days | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| FE | Flare efficiency | 90 | % | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

developing countries to which the Philippines is dedicated to. The value for $W_{\text{default LAYER}}$ has been derived for Layers (dry) developed as under developing no value is reported. This is considered reasonable as no other value is reported and this is the only value available by IPCC Guideline. Further, the applied value of 1.8 kg fits good to the average weight as reported by weekly excel file on average weight and population of Biotech farm, e.g. for 2020 of 1.786 kg in average.^{/AW//XLS/} Parameter MCF_j is also derived for developing and for warm region. As per registered PoA-DD and eligibility criteria 4 the mean annual temperature is 26.6°C and therefore the value is correct.

Therefore, the applied values are correctly derived by related sources and chosen as per guidelines and actual situation or related supporting document.

Considering the actual ex-post values the emission reductions for the years 2018-2020 for type III part only including poultry are as following:

| Year | 2018 | 2019 | 2020 |
|---|--------|--------|--------|
| $ER_{\text{TypeIII, total}}$ in tCO ₂ e | 31,225 | 47,971 | 43,319 |
| $ER_{\text{TypeIII, pigs, only}}$ in tCO ₂ e | 30,083 | 46,791 | 42,797 |
| Share of Poultry in % of Type III ER | 3.7 | 2.5 | 1.2 |

From the ex-post ER calculation it is confirmed that during none of the years for which the PRC is requested the Type III emission reductions have exceeded the threshold of 60ktCO₂e. In any of the three years the ER result is in minimum 20% lower than the threshold [for 2019: $(1 - 47,971/60,000) \times 100\%$]. Further, the actual ex-post figures have been checked and accordingly to the actual pig and poultry inventory the achieved GHG emission reductions are as following for the years 2018, 2019 and 2020:

| Year | 2018 | 2019 | 2020 |
|---|--------|--------|--------|
| Ex-post GHG emission reductions in tCO ₂ e incl. poultry | 35,153 | 53,565 | 34,632 |
| Ex-post GHG emission reductions in tCO ₂ e without poultry | 34,290 | 52,899 | 34,235 |
| Share of Poultry in % of ER | 2.5 | 1.3 | 1.2 |

From the actual achieved GHG emissions one can see that the threshold has not been exceeded for any of the last three years. After an increase in 2019 it is at a level of approx. 35,000 tCO₂e. This figures include the power generation and not only the GHG emissions from Type III. In maximum they are still 10% below the threshold of 60k tCO₂e in total. Hence for the considered period there cannot be a breach if the threshold as the period is already over and the achieved emissions are below the threshold.

Besides, considering e.g. for year 2020 the maximum allowed number of poultry as per related permission^{/ECC/} of 1.8 Mio for the entire year instead of the actual average value of 956,820, the type III ER result for the year 2020 would increase to 44,220 tCO₂. This is an increase of 2.08% only by almost doubling the number of poultry. Considering the 1.8 Mio poultry for 2019, the ER result would increase to 48,597

| | | | | | | |
|---------------------------------|---|-------------------------------------|---|----------|---------|-----------------|
| | <p>tCO₂e an increase by 1.3% and still far below the related threshold.</p> <p>At 1.8 Mio poultry the pig numbers have to increase for all types by 36% to reach the threshold of 60ktCO₂e. This is considered unlikely considering the number of pigs as per 1st crediting period.</p> | | | | | |
| | Type | Sow/Gilt | Boar | Finisher | Nursery | Farrow/ Wean |
| | Current actual | 5,335 | 145 | 30,948 | 12,618 | 8,064 |
| | Required increase to reach threshold | 7,271 | 198 | 42,194 | 17,198 | 10,985 |
| | <p>Based on the actual values for the period at consideration, the Type III threshold will not be exceeded. Further, based on actual data for pigs and poultry it is also not plausible that the threshold will be exceeded in future.</p> <p>However, even though the ER result will be below the threshold, the ex-post calculations will consider a 1% discount on BG_{burnt,y} (Biogas flared or combusted in year y) for the poultry manure added.</p> <p>Therefore, the scale of the CPA is not affected and far below the SSC threshold.</p> | | | | | |
| Revised Specific CPA-DDs | | | | | | |
| | <p>Rev. of Specific CPA DDs:</p> <p>Check whether the changes have been fully addressed in a revised CPA DD. In this context pl. refer to</p> <ul style="list-style-type: none"> - Changes to the project boundary and GHG Sources - Changes to the baseline scenario. - Changes to the estimation of emission reductions of a generic CPA - Effects with regards to compliance with the MP and level of accuracy and completeness of monitoring. | <input checked="" type="checkbox"/> | <p>The change has been addressed in relevant sections of the revised CPA-DD.</p> <p>The proposed change has no impact to the baseline scenario and remains the same during validation.</p> <p>The proposed change has no impact to the monitoring plan, level of accuracy and completeness of monitoring for emission reduction calculations.</p> <p>The change does not adversely impact the additionality of the CPA.</p> <p>The capacity increase is covered by the generic CPA.</p> <p>The included CPA with the changes is within the scope of the corresponding generic CPA.</p> <p>Therefore para 1 (d) of Appendix 2 of PoA PS 02.0 applies and prior approval is not required.</p> | | | |
| Findings | CAR 04 | | | | | |
| Conclusion | <p>Based on the above the project design change(s) from the registered CPA design are in accordance with applicable validation requirements related to project design changes in the PoA-VVS.</p> | | | | | |
| | Revised CPA-DD | | | | | |
| | <p>Rev. of CPA-DD:</p> <p>Check whether the changes have been fully addressed in a revised CPA-DD.</p> | <input checked="" type="checkbox"/> | The changes have correctly been reflected in the revised CPA-DD. | | | |
| | | <input type="checkbox"/> | A revision of the CPA-DD is not required (in case of temp. changes). | | | |
| | | <input checked="" type="checkbox"/> | The revised CPA-DD has been forwarded in (i) track-change and (ii) clean version. | | | |
| | Prior Approval | | | | | |
| | | <input type="checkbox"/> | The post registration change requires prior approval | | | |

| | | | |
|--|--|-------------------------------------|--|
| | Prior approval: Assess whether the change requires prior approval of the board | <input checked="" type="checkbox"/> | The post registration change does not require prior approval |
|--|--|-------------------------------------|--|

#2

| | | | | |
|----------------------------|--|---|--|---|
| Means of validation | Type of change(s): | <input checked="" type="checkbox"/> | <i>Changes to the project design</i> | |
| | Description of post registration change | | | |
| | Start Date: Please provide the start date of the change | 15/07/2019 | End Date: Please provide the end date of the change, if applicable | - |
| | Description: Please give a detailed description of the change(s) | <p>The CPA implementer considered a phased implementation w.r.t. the installed project activity. The CPA implementer has extended the farm, the number of pigs is not increased beyond the initial plan however, included poultry farming in the biogas system. Subsequently the biogas system has been extended by enclosed anaerobic digester tanks and components and accordingly the installed capacity of the engines has been increased to destroy increased amount of biogas.</p> <p>As per provided documents since 2019, four Jenbacher J420 engines have been installed additionally with 1,429 kW capacity each. The engines do not operate all at the same time but operate back-to-back (only two engines are in operation at a time while the others are in stand-by (cool down, maintenance, repair or back-up).</p> <p>However, currently the total installed capacity since 2019 is 4 x 1,429 kW + 2 x 1,059 kW + 1 x 1,000 kW + 1 x 800kW equal to 8.834 MW. The two Jenbacher J320 (1,059 kW x 2), and one Capstone CR1000 (1,000 kW x 1) engine are however only used in emergency cases and one Capstone (800kW) is not used since 2016 as broken down and not operated since. As meanwhile further new engines have been bought, installed and used and the engine is broke down the 800 kW engine is not considered as installed capacity. The four J420 are used back-to-back, meaning always two are in operation at a time with maximum output capacity of 2 x 1,429 = 2,858 kW. And based on this the ex-ante ER calculation is considered^{TD//ECC/}.</p> <p>In general, the engine-generator sets are assumed to operate 24 hours a day, 365 days a year with down times for maintenance. The maintenance downtime is considered to be 15 days a year. Therefore, the total annual operation hours are 8,400 hours. Additionally, an operating rate of 80% is considered.</p> <p>Based on the above the expected annual electricity for use at the farm is considered at 19,205 MWh/year (5.716 / 2 x 8,400 x 80%) from year 2019 onwards. Besides, a flare system is installed additionally next to the engines as per verification report for first monitoring period^{TD//ECC/}.</p> <p>The same is confirmed from related commissioning reports for the engines, process and instrument diagram and document on confirmation on operation hours as of 23/07/2020.^{TD//OP/} This latter document confirms that the 800 kW Capstone are not in operation any more as it shows: "OUT of service".^{OP/} The J320 have almost reached 10,000 Oh and always two of the four J420 engines have similar operation hours at around 2,200 or 1,300 which substantiates the back-to-back operation.</p> | | |

Further, as per verification report of first monitoring period the flare system has a capacity of 100 m³. This has been corrected as a new flare has been installed with a capacity of 1,500m³.

This capacity increase/change and the actual current installed capacity and technology is notified via this PRC.

Finally, as per CPA-DD appendix 6 and call with CME the manure from the poultry raising is also treated by the newly build WWT and biogas system. However, as the related GHG reduction by poultry is almost negligible compared to the GHG reduction by piggery. As per related ER calculation checked, the type III ER resulting from poultry contribute to those by only 0.96% in maximum. Based on sectoral knowledge and experience by the validation team this is correct. Manure from poultry is far less than for piggery and also the biogas generation is far less than from piggery due to the reason that poultry manure is almost dry. Also considering IPCC values for VS and Bo in consideration with weight and comparison with piggery substantiate this. At given/constant piggery figures the poultry ER would reach 10% of total type III ER from 13,072,702 number of poultry in the farm. This is 11.5 times higher than current average number of 1,135,418 (2019 average value). This is unlikely as the farm has no related license for this amount, would require a new ECC as well as would need 11 times the area for housing and related investment. Even for a 5% share for poultry the number has to increase to approx. 6 Mio, more than 6 times higher than in 2019. As the remaining time period until end of the first crediting period is already passed, data for the years 2018, 2019 and remaining months in 2020 have been made available. By checking those data for piggery and poultry the threshold for type III project activities of 60,000 tCO₂e equivalent has not been exceeded. This is substantiated by the result of the first verification conducted for the start date of the CPA until 30/06/2015 for which the ERs for this CPA have only been verified to be 18,733 tCO₂e, 17.5% (18,733/107,034x100%) of related estimated GHG emissions as per related monitoring report section H.5.^{/VER/} Further, the actual ex-post figures have been checked and accordingly to the actual pig and poultry inventory the achieved GHG emission reductions are as following for the years 2018, 2019 and 2020:

| Year | 2018 | 2019 | 2020 |
|---|--------|--------|--------|
| Ex-post GHG emission reductions in tCO ₂ e incl. poultry | 35,153 | 53,565 | 34,632 |
| Ex-post GHG emission reductions in tCO ₂ e without poultry | 34,290 | 52,899 | 34,235 |
| Share of Poultry in % of ER | 2.5 | 1.3 | 1.2 |

Finally, ex-post determination of emission reductions is conducted by amount of destroyed methane by installed technical equipment. This is compared with methodology calculation and minimum of both is to be considered. From 1st verification it is derived that methane generation is far below ER as per registered CPA. Finally, as per checked certificates of completion and compared with previous CPA-DD/1st Monitoring report and verification report the installed capacity of the digesters has decreased from 60,000 m³ to 38,640 m³ ^{/COMC/} and hence, as from point of view of today it is unlikely that the threshold will be exceeded even though as per related

| | | |
|--|---|---|
| | | theoretical methodology calculation the ER result is close to the threshold. |
| | Applicability and application of the Approved Baseline Methodology | |
| | Description: Please give a detailed description on how the changes affect the applicability and application of the approved Baseline Methodology. Check if the actual changes would adversely affect the conclusions during validation. | 1. The changes do not affect the applicability and application of the approved baseline methodology. 2. The actual changes have not affected the conclusions during the initial validation. |
| | Additionality assessment | |
| | Description: Please give a detailed description re-assessment of additionality, Check whether the actual changes would adversely affect the conclusions during validation. If required please make use of the assessment tables in the annex. | <p>The additionality is demonstrated via Barrier analysis. The typical CPA is additional due to the following barriers: a) Access to Finance, b) Technological barrier, and c) Common practice. Accordingly, the eligibility criteria have been established. The eligibility criteria to demonstrate additionality at inclusion are</p> <p>First:</p> <p>The farm is operating an open anaerobic wastewater system in the baseline and the project technology involves higher costs of installation and operation to the farm owner coupled with higher technical requirements for construction, operation and maintenance than continued operation of the open system. Hence this shall be demonstrated through:</p> <p>1- Project technology involves the installation of a biogas collection and flare/use system</p> <p>2- Project needs to be financed with future carbon revenues, used as securities to repay the loan.</p> <p>Second:</p> <p>The farm is compliant with the applicable Philippine environmental rules and regulations</p> <p>Based on that, no financial barrier is to be met and no financial analysis has to be redone and assessed.</p> <p>Assessment w.r.t. first EC:</p> <p>As per documents provided such as commissioning reports the process and instrument diagram the CPA involves the implementation of a biogas capture and destruction system. This system has been extended.</p> <p>By this extension further investment was required and as per provided letter by Land Bank of the Philippines the CPA implementer had still an ongoing loan of approx. 10.4 Billion Philippine Pesos^{TD//FL//CPADD//POADD/}.</p> <p>Therefore, this criterion is still met.</p> <p>Assessment w.r.t. second EC:</p> <p>All related required permits have been provided for the assessment of this PRC. DOE has checked related Mayor Permits for Piggery, poultry and Biogas system, discharge permits and Env. Compliance Certificates. Based on that DOE can confirm that the CPA implementer is in possession of all</p> |

| | | | |
|--|--|-------------------------------------|---|
| | <p>required and latest permits and therefore in compliance with applicable Philippine Env. Rules and regulations^{/BP//DP//ECC//LAW/}.</p> <p>Therefore, this criterion is still met.</p> <p>The change in biogas system or bigger flare has no impact on additionality. It further shows that additional investment is required. Further, it is also reasonable and plausible to install a bigger flare if capacity is increased to ensure that all biogas generated is destroyed e.g. if all engines are down due to any reason.</p> <p>As the CPA is still in compliance with both ECs the additionality of the CPA is not adversely impacted.</p> | | |
| Scale of the Project activity | | | |
| <p>Description:</p> <p>Please give a detailed regarding the effect of the changes on the scale of the PoA (i.e. LSC or SSC).</p> | <p>The design changes do not affect the scale of the CPA. The related methodology for the power generation is a type I methodology AMS-I.F. Therefore, the related SSC threshold is 15 MW. As stated above and confirmed by the commissioning reports, the current installed capacity is $4 \times 1,429 + 2 \times 1,059 \text{ kW} + 1 \times 1,000 \text{ kW} + 1 \times 800 \text{ kW}$ equal to 8.834 MW. The two Jenbacher and one Capstone (1,000 kW) engines are however only for emergency cases but considered as installed capacity as still connected and operational. A 800 kW engine broke down in 2016 and was not in operation since then for now four years: based on that and that even new engines have been bought meanwhile the 800 kW engine, even though still at site, are not considered as installed capacity. The four J420 are used back-to-back, meaning always two are in operation at a time. Further, DOE checked related ECC which limits the installed capacity to 12.39 MW^{/ECC/} also lower than the type I threshold.</p> <p>CPA also applies a type III methodology and related threshold for Type III SSC project activities is 60 ktCO₂e. For related assessment on probability to exceed the type III threshold please refer to above description under section scale of project activity. In general, based on actual figures from ex-post GHG achieved, the ER result from Type III was always below the threshold of 60 ktCO₂e.^{/AW//VER/} Hence it is also highly unlikely that it will exceed in near future.</p> <p>Therefore, the scale of the CPA is not affected and far below the SSC threshold.</p> | | |
| Revised Specific CPA-DDs | | | |
| <p>Rev. of Specific CPA DDs:</p> <p>Check whether the changes have been fully addressed in a revised CPA DD. In this context pl. refer to</p> <ul style="list-style-type: none"> - Changes to the project boundary and GHG Sources - Changes to the baseline scenario. - Changes to the estimation of emission reductions of a generic CPA - Effects with regards to compliance with the MP and level of accuracy and completeness of monitoring. | <table border="1"> <tr> <td data-bbox="726 1473 821 2063" style="text-align: center; vertical-align: middle;"> <input checked="" type="checkbox"/> </td> <td data-bbox="821 1473 1422 2063"> <p>The change has been addressed in relevant sections of the revised CPA-DD.</p> <p>The proposed change has no impact to the baseline scenario and remains the same during validation.</p> <p>The proposed change has no impact to the monitoring plan, level of accuracy and completeness of monitoring for emission reduction calculations.</p> <p>The change does not adversely impact the additionality of the CPA.</p> <p>The capacity increase is covered by the generic CPA.</p> <p>The included CPA with the changes is within the scope of the corresponding generic CPA.</p> <p>Therefore para 1 (d) of Appendix 2 of PoA PS 02.0 applies and prior approval is not required.</p> </td> </tr> </table> | <input checked="" type="checkbox"/> | <p>The change has been addressed in relevant sections of the revised CPA-DD.</p> <p>The proposed change has no impact to the baseline scenario and remains the same during validation.</p> <p>The proposed change has no impact to the monitoring plan, level of accuracy and completeness of monitoring for emission reduction calculations.</p> <p>The change does not adversely impact the additionality of the CPA.</p> <p>The capacity increase is covered by the generic CPA.</p> <p>The included CPA with the changes is within the scope of the corresponding generic CPA.</p> <p>Therefore para 1 (d) of Appendix 2 of PoA PS 02.0 applies and prior approval is not required.</p> |
| <input checked="" type="checkbox"/> | <p>The change has been addressed in relevant sections of the revised CPA-DD.</p> <p>The proposed change has no impact to the baseline scenario and remains the same during validation.</p> <p>The proposed change has no impact to the monitoring plan, level of accuracy and completeness of monitoring for emission reduction calculations.</p> <p>The change does not adversely impact the additionality of the CPA.</p> <p>The capacity increase is covered by the generic CPA.</p> <p>The included CPA with the changes is within the scope of the corresponding generic CPA.</p> <p>Therefore para 1 (d) of Appendix 2 of PoA PS 02.0 applies and prior approval is not required.</p> | | |

| | | | |
|-------------------|--|-------------------------------------|---|
| | | | |
| Findings | CL 01, CAR 02, CAR 04 | | |
| Conclusion | Based on the above the project design change(s) from the registered CPA design are in accordance with applicable validation requirements related to project design changes in the PoA-VVS. | | |
| | Revised CPA-DD | | |
| | Rev. of CPA-DD: Check whether the changes have been fully addressed in a revised CPA-DD. | <input checked="" type="checkbox"/> | The changes have correctly been reflected in the revised CPA-DD. |
| | | <input type="checkbox"/> | A revision of the CPA-DD is not required (in case of temp. changes). |
| | | <input checked="" type="checkbox"/> | The revised CPA-DD has been forwarded in (i) track-change and (ii) clean version. |
| | Prior Approval | | |
| | Prior approval: Assess whether the change requires prior approval of the board | <input type="checkbox"/> | The post registration change requires prior approval |
| | | <input checked="" type="checkbox"/> | The post registration change does not require prior approval |

D.8. Changes specific to afforestation and reforestation activities

| | |
|----------------------------|-----|
| Means of validation | N/A |
| Findings | |
| Conclusion | |

SECTION E. Internal quality control

Before submission of the final assessment report a technical review is carried out. The technical reviewer is a competent GHG auditor being appointed for the scope this project falls under. The technical reviewer is not considered to be part of the verification team and thus not involved in the decision-making process up to the technical review.

As a result of the technical review process the assessment opinion as prepared by the validation team leader may be confirmed or revised. Furthermore, reporting improvements might be achieved

SECTION F. Validation opinion


The below listed changes have occurred after the registration of the component project activity:

| Type of Change occurred | Total No. of changes | No. of changes which require prior approval |
|--|----------------------|---|
| <input type="checkbox"/> Temporary Deviation from Monitoring Plan | - | - |
| <input type="checkbox"/> Temporary Deviation from applied methodology | - | - |
| <input type="checkbox"/> Temporary Deviation from standardized baselines | - | - |
| <input type="checkbox"/> Temporary Deviation from other regulatory documents | - | - |
| <input checked="" type="checkbox"/> Corrections that do not affect the project | 1 | 0 |
| <input type="checkbox"/> Change to the start date of the crediting p. | - | - |
| <input type="checkbox"/> Permanent changes from the MP | - | - |
| <input type="checkbox"/> Permanent changes from the MM | - | - |
| <input checked="" type="checkbox"/> Design changes to the project | 2 | 0 |
| <input type="checkbox"/> Change of coordinating/managing entity | - | - |
| <input type="checkbox"/> Inclusion of monitoring plan | - | - |

| | | |
|---|---|---|
| <input type="checkbox"/> Changes specific to afforestation and reforestation activities | - | - |
|---|---|---|

The above listed post registration change(s) do not require prior approval by the Board.

Essen, 21/06/2021



Stefan Winter

TÜV NORD JI/CDM CP
Assessment Team Leader

Appendix 1. Abbreviations

| Abbreviations | Full texts |
|------------------------|---|
| CA | Corrective Action / Clarification Action |
| CAR | Corrective Action Request |
| CDM | Clean Development Mechanism |
| CER | Certified Emission Reduction |
| CL | Clarification Request |
| CO₂ | Carbon dioxide |
| CO₂e | Carbon dioxide equivalent |
| CP | Certification Program |
| CPA | Component Project Activities |
| DNA | Designated National Authority |
| EB | CDM Executive Board |
| EC | Eligibility Criteria |
| ER | Emission Reduction |
| FAR | Forward Action Request |
| FSR | Feasibility Study Report |
| GHG | Greenhouse gas(es) |
| MP | Monitoring Plan |
| MR | Monitoring Report |
| PA | Project activity |
| PCP | Project Cycle Procedure |
| PDD | Project Design Document |
| PoA | Programme of Activities |
| PP | Project Participant |
| PRC | Post Registration Changes |
| PS | Project Standard |
| QC/QA | Quality control/Quality assurance |
| TR | Technical Review |
| UNFCCC | United Nations Framework Convention on Climate Change |
| VT | Validation Team/Verification Team |
| VVS | Validation and Verification Standard |
| XLS | Emission Reduction Calculation Spread Sheet |

Appendix 2. Competence of team members and technical reviewers



Statement of Competence

Appointment and authorization according to the procedures of the TÜV NORD JVCMD Certification Program

Mr. Stefan Winter

| SCHEME | STATUS | VALID UNTIL |
|------------------|--|-------------|
| CDM | Senior Assessor (Validation, Verification) Technical Reviewer | 2023-07-27 |
| VCS / ISO14064-2 | Senior Assessor (Validation, Verification) Technical Reviewer | 2023-07-27 |

Authorization status for technical areas within sectoral scopes:

| CODE | TECHNICAL AREA |
|------|--|
| 1.1 | Thermal energy generation |
| 1.2 | Renewables |
| 2.1 | Energy distribution |
| 3.1 | Energy demand |
| 4.1 | Cement and lime production |
| 4.2 | Paper |
| 5.2 | Caprolactam, nitric and adipic acid |
| 9.1 | Aluminium and magnesium production |
| 9.2 | Iron, steel and Ferro-alloy production |
| 10.1 | Fugitive emissions from oil and gas |
| 13.1 | Solid waste and wastewater |
| 13.2 | Manure |

163 – Rev. 7, Date: 2020-07-22



Statement of Competence

Appointment and authorization according to the procedures of the TÜV NORD JVCMD Certification Program

Mr. David Lubanga

| SCHEME | STATUS | VALID UNTIL |
|-------------------|--|-------------|
| CDM | Senior Assessor (Validation, Verification) Technical Reviewer | 2021-10-20 |
| VCS / ISO 14064-2 | Senior Assessor Technical Reviewer | 2021-10-20 |

Authorization status for technical areas within sectoral scopes:

| CODE | TECHNICAL AREA |
|------|----------------|
| 1.2 | Renewables |
| 3.1 | Energy demand |
| 13.2 | Manure |

251 - Rev. 7, Date: 2018-10-19

163_S01-VA060-F20_2020-07-22_rev7

S01-VA060-F20_rev3 / 2012-10-28

251_S01-VA060-F20_2018-10-19_rev7.doc

S01-VA060-F20_rev3 / 2012-10-28

Appendix 3. Documents reviewed or referenced

| No | Reference | Author | Title | References to the document | Provider |
|----|-----------|--------|--|---|----------|
| 1. | /CPADD-T/ | UNFCCC | Component project activity design document form for CDM component project activities (CDM-CPA-DD-FORM) –version 9.0 | https://cdm.unfccc.int/Reference/PDDs_Forms/index.html | Other |
| 2. | /CPM/ | DOE | TÜV NORD JI / CDM CP Manual (incl. CP procedures and forms) | - | Other |
| 3. | /GOT/ | UNFCCC | Glossary “CDM terms” – version 10.0 | https://cdm.unfccc.int/Reference/index.html | Other |
| 4. | /IPCC/ | IPCC | 1. 1996 IPCC Guidelines for National Greenhouse Gas Inventories: work book 2. 2006 IPCC Guidelines for National Greenhouse Gas Inventories: work book | www.ipcc-nggip.iges.or.jp | Other |

| No | Reference | Author | Title | References to the document | Provider |
|-----|-----------------|--------|---|--|----------|
| 5. | /KP/ | UNFCCC | Kyoto Protocol (1997) | http://unfccc.int/kyoto_protocol/items/2830.php | Other |
| 6. | /MA/ | UNFCCC | Decision 3/CMP. 1 (Marrakesh – Accords) | http://cdm.unfccc.int/Reference/CO2PMOP/index.html | Other |
| 7. | /METH/ | UNFCCC | AMS-III.D. ver. 17.0: Methane recovery in animal manure management systems AMS-I.F. ver. 2.0: Renewable electricity generation for captive use and mini-grid | https://cdm.unfccc.int/methodologies/SSCmethodologies/approved | Other |
| 8. | /TOOL/ | UNFCCC | Methodological Tools: - “Tool to calculate project or leakage CO2 emissions from fossil fuel combustion” version 3.0, - “Baseline, project and/or leakage emissions from electricity consumption and monitoring of electricity generation” version 3.0, - “Project and leakage emissions from anaerobic digesters” version 2.0, - “Project emissions from flaring” version 3.0, - “Tool to determine the mass flow of a greenhouse gas in a gaseous stream” version 3.0, - “Tool to calculate the emission factor for an electricity system” version 7.0 - “Assessment of debundling for small-scale project activities” version 4 | http://cdm.unfccc.int/Reference/tools/index.html | Other |
| 9. | /PS/ | UNFCCC | CDM project standard for programmes of activities version 2.0 | http://cdm.unfccc.int/Reference/Standards/index.html | Other |
| 10. | /SAMPLE/ | UNFCCC | - Guidelines for Sampling and Surveys for CDM Project Activities and Programme Activities – version 04.0 - Standard for Sampling and Surveys for CDM Project Activities and Programme Activities – version 9.0 | https://cdm.unfccc.int/Reference/Guidclarif/index.html http://cdm.unfccc.int/Reference/Standards/index.html | Other |
| 11. | /VVS/ | UNFCCC | - CDM validation and verification standard for programmes of activities version 2.0 | http://cdm.unfccc.int/Reference/Standards/index.html | Other |
| 12. | /CON/ | DOE | Signed Contract for carrying out the validation of the CPA Renewal of CP among TÜV Nord and Land Bank of the Philippines | - | Other |
| 13. | /ACPC/ | ACPC | Costs of Agricultural Credit and Interest Rate Sensitivity of Small Farmers: An Empirical Study, Agricultural Credit Policy Council, Agham C. Cuevas, DURATION: June 11, 2014 – May 10, 2015 Report: 2017 BANK LENDING TO AGRICULTURE | http://www.acpc.gov.ph/wp-content/uploads/2017/05/Cost-of-Agricultural-Credit.pdf http://www.acpc.gov.ph/wp-content/uploads/2018/11/2017-Bank-Lending-to-Agriculture.pdf | Other |

| No | Reference | Author | Title | References to the document | Provider |
|-----|-----------|-----------------|---|--|----------|
| 14. | /EL/ | - | <p><u>Environmental Legislation:</u></p> <ul style="list-style-type: none"> - Phil. Clean Water Act of 2004 - Clean Air Act of 1999 - Philippine Environment Code Presidential Decree No. 1152 - Philippine Environmental Policy Presidential Decree No. 1151 - The Water Code of the Philippines Presidential Decree No. 1067 - National Pollution Control Commission Presidential Decree No. 984 - Marine Pollution Decree of 1976 Presidential Decree No. 979 - Presidential Decree No. 522 - Code on Sanitation of the Philippines Presidential Decree No. 856 - Penalty for Improper Garbage Disposal Presidential Decree No. 825 - Environmental Impact Statement System – Areas/Types of Projects Proclamation No. 2146 - PROCLAMATION NO. 1134 - PROCLAMATION NO. 1136 - PROCLAMATION NO. 1127 - PROCLAMATION NO. 1119 - JOINT AO DENR-DOST 2006-01 DENR Administrative Order No 2005-10: Implementing Rules and Regulations of the Philippine Clean Water Act of 2004 as of May 16 2005 | http://www.chanrobles.com/legal9.htm#.Vq3Ma13UjIU http://www.denr.gov.ph/laws-and-policies.html | Other |
| 15. | /GEN/ | Hypor France | Genetic source pedigree certificate Reg. No. –[CAN]2180667- by Canadian Swine Breeders Association dated 19/04/2013 | - | CME |
| 16. | /FFR/ | PP | Feed Formulation Ratio and Feed Composition Documents for different piggery type and age dated 02/07/2020 Feed Formulation Ratio and Feed Composition Documents for different poultry type and age dated 02/07/2020 | - | CME |
| 17. | /ECC/ | EMB | Env. Compliance Certificate No: ECC-R12 1506-0053 dated 02/07/2015 Amendment Env. Compliance Certificate No: ECC-R12 1506-0053 dated 21/07/2019 | - | CME |
| 18. | /DP/ | EMB | Discharge Permit 15-WDP-C-1263-088 dated 08/05/2015 Official Receipt for Application for Discharge Permit for 2020 dated 18/07/2020 | - | CME |
| 19. | /BP/ | Municipal Mayor | Business Permit for Biotech Farms for Piggery No: 20-458-1 dated 13/02/2020 Business Permit for Biotech Farms for Biogas No: 20-457 dated 13/02/2020 | - | CME |

| No | Reference | Author | Title | References to the document | Provider |
|-----|----------------|--------|--|---|---------------|
| . | | | Business Permit for Biotech Farms for Poultry No: 20-458 dated 13/02/2020 | | |
| 20. | /OP/ | CME | Overview of operating hours of different installed engines by Biotech Farms as of 23/07/2020 Operation hours spreadsheet for Biotech farm for years 2018-2020 on daily basis “(2) 5979-CPA02-BIOTECH 2018-2020 ER GENERATION DATA-LOAD-OPERATING HOURS_05.04.21 sec” Electricity consumption of Biotech farm spreadsheet for years 2018-2020 on daily basis “(3) 5979-CPA02-Electricity Consumption (Biogas Parasitic Load)_PRC_1” | - | CME |
| 21. | /LOA/ | DNA | Letter of Approval for PoA | - | Other |
| 22. | /CPADD/ | PP | Component Project Activity: “CPA-2: Methane recovery and combustion with renewable energy generation from anaerobic animal manure management systems under the Land Bank of the Philippines’ (LBP) Carbon Finance Support Facility” version 05 – 18/05/2015 version 06 – 31/05/2017 version 07 – 28/08/2020 version 08 – 14/09/2020 version 09 – 16/09/2020 version 10 – 18/09/2020 version 11 – 21/09/2020 version 12 – 27/11/2020 version 13 – 22/12/2020 | https://cdm.unfccc.int/PRCContainer/DB/prcp555384061/view | CME UNFCCC |
| 23. | /XLS/ | CME | CPA 2 Ex-ante Emission Reduction spreadsheet: CER-CPA2-5979-PRC revised CER-CPA2-5979-PRC revised tracked (version 3) CER-CPA2-5979-PRC revised tracked (version 4) Ex-post ER calculation for years 2018-2020 (1) POA 5979 CPA-02 ER 2020 for prc (2) 5979-CPA02-BIOTECH 2018-2020 ER GENERATION DATA_05.04.21 sec (3) 5979-CPA02-Electricity Consumption (Biogas Parasitic Load)_PRC_1 (4) POA 5979 CPA-02 ERclean rev1 sec PRCrev POA 5979 CPA-02 ER 2020 for prc rev tracked3 | - | CME |
| 24. | /POADD/ | CME | Programme of Activities: “Methane recovery and combustion with renewable energy generation from anaerobic animal manure management systems under the Land Bank of the Philippines’ (LBP) Carbon Finance Support Facility” | http://cdm.unfccc.int/ProgrammeOfActivities/poa_db/06GHFO2NC9MS3YWA7PDTQR8LKZVU14/view | UNFCCC |

| No | Reference | Author | Title | References to the document | Provider |
|-----|-----------------|--------|---|---|----------|
| . | | | version 16 – 31/05/2017 | | |
| 25. | /CENSUS/ | CME | Excel spreadsheets on weighing details for sows, gilts, farrowing, nursery and growing Excel spreadsheets on daily stock movement for 2019 Sales reports, inventory records Monthly pig census spreadsheets by Biotech for the months January 2018 until September 2020 | | CME |
| 26. | /INCL/ | DNV | CPA inclusion report for CPA titled “CPA-2: Methane recovery and combustion with renewable energy generation from anaerobic animal manure management systems under the Land Bank of the Philippines”(LBP) Carbon Finance Support Facility” dated 04/09/2013 by DNV | https://cdm.unfccc.int/filestorage/b/n/PNRUZTIA42B8L6O7CSY1EJVQ5XGF3M.pdf/CPA-5979-VCR-04-09.pdf?t=Yzl8cWdgcXE0fDDdC_z45eqDr9WZ0zvCdOMp | UNFCCC |
| 27. | /TD/ | PP | <u>Project technical description:</u> <ul style="list-style-type: none"> - Commissioning report by Capstone dated 14/12/2017 - Commissioning report by Jenbacher on JMC 320 dated 04/12/2017 - Commissioning report by Jenbacher/EuroAsiatic on JMS 420 dated 07/06/2019 - Equipment acceptance report on JMS 420 dated 15/07/2019 - Pictures of name plates of engines - Completion Certificate “Renewable Energy Biogas Digester Plant and Wastewater Treatment Plant at Biotech Farms Inc. by Sobono Energy dated 15/12/2017 - Renewable Energy/Biogas digester and WWT Plant process and instrument flow chart and diagram - Flare specification | - | PP |
| 28. | /VER/ | | Verification report on Programme of Activities: “Methane recovery and combustion with renewable energy generation from anaerobic animal manure management systems under the Land Bank of the Philippines’ (LBP) Carbon Finance Support Facility” dated 06/04/2016 by Bureau Veritas Certification | https://cdm.unfccc.int/PoAIssuance/iss_db/poais287465719/view | |
| 29. | /SNV/ | SNV | Feasibility Study titled: “Feasibility Study of a National Biogas Program on Domestic Biogas in the Philippines.” by SNV Netherlands Development Organization and Winrock International. April 2010. | - | PP |
| 30. | /dna/ | EMB | Republic of the Philippines Environmental Management Bureau | http://emb.gov.ph/ | Other |
| 31. | /ipcc/ | - | IPCC publications | www.ipcc-nggip.iges.or.jp | Other |

| No | Reference | Author | Title | References to the document | Provider |
|-----|-----------------|---------------------------------|---|---|----------|
| . | | | For GWP methane (page 214 of document as per link) | https://www.ipcc.ch/site/assets/uploads/2018/02/ar4-wg1-chapter2-1.pdf | |
| 32. | /unfccc/ | - | UNFCCC | http://cdm.unfccc.int | Other |
| 33. | /pagasa/ | PAGASA | Philippine Atmospheric Geophysical & Astronomical Services Administration (PAGASA) | http://www.pagasa.dost.gov.ph/ | Other |
| 34. | /grid/ | Philippine Department of Energy | <ul style="list-style-type: none"> - Philippine Department of Energy - Link to data for the national grid emission factor for Luzon-Visayas and Mindanao Grid - 2016 Philippine Power Situation Report by Electric Power Industry Management Bureau, Department of Energy - List of existing power plants Luzon Grid as of Dec 2019 - List of existing power plants Mindanao grid as of June 2019 - List of existing power plants Visayas Grid as of June 2019 - List of existing off-grid power plants Luzon, Visayas and Mindanao grid as of June 2019 | https://www.doe.gov.ph/electric-power/2015-2017-national-grid-emission-factor-ngef https://www.doe.gov.ph/sites/default/files/pdf/electric_power/power_situationer/2016_philippine_power_situation_report.pdf https://www.doe.gov.ph/electric-power/2015-2017-national-grid-emission-factor-ngef?q=list-existing-power-plants | Other |
| 35. | /MoA/ | | Memorandum of Agreement between Biotech Farms and Land Bank of the Philippines on Purchase of CERs dated 28/10/2009 | | CME |
| 36. | /FL/ | LPB | Certification letter by Land Bank of the Philippines on amount of outstanding loan balance as of 31/12/2019 dated 11/02/2020 | | CME |
| 37. | /COVID/ | - | EB announcement on relaxation of mandatory onsite inspections considering the COVID-19 pandemic | https://cdm.unfccc.int/newsroom/latestnews/releases/2020/01041_index.html | - |
| 38. | /AW/ | CPA Implementer | Excel-file of weight and population of poultry per house of Biotech for the year 2019 | | |
| 39. | /INVE/ | CPA Implementer | Inventory for different pig types, ages and phases for year 2019 December 2019 Sales and Culling Report | | |
| 40. | /COMC/ | Sobono Energy | Certificates of Completion for Biotech Digester System providing main technical data for <ul style="list-style-type: none"> - Digester 1 to 8, 15/08/2015 - Retention tank 1 and 2, both 15/08/2015 | | |

| No | Reference | Author | Title | References to the document | Provider |
|----|-----------|--------|--|----------------------------|----------|
| | | | <ul style="list-style-type: none"> - Digester storage tank 1 and 2, both 15/08/2015 - External gas holder 1, 15/08/2015 and - External gas holder 2, 15/05/2015 All dated | | |

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

Table 1. CLs from this validation

CL ID

01

Section no.

D.6.3

Date

12/09/2020

Description of CL

Following clarifications are requested w.r.t. the installed capacities:

1. The Process and instrument diagram shows 2 x J320, 4xJ420, 1 Capstone CR1000 and 1 Capstone CR800 engine. Therefore, clarify which engines are currently installed and which ones are in use and operation. Further, pls clarify if the ones which are installed but not used are still connected to the biogas system.

2. Finally, clarification is requested on the exact date when the installed capacity has been increased to determine the date from which this change is applicable. As per CPA-DD appendix 6 it is stated that the monitoring of the change started 17/09/2018 whereas the commissioning report for the 4 Jenbacher J420 engines is signed on 15/07/2019. The 1,000 kW max output was already stated in CPA-DD version 5 dated 18/05/2015 submitted under PRC-5979- pg 15 under related eligibility criterion on max allowed output capacity of 15 MW and ER calculation pg 26.

CME response (1st round)

Date

14/09/2020

1. We note the following engines installed and still connected to the biogas digester:

2 x J320 (Serial Nos. 1180055 and 1180074);

4 x J420 (Serial Nos. 1388523; 1388546; 1388580; and 1388627);

1 x Capstone CR1000 (Serial No. 007188); and

1 x Capstone CR800 (Serial No. 006694).

Of these, Capstone CR800 (Serial No. 006694) though still connected with the biogas system, is not used (not recording), and not in operation. The Capstone C800 has not been in use since July 2016.

The rest of the above engines are installed, still in use, and in operation.

2. The completion of the phased increase described is on 15/07/2019 when the 4 x Jenbacher J420 engines were commissioned; this may be taken as date when the installed capacity has been increased. The 17/09/2018 date denotes the start of monitoring (using SCADA system, earlier installed August 2018) involving CR1000 and 2 x J420 engines (already installed since December 2017).

The ER calculation spreadsheet has been revised accordingly. The following sections of PoA5979-CPA2-DD ver. 8 have also been revised accordingly: Title Page; A.1; B4.2 (EG_y); B4.3 (pp.25-27); B4.4; and Appendix 6.

Documentation provided by CME

☒ Changes in CPA-DD

Section(s): Title Page; A.1; B4.2 (EG_y); B4.3 (pp.25-27); B4.4; and Appendix 6

New version No.: 8

☒ Changes in XLS

Worksheet(s): ER calculation

New version No.: 3

☐ Other:

DOE assessment (1st round)

Date

14/09/2020

1. Ok. Clarification has been provided w.r.t. which engine(s) is/are in use and which are connected and not used. This is in line with commissioning certificates provided.

2. Ok. The capacity increase for 4 x J420 occurred on 15/07/2019 and therefore the ex-ante estimation and ER spreadsheet have been adjusted accordingly to this date.

| | |
|---|--|
| Conclusion <i>Tick the appropriate checkbox</i> | <input type="checkbox"/> Additional action should be taken (finding remains open) <input checked="" type="checkbox"/> The finding is closed |
|---|--|

| | | | | | | |
|--|--|--------------------|-------|------------------|-------------|------------|
| CL ID | 01 | Section no. | B.4.3 | Date | 30/11/2020 | |
| Description of CL | | | | | | |
| <p>Clarification is requested w.r.t. the following issue: As per CPA-DD section B.4.3 it is stated that "the farm has extended the design to combine manure from the poultry farm (which can be considered negligible, i.e. < 5% contribution to baseline and GHG emissions, and thus not considered in the ER calculations)". However, as per provided related ER calculation poultry has been considered for ex-ante ER calculation. Therefore, clarification is requested whether ER from poultry will be claimed and As the ex-post ER of the type III component under AMS-III.D will be the minimum of (BE_{y,ex post} – PE_{y,ex post}) and (MD_y – PE_{power,y,ex post}), it is not clear how the provision of not considering ER from manure from poultry farm will apply to both (BE_{y,ex post} – PE_{y,ex post}) and (MD_y – PE_{power,y,ex post}) in order to have a proper comparison. Further, as all manure is treated in the WWT and digester system and the CPA monitors parameter BG_{burnt,y} (Biogas flared or combusted in year y) it is not clear how the provision of not considering ER from manure from poultry farm will apply to this parameter. Even though the poultry part is very small BG_{burnt} includes the related methane.</p> | | | | | | |
| CME response (1st round) | | | | | Date | 01/12/2020 |
| Ex-post calculations will consider a 1% discount on BG _{burnt,y} (Biogas flared or combusted in year y) for the poultry manure added | | | | | | |
| Documentation provided by CME | | | | | | |
| <input type="checkbox"/> Changes in CPA-DD | | Section(s): | | New version No.: | | |
| <input type="checkbox"/> Changes in XLS | | Worksheet(s): | | New version No.: | | |
| <input type="checkbox"/> Other: | | | | | | |
| DOE assessment (1st round) | | | | | Date | 02/12/2020 |
| <p>Emission reductions from poultry manure have been considered in updated ER calculation in order to demonstrate that the related type III emissions are neglectable however will not be considered as per related CPA-DD section B.4.3 for related remaining time of first crediting period but ex-post calculations will consider a 1% discount on BG_{burnt,y} (Biogas flared or combusted in year y) for the poultry manure added. As per related ER spreadsheet this is reasonable as the maximum Type III ER from poultry contributes to only 0.96% to the final type III ER result.</p> | | | | | | |
| Conclusion <i>Tick the appropriate checkbox</i> | <input type="checkbox"/> Additional action should be taken (finding remains open) <input checked="" type="checkbox"/> The finding is closed | | | | | |

Table 2. CARs from this validation

| | | | | | | |
|--|--|------------------------|------------|--------------------|-------------|------------|
| CAR ID | 01 | Section no. | Title page | Date | 12/09/2020 | |
| Description of CL | | | | | | |
| <p>Title page: Title page refers to Biotech Farms for CME however the CME as per related UNFCCC PoA webpage is Landbank of the Philippines. Biotech farms is the related CPA implementer. Pls revise accordingly.</p> | | | | | | |
| CME response (1st round) | | | | | Date | 14/09/2020 |
| The CPA-DD has been revised; 'Land Bank of the Philippines' now indicated as CME in Title Page. | | | | | | |
| Documentation provided by CME | | | | | | |
| <input checked="" type="checkbox"/> Changes in CPA-DD | | Section(s): Title page | | New version No.: 8 | | |
| <input type="checkbox"/> Changes in XLS | | Worksheet(s): | | New version No.: | | |
| <input type="checkbox"/> Other: | | | | | | |
| DOE assessment (1st round) | | | | | Date | 14/09/2020 |
| Ok. The title page of the CPA-DD has been corrected accordingly and states now the CME and not the CPA Implementer. | | | | | | |
| Conclusion <i>Tick the appropriate checkbox</i> | <input type="checkbox"/> Additional action should be taken (finding remains open) <input checked="" type="checkbox"/> The finding is closed | | | | | |

| | | | | | |
|--------------------------|----|--------------------|---------|-------------|------------|
| CAR ID | 02 | Section no. | General | Date | 15/09/2020 |
| Description of CL | | | | | |

Inconsistencies have been identified in the CPA-DD as following:

A.4 provides the name of the CPA implementer whereas the CME is to be provided.

B.1: the link <https://cdm.unfccc.int/methodologies/DB/XA6RFKB3QM9T8S6ELI0V4P8SY8RR2U> refers to AMS-I.E. Pls clarify as this methodology is not applied.

B.4.2: EGY: the updated values due to the change in capacity have not been considered in Appendix 6. Pls clarify.

B.4.3: DD refers that leakage is set to zero as CPA does not involve replacement of equipment: however, please see §17 of AMS-III.D.

B.4.4: Pls clarify why table refers to "7 years" as "year" is already given in general description.

Appendix 6: Please clarify why the change in flare is not considered

Pls clarify why previous PRC approved on 14/08/2017 (5979-P1-0002-CP1) is not considered in appendix 6.

| | | |
|---------------------------------|-------------|------------|
| CME response (1st round) | Date | 16/09/2020 |
|---------------------------------|-------------|------------|

The CPA-DD has been revised w.r.t. all related issues raised.

Documentation provided by CME

| | | |
|---|------------------------|--------------------|
| <input checked="" type="checkbox"/> Changes in CPA-DD | Section(s): Title page | New version No.: 9 |
| <input type="checkbox"/> Changes in XLS | Worksheet(s): | New version No.: |
| <input type="checkbox"/> Other: | | |

| | | |
|--|-------------|------------|
| DOE assessment (1st round) | Date | 17/09/2020 |
|--|-------------|------------|

Ok. A.4 provides name of CME.

Ok. B.1 the link has been exchanged by the correct link to AMS-I.F: v2.

Ok. Appendix 6 considers now the updated values for parameter EGY as a correction.

Ok. Statement has been revised in line with related methodology. No leakage is required as per methodology.

Ok. "year" has been deleted as double.

Ok. Provided now in Appendix 6 and also started in section B.5.3 "During the crediting period, the enclosed flare (100 m3/hr) was replaced with a larger enclosed flare (1,500 m3/hr)."

Ok. All issues as per previous PRC have been considered now.

Not ok. B.5.1: At QA/QC of Parameter W_{site} newly specification is provided. Pls clarify as this is inconsistent to generic CPA-DD.

Not ok. Following issues have identified w.r.t. section F:

- Please clarify why in latest CPA-DD it is referred to in several ECs to "livestock farm" whereas the CPA-DD v6 and generic CPA-DD refer to "Piggery farm". Hence, inconsistent.
- EC4: Clarify why reference to (www.weather.gov.ph) has been deleted. This is inconsistent with generic DD and previous DD.
- The list of eligibility criteria is inconsistent with the generic CPA-DD and previous CPA-DD list. Please clarify why it has been extended by EC25-29.
- Based on a) to c), please clarify why this is not considered a PRC as per PoA-PS §238 (b) and PoA-VVS §270 (b).

| | | |
|--|-------------|------------|
| CME response (2nd round) | Date | 18/09/2020 |
|--|-------------|------------|

- On clarification raised on Section B.5.1 (QA/QC of Parameter W_{site}), entry deleted to make consistent with generic CPA-DD.

- Following issues have identified with respect to section F:

- "Livestock farms" revised to "Piggery farms" (see EC2 and EC3) to make consistent with reference CPA-DDs.
- Reference to www.weather.gov.ph was deleted because link is now connecting to a wholly unrelated website. The replacement link: <http://bagong.pagasa.dost.gov.ph/information/climate-philippines> - is the correct, updated website link as far as can be ascertained.
- This list was erroneously added; EC25-EC29 now deleted to replicate the information from corresponding generic CPA-DD.
- With changes/revisions done relative to a.) and c.), clarification d.) now does not apply; with change done relative to b.), this may be considered a correction and already duly noted/included in Appendix 6.

| Documentation provided by CME | | |
|---|--|-------------------------|
| <input checked="" type="checkbox"/> Changes in CPA-DD | Section(s): Title Page; B.5.1; and F | New version No.: 10 |
| <input type="checkbox"/> Changes in XLS | Worksheet(s): | New version No.: |
| <input type="checkbox"/> Other: | | |
| DOE assessment (2nd round) | | Date 18/09/2020 |
| <p>B.5.1: Ok. Related QA/QC has been deleted and is now in line with previous, latest registered CPA-DD version 6.</p> <p>Section F:</p> <ul style="list-style-type: none"> - Ok. CPA-DD has been corrected to Piggery farms as per related latest CPA-DD - Ok. DOE checked related link and link to www.weather.gov.ph is no longer available and is replaced by bagong website link. Related correction is therefore considered correct and applicable and leads to accurate description of the EC. - Ok. Related additional added ECs have been deleted now and List of eligibility criteria are now consistent with latest registered CPA-DD version 6. - Ok. As assessed above, issues are either deleted and considered for this PRC or are corrections. Therefore, no further issue to be considered as per PoA-PS §238 (b) or PoA-VVS §270 (b). <p>However, the CPA-DD is not in correct track-change version as required for submission.</p> | | |
| CME's response | | Date: 21/09/2020 |
| CPA-DD accordingly adjusted. | | |
| Documentation provided by CME | | |
| CPA-DD version 11 | | |
| DOE assessment | | Date: 21/09/2020 |
| <p>Ok. CPA-DD has been corrected. All information not presented in previous DD has been provided in track change mode.</p> <p>All outstanding issues have been resolved this finding is closed.</p> | | |
| Conclusion <i>Tick the appropriate checkbox</i> | <input type="checkbox"/> Additional action should be taken (finding remains open) <input checked="" type="checkbox"/> The finding is closed | |

| CAR ID | 03 | Section no. | A.3 | Date | 12/09/2020 |
|--|--|--------------------|---------------------|-------------|------------------------|
| Description of CL | | | | | |
| The decrease in the capacity of the anaerobic digestion system, capacity addition of the gas engines, and change in the flare capacity are not described under the relevant section of the CPA-DD, i.e. section A.3 (Technologies/measures). | | | | | |
| CME response (1st round) | | | | | Date 22/12/2020 |
| The CPA-DD has been revised; 'Land Bank of the Philippines' now indicated as CME in Title Page. | | | | | |
| Documentation provided by CME | | | | | |
| <input checked="" type="checkbox"/> Changes in CPA-DD | Section(s): A.3 | | New version No.: 13 | | |
| <input type="checkbox"/> Changes in XLS | Worksheet(s): | | New version No.: | | |
| <input type="checkbox"/> Other: | | | | | |
| DOE assessment (1st round) | | | | | Date 04/03/2021 |
| Ok. The related changes of technology and new installed technologies and capacities are now described in section A.3 of the CPA-DD. | | | | | |
| Conclusion <i>Tick the appropriate checkbox</i> | <input type="checkbox"/> Additional action should be taken (finding remains open) <input checked="" type="checkbox"/> The finding is closed | | | | |

| CAR ID | 04 | Section no. | ER spreadsheet | Date | 16/06/2021 |
|---|--|--------------------|------------------|-------------|------------------------|
| Description of CL | | | | | |
| The values on pig numbers are inconsistent for the months Feb 2018 and March 2020 with the provided related monthly pig census. Please clarify the inconsistencies. | | | | | |
| CME response (1st round) | | | | | Date dd/mm/2021 |
| The CPA-DD has been revised; 'Land Bank of the Philippines' now indicated as CME in Title Page. | | | | | |
| Documentation provided by CME | | | | | |
| <input type="checkbox"/> Changes in CPA-DD | Section(s): | | New version No.: | | |
| <input checked="" type="checkbox"/> Changes in XLS | Worksheet(s): POA 5979 CPA-02 ER 2020 for prc rev tracked3 | | New version No.: | | |

| | | | | |
|---|--|--|-------------|------------|
| | | (4) POA 5979 CPA-02 ERclean rev1 sec PRCrev | | |
| <input type="checkbox"/> Other: | | | | |
| DOE assessment (1st round) | | | Date | dd/mm/2021 |
| OK. The numbers of pigs for Feb 2018 and March 2020 are now consistent between the monthly pig census and ER spreadsheet. | | | | |
| Conclusion <i>Tick the appropriate checkbox</i> | | <input type="checkbox"/> Additional action should be taken (finding remains open) <input checked="" type="checkbox"/> The finding is closed | | |

Table 3. FARs from this validation

| FAR ID | xx | Section no. | Date: DD/MM/YYYY |
|--------------------------------------|----|-------------|-------------------------|
| Description of FAR | | | |
| NA | | | |
| CME's response | | | Date: DD/MM/YYYY |
| Documentation provided by CME | | | |
| DOE assessment | | | Date: DD/MM/YYYY |

- - - - -

Document information

| <i>Version</i> | <i>Date</i> | <i>Description</i> |
|---|------------------|--|
| 02.0 | 31 May 2019 | Revision to: <ul style="list-style-type: none">• Ensure consistency with version 02.0 of the “CDM validation and verification standard for programmes of activities” (CDM-EB93-A08-STAN);• Make editorial improvements. |
| 01.0 | 29 December 2017 | Initial publication. |
| Decision Class: Regulatory Document Type: Form Business Function: Registration Keywords: post-registration change, component project activity, validation report | | |