Validation report form for renewal of crediting period of component project activities

(Version 03.0)

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

BASIC INFORMATION			
Title and UNFCCC reference number of the programme of activities (PoA)	PoA 5979: 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 number of the validation report	1.0		
Completion date of the validation report	06/09/2021		
Version numbers of CPA-DD to which this report applies	14.0		
Title and UNFCCC reference number of each CPA for renewal	CPA Ref. no.	**Title**	
	CPA 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	
Sectoral scopes for each CPA	CPA Ref. no.	**Sectoral scopes (indicate mandatory and conditional sectoral scopes)**	
	CPA 5979-P1-0002-CP1	AMS-III.D.: Sectoral Scopes 13 Waste handling and disposal (Mandatory) and 1 Energy industries (renewable / non-renewable sources) (conditional) AMS-I.F.: Sectoral scope 1 (Mandatory) and 13 (conditional)	
Applied methodologies and standardized baselines for each CPA	CPA Ref. no.	**Applied methodologies and standardized baselines**	
	CPA 5979-P1-0002-CP1	AMS-III.D. version 21.0, Methane recovery in animal manure management systems AMS-I.F. version 3.0, Renewable electricity generation for captive use and mini-grid	
Number and duration of the next crediting period (CP)	CPA Ref. no.	**No. of CP**	**Duration of the CP**
	CPA 5979-P1-0002-CP1	2	7 years from 08/09/2020 – 07/09/2027
Coordinating/managing entity (CME)	Land bank of the Philippines		
Host Parties	Philippines		
Estimated amount of annual average greenhouse gas (GHG) emission reductions or GHG removals by sinks in the next crediting period (tCO_2e), per CPA	CPA Ref. no.	**Annual emission reductions or removals (tCO_2e)**	
	CPA 5979-P1-0002-CP1	55,305 tCO_2e	

Name and UNFCCC reference number of the DOE	TÜV NORD CERT GmbH; E-0022	
Name, position and signature of the approver of the validation report	Alexandra Nuske Final Approver	

SECTION A. Executive summary

The Landbank of the Philippines has commissioned the TÜV NORD JI/CDM Certification Program to carry out validation of the request for renewal of crediting period (RCP) for the Component project activity 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"

with regard to the relevant requirements for CDM Component project activities.

The component Project Activity was included on 08/09/2013 under the UNFCCC registration No. CPA 5979-P1-0002-CP1. The PPs have chosen a 7 year crediting period which is now due for renewal.
The objective of this RCP validation is the review by an independent entity whether the project is still compliant with the applicable sections of:

- the CDM project standard for programmes of Activities v2.0,
- the CDM project cycle procedure for Programmes of Activities v2.0
- the updated PoA-DD applied UNFCCC Methodology AMS-III.D. version 21.0 and AMS-I.F. version 3.0, and
- the methodological tool "Assessment of the validity of the original / current baseline and update of the baseline at the renewal of the creditiong period", v3.0.1.

As per the requirements of the CDM Validation and Verification Standard for programmes of activities/VVS/ (section 11) the validation is based on

- the registered and/or latest updated version of the CPA-DD (including revisions of the monitoring plan)/CPADD/,
- the updated emission reduction calculation/XLS/,
- further supporting documents made available to the validator as well as
- information collected through performing additional research.

Furthermore, publicly available information, such as the host country legislation, was considered as far as available and required.

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.

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 x 1,429 kW + 2 x 1,059 kW + 1 x 1,000 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 19,206 MWh/year (5.716 / 2 x 8,400 h x 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.

Details of the project location are given in table A-1 below:

Table A-1: Project Location

No.	Project Location
Host Country	The Philippines
Region:	South Cotabato
Project location address:	Biotech Farms: Barrio 6, Barangay San Vicente, Banga
Latitude:	6.4469
Longitude:	124.8014

Basic technical details of the project are summarized in table A-2.

Table - A-2: Technical data of the project activity

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

Parameter	Unit	Value
Serial number		006694
Total installed capacity since 2019	kW	4x1,429+2x1,059+1x1000 = 8,834
Flare Type	-	LTC 8.7
Flare capacity	Nm³	1500 max
Combustion capacity	MW	8.7
Combustion temperature	°C	800-900
Calorific value of gas	kWh/m³	5.2
Digester		
Number of digesters	-	8
Effective Volume	m³	4,830
Total installed effective digester volume	m³	38,640

SECTION B. Validation team, technical reviewer and approver

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			
						Desk/document review	On-site inspection	Interviews	Validation findings
1.	Team Leader/Technical Expert	IR	Winter	Stefan	TÜV NORD CERT GmbH	X	-	X	X

B.2. Technical reviewer and approver of the validation report for RCP

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	IR	Stöhr	Christina	TN CERT GmbH
2.	Technical reviewer	EI	Lubanga	David	
3.	Approver	IR	Nuske	Alexandra	TN CERT GmbH

SECTION C. Means of validation

C.1. Desk/document review

During the desk review all documents initially provided by the client and publicly available documents relevant for the validation were reviewed. The main documents are listed below:

- the last revision of the CPA-DD including the monitoring plan/PDD/,
- the last revision of the validation report/VAL/,
- documentation of previous verifications/VER/
- the monitoring report, including the claimed emission reductions for the project/MR/,
- the emission reduction calculation spreadsheet/XLS/.

Other supporting documents, such as publicly available information on the UNFCCC website and background information were also reviewed.

C.2. On-site inspection

Duration of on-site inspection: DD/MM/YYYY to DD/MM/YYYY				
No.	**Activity performed on-site**	**Site location**	**Date**	**Team member**
1.	-			

As per VVS, no onsite inspection is required for assessing Renewal of Crediting Period. 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.

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

Besides, CDM EB at it's 110th meeting agreed to further extend the period in which DOEs may apply alternative measures of validation/verification to mandatory on-site inspections until 31st December 2021 based on information note titled "CDM Executive Board agrees to relax mandatory site visits by DOEs 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.

Hence, the team leader applied alternative means as following:

Team leader conducted a remote audit via video-conference and phone as well as email exchange.
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 and 26/08/2021	General set up of the PoA Changes to the PoA or any CPA therein	Stefan Winter
2.	Chua	Susana	The World Bank consultant			
3.	Segarra	Amelito	LBP			

4.	Ashida	Keiko	The World Bank		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 Changes due to rejection of PRC5979-003	
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 Renewal auditing plan	
6.	Granadino	Renee	LBP			

There was a general video conference on the contracting issues and PoA-Status and changes due to ongoing PoA. Besides that any issues have been exchanged via Email due to time difference between PP (The World Bank), DOE and CME (Philippines).

C.4. Sampling approach

No sampling has been conducted by the PP to collect data for the preparation of documents for the renewal of PoA period.

DOE has also not conducted any sampling in assessing the documents provided and during course of valdating the programme of activities renewal of PoA period.

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

Area of validation findings (SECTION D)	No. of CL	No. of CAR	No. of FAR
CPAs to be renewed and corresponding generic CPAs	0	0	0
Compliance with CPA-DD form	0	0	0
Application and selection of methodologies and standardized baselines	1 CL 1	1	0
Validity of original baseline or its update	1 CL 2	1 CAR 02	0
Demonstration of eligibility of the CPAs	0	0	0
Estimated emission reductions or net anthropogenic removals	0	3 CAR 03 CAR 04 CAR 05	0
Validity of monitoring plan	0	2 CAR 06 CAR 07	0
Crediting period	0	0	0
CME and project participants	0	0	0

Post-registration changes	0	0	0
Others (Consistency with gCPA-DD, missing supporting documents)	0	2 CAR 01 CAR 08	0
Total	**2**	**7**	**0**

SECTION D. Validation findings

D.1. CPAs to be renewed and corresponding generic CPAs

Title and UNFCCC reference number of the CPA	Version number of the CPA-DD	Host Party	Title and reference number of the corresponding generic CPA	Version number of the PoA-DD on which the RCP is based
CPA 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	14.0	Philippines	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, 5979-P1-XXXX-CP1	18.0

D.2. Compliance with CPA-DD form

Means of validation	A draft revised CPA-DD was submitted to the validation team by the project participants. By means of the UNFCCC website it has been checked whether the latest applicable CPA-DD template CDM-CPA-DD-FORM has been used. 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. The following sources of information have been used in this context: • /CPA-DD/ • /unfccc/	
Findings	☒	The latest reporting template CDM-CPA-DD-FORM as listed on the UNFCCC website has been used for the PoADD.
	☐	The latest instructions for filling out the CPA-DD have been followed. No adverse finding has been identified in the course of this validation.
	☐	The respective requirements have widely been complied with; however; the following issues needed to be addressed in this context:
		-
Conclusion	☒	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.
	☐	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 DOE can confirm that the information transferred from the previous version of the CPA-DD to this latest version is materially the same but the changes applied in the course of updating the CPA-DD for renewal of the programme of activities period.	

D.3. Application and selection of methodologies and standardized baselines

Means of validation	By means of comparison of the CPA-DD with (i) the applied CDM methodology (ii) all applicable CDM Meth tools and (iii) if applicable, a standardized baseline the verification team has checked whether the updated CPA-DD is in compliance with the requirements of the applied methodologies /tools/SB. The following sources of information have been used in this context: • /PDD/ • /METH/ • /TOOL/ • /unfccc/			
CARFindings	☐	The updated CPA-DD is completely in accordance with the approved methodologies applicable for the CDM programme of activites.		
	☒	The breakdown of PDD accordance of the referenced tools is as follows:		
		1	Title (of the tool)	TOOL05: Tool to calculate project or leakage CO_2 emissions from fossil fuel combustion
			Version	3.0
			MP compliance	☒ full compliance ☐ findings have been raised ☐ N/A (for MP)
		2	Title (of the tool)	TOOL03: Baseline, project and/or leakage emissions from electricity consumption and monitoring of electricity generation
			Version	3.0
			MP compliance	☒ full compliance ☐ findings have been raised ☐ N/A
		3	Title (of the tool)	TOOL14: Project and leakage emissions from anaerobic digesters
			Version	2.0
			MP compliance	☒ full compliance ☐ findings have been raised ☐ N/A
		4	Title (of the tool)	TOOL06: Project emissions from flaring
			Version	3.0
			MP compliance	☒ full compliance ☐ findings have been raised ☐ N/A
		5	Title (of the tool)	Tool to determine the mass flow of a greenhouse gas in a gaseous stream
			Version	3.0
			MP compliance	☐ full compliance ☒ findings have been raised ☐ N/A
		6	Title (of the tool)	Tool to calculate the emission factor for an electricity system
			Version	7.0
			MP compliance	☒ full compliance ☐ findings have been raised ☐ N/A
	☐	The breakdown of PDD accordance of the applicable SB is as follows:		

		1	Title (of the SB)	Not applicable
			Version	
			MP compliance	
	☒	In this context the following CARs, CLs, FARs have been raised:		
		CL 01		
Conclusion	☐	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.		
	☒	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 is completely in accordance with the approved methodologies applicable for the CDM programme of activites as well as related applied tools.			

D.4. Validity of original baseline or its update

Means of validation	In line with PoA-VVS §392 if data and parameters used for determining the original baseline, that were determined ex ante and not monitored during the crediting period, are no longer valid, the DOE shall confirm that the coordinating/managing entity updated such data and parameters in accordance with the "Methodological tool: Assessment of the validity of the original/current baseline and update of the baseline at the renewal of the crediting period". Accordingly and based on related TOOL11 the DOE has has applied the following stepwise approach: *Step 1:* Check of Applicability of a Standardized Baseline *Step 2:* Check of Baseline Scenario *Step 3:* Assessment of compliance of the current baseline with relevant mandatory national and/or sectoral policies *Step 4:* Assessment of impact of circumstances *Step 5:* Assessment of likeliness of investments *Step 6:* Validity check of ex-ante determined parameters. All necessary documentation has been either provided by the client or the validation team has acquired appropriate information required for assessment independently. For a detailed list of reviewed documentation please refer to appendix 3.
	Step 1: Applicability of a Standardized Baseline: No standardized baseline is applicable to the project activity. This has been checked by an analysis of the current list of valid standardized baselines on the UNFCCC website/unfccc/.
	Step 2: Baseline Scenario: The baseline scenario of the project as per the registered CPA-DD can be described as follows: As per AMS-III.D., the baseline scenario of the methane recovery component is the situation where, in the absence of the project activity, animal manure is left to decay anaerobically within the project boundary and methane is emitted to the atmosphere. As per AMS-I.F., the baseline emission scenario of the renewable energy generation component is based on the electricity that is displaced from the electricity distribution system by the project activities. Step 2.1: Update the current baseline As per the project standard this scenario is not subject to re-assessment and is thus deemed to be applicable for the next crediting period. Step 2.2: Update the data and parameters However, the baseline itself i.e. the calculation of baseline emissions has been checked regarding the continued validity of underlying assumptions and parameter values. The assessment steps are described in the following subsections.
	Step 3: Assessment of compliance of the current baseline with relevant mandatory

national and/or sectoral policies:

The baseline of the registered CPA-DD has been assessed to be compliant with the national legislation and policies applicable for the project activity at the time of validation. During the first CPA crediting period the PP has frequently reviewed the legal requirements and policies relevant for the baseline of the project. On the basis of this the PP has arrived at the conclusion that the baseline is still in line with all applicable legislations and policies.

The validation team has independently reviewed the host country legislation as well as current policies, such as

- 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
- Besides, the information on national grid emission factor published by Philippine Depatrtment of Energy/grid/

On the basis of this analysis the validation team confirms that the baseline is still in compliance with the currently applicable national legislation and other national and/or sectoral policies. No changes have been occurred based on the host country law which would affect the CPA. The requirements from national laws and regulations are the same as during initial request for registration. Therefore the baseline did not need to be adjusted due to changes in this respect.

Step 4: Impact of circumstances:

As the baseline scenario might be affected by changed circumstances, e.g. market conditions, market prices etc. the PP has checked the baseline against such changes that have occurred since validation. This is of special importance if the baseline scenario is the continuation of the pre-project scenario.

One barrier identified during initial registration is related to access to finance. Initially a study by the Agricultural Cerdit Policy Council from 2009 has been stated. DOE has checked the related webpage of ACPC and found the following in a related study covering the period June 2014 to May 2015 (most recent study available):

Primary reasons why small-scale farmers borrow includes agricultural purposes (buying farm inputs, improving land, etc.) and personal use (household consumption, consumer durables, bills, etc.).

Therefore, the initial statement “farm improvement loans are targeted to agricultural production and facilities given that this is intended to have a positive effect on revenue streams for the farm, but this does not happen with waste management investments.” can still be considered as given. /ACPC/

Also, the following statement in the PoA-DD is unchanged: “Farmers interviewed by the Global Methane Initiative study; said they have difficulty of accessing finance because they “are not able to put up enough collateral to secure the loan. In general, Philippine banks don’t want to get involved in chattel mortgages and prefer accepting land as collateral”. According to the interviews conducted with officials from five different banks in the Philippines, “(bank officials) mentioned that chattel mortgages, was not encouraged because it increased the bank’s burden should the borrower default on the loan payment”./PoA-DD/

The study states that on farmer borrowers the “[…] average interest rates of loans sourced from informal lenders are much higher than those sourced from the formal type.” And additionally the study states that “For formal lenders, the average annual interest rate is 11% for agricultural and 11% non-agricultural loans while for informal lenders, the rate is 14% for agricultural loans and 11% percent for non-agricultural loans. Majority formal lenders require collateral especially if it involves high amount of loan […]” and “Lenders from both sector experienced various problems such as delayed payment of borrowers, unsecure funds, management issues, and lack of assistance.”/ACPC/

Finally, as per report on Bank Lending to Agricultural Sector in 2017 only 1.6% of the Bank Loans granted have been in the Agricutural sector. This is a slight increase to 2016 which states a 1.3% share however the absolut number can still be stated as very low./ACPC/

Accoridngly the intial circumstances to access to finance are still applicable and those have no impact on the baseline. The installation and operation of an anaerobic open lagoon is still the common practice in the baseline as per assessment above./ACPC//dna/

Besides, even though the initial baseline is the continuation of current practice also the current practice requires some investment for consutructing a lagoon and related channel system and/or pumping equipment whereas the releated tool requires an assessment “In the situation where the baseline scenario identified at the validation of the project activity was the continuation of the current practice without any investment, […]”.

The validation team has independently checked whether there are changes in circumstances which have an impact on the baseline. No such changes have been identified and thus it is deemed appropriate not to revise the baseline due to changes in circumstances.

Step 5: Likeliness of investments

This sub-step should only be applied if the baseline scenario identified at the validation of the project activity was the continuation of use of the current equipment(s) without any investment, so it’s not applicable for the project. Besides, see assessment under Step 4 above. No equipment is used in the baseline for electricity generation but taken from the connected grid.

Step 6: Validity of ex-ante determined parameters:

The parameters which have been determined ex-ante in the registered CPA-DD are basically still valid. Only the following changes were required:

Parameter	Previous value	Updated value	Reference and assessment
W_{site}	48 for market; 250 (boar) and 200 (sow) for breeding	62 for market; 216 (boars) and 208 (sows) for breeding; 1.81 for poultry	The value is based on farm records which have been checked. Accordingly the values have been updated and are in line with related supporting documents.

	$W_{default}$	46 for market; 198 for breeding.	46 for market; 198 for breeding swines; 1.8 for poultry (layer)	The applied value derived from the 2006 IPCC Guidelines for National Greenhouse Gas Inventories/IPCC/, Volume 4, and Chapter 10, Table 10A-7 (swine) and 10A-8 (breeding) & 10-9, the value for the average market swine of Wetsern European. DOE has checked latest breeding certificate as well as crosschecked with IPCC guideline and found the value is correctly chosen and applied.
	$N_{da,y}$	365 days for market sold; 365 for breeders	152 days for market; 365 for breeders; 365 for poultry	The value applied is based on farm records. DOE has checked related farm records and can therefore confirm the values stated. Besides, based on sectoral knowledge and experience the lifetime of a market swine is max 180 days. Therefore the value is considered plausible and reasonable considering the hst country.
	$N_{p,y}$	For 2013-2014 N breed 6,601 Sow 6,489 Boar 112 N market - sold 54,999 For 2015-2020 N breed 7,223 Sow 7,100 Boar 123 N market - sold 60,177	For 2020 (actual data) N breed 5,507 Sow 5,360 Boar 147 N market 120,269 For 2021-2027 N breed 6,058 Sow 5,896 Boar 162 N market 132,296 For 2020 (actual data) N poultry 906,667 For 2021-2027 N poultry 997,333	The value applied is based on farm records and future planning by the farm owner. DOE has checked related farm records and considering previous CPA-DD version for 1st CP the vaues are reasonable and plausible.
	MCF_j	0.8	0.8 for swine; 0.02 for poultry	The value is derived from Table 10.17 of 2006 IPCC Guidelines for National Greenhouse Gas Inventories Volume 4 Chapter 10, "Uncovered Anaerobic Lagoon" and Table 10.A-9 of 2006 IPCC Guidelines for National Greenhouse Gas Inventories Volume 4 Chapter 10, poultry "developing". As per PAGASA "Based on the average of all weather stations in the Philippines, excluding Baguio, the mean annual

				temperature is 26.6°C. […]The difference between the mean annual temperature of the southernmost station in Zamboanga and that of the northermost station in Laoag is insignificant. In other words, there is essentially no difference in the mean annual temperature of places in Luzon, Visayas or Mindanao measured at or near sea level." Therefore, considering an MAT >26°C the related value in the IPCCC Guidelines is 80% = 0.8. For poultry, manure management system for developing (warm temperature) has been correctly chosen and hence 0.02. Therefore, the chosen value is correct and still valid.
	$B_{0,LT}$	$B_{o,breed}$ = 0.48 $B_{o,market}$ = 0.48	$B_{o,breed}$ = 0.48 $B_{o,market}$ = 0.48 $B_{o,mlayer}$ = 0.24	The applied value derived from the 2006 IPCC Guidelines for National Greenhouse Gas Inventories/IPCC/, Volume 4, and Chapter 10, Table 10A-7 (market swine) & 10A-8 (breeding). Conservative standard value for Wstern European swine is applied for all animals in the calculations of emission reduction of the proposed PoA. As per checked and provided data The project's specified animal weight (50 kg for market pigs and 250 kg -boars and 200 kg – sows for breeding pigs) is more similar to developed country IPCC default values (46 kg for market and 198 kg for breeding) than to Asian default values (28 kg for market and breeding). Therefore, the value is 0.48 which is verified still valid for the next crediting period as per IPCC. Related genetic source certificate has also been checked. As per provided genetic source the layers are from the Philippines and hence value for developing is considered correct as well as this is also conservative. Value of 0.24 is consistent with the related source.
	$VS_{LT,y}$	$VS_{breed,\ y}$ = 0.5; $VS_{market,\ y}$= 0.27;	$VS_{breed,\ y}$ = 0.5; $VS_{market,\ y}$= 0.27; VS_{layers} =0.02	The applied value derived from the 2006 IPCC Guidelines for National Greenhouse Gas

				Inventories/IPCC/, Volume 4, and Chapter 10, Table 10A-7 (market swine) & 10A-8 (breeding), the value for the daily solid excreted by Western European swines multiplied with 365 days. As per provided pedigree certificate the origin of the pigs is France and therefoe Western Europe values are considered to be applied correct and reasonable. Application of default values of mass of 198 kg and VS of 0.46 and 50 kg and VS of 0.3 are correct as per IPCC and related results of 156.5 = 185 (exact value of 184.6 applied in ER)/198x0.46x365 and 62/50x0.3x365 = 135.8. Therefore, these values are valid for the next crediting period as per IPCC and related tool. As per provided genetic source the layers are from the Philippines and hence value for developing is considered correct as well as this is also conservative. Value of 0.02 is consistent with the related source.
	FE	90%	80%	Derived from related methodology AMS-III.D. and Tool for "Project emissions from flaring". Accoridngly for enclosed flares that are defined as low height flares, the flare efficiency shall be adjusted, as a conservative approach, by subtracting 10 percentile points. For example, the default value applied shall be 80%, rather than 90%. DOE has checked related supporting documents and can confirm that an enclosed flare is installed as well as it is a low height flare. Further, the default value is applied which is in line with the tool and conservative.
	$SPEC_{flare}$	Not provided	Temperature: 800-900°C Flow rate : 1,500 m3/h	Previous gCPA-DD did not require providing this parameter. This has been included in course of renewal of PoA. Hence, this parameter is also provided now and the stated values are correct as per

				provided supporting document and check of related verification reports.
	GWP_{CH4}	21 in 2012, 25 from 2013 onwards	25	In this crediting period global warming potential for CH_4 is 25 according to para. 66 of EB69 meeting report "the Board agreed that the second commitment period global warming potentials (GWPs) shall apply to all calculations of emissions reductions or removals achieved from 01/01/2013". Value is 25 which is verified still valid for the next crediting period as per EB decision.
	$MS_{\%Bl,j}$	1.0	1.0	This is the fraction of manure treated in the baseline. Based on the previous validation report for inclusion of this CPA, all (100%) of the manure was treated in open anaerobic lagoosn prior to the installation of the project activity. Further, as per PoA open anaerobic lagoons are considered common practice in the host country. Therefore, the DOE consideres that the value is still valid.
	$W_{CH4,y}$	60%	60%	The value is derived from related applied methodology AMS-III.D. v21.0. As per Section 5.1, Data / Parameter table 6, measurement procedure the methodology states that alternatively a default value of 60% methane content can be used. Therefore, this value is still valid and correct.
	n_{dy}	365	365	The value is derived from the basic project design. As per CPA validation report all manure is treated in the treatment plant all year long. No manure is emitted by other means or guided to natural waters. This is based on sectoral and host country knowledge and experience besides check of previous validation and latest verification report. This value is still valid.
	EG_y	For 2013-2014: 2,913	For 2020: 6,051 MWh/a	The value is derived by full year operation less 15 days for

		MWh/a For 2015-2020: 3,641 MWh/a	For 2021-2026: 19,206 MWh/a For 2027: 13,155 MWh/a	maintenance and 80% availability of two engines with capacity of 1,429 kW. two of the four engine for back-up. This results in 1,429kW x 2 x 80% x (365-15) d x 24 h/d = 19,206 MWh. The ex-ante estimation of 19,206 MWh is for the entire crediting period. The stated values for 2020 and 2027 are lower due to pro-rata adjustment as for these years not the full calendar year is applicable to the crediting period (start year and end year of CP). The 1,429 kW engines operate back-to-back with other 1,429kW engines and further engines are for back-up. Considering the data as per latest verification the assumption is considered reasonable and plausible. Besides, with provided name plate pictures. Therefore the valid applied is accepted.
	$EF_{CO2,y}$	0.5418 tCO2e/MWh for the Mindanao Grid	0.7983 tCO2e/MWh for the Mindanao Grid	https://www.doe.gov.ph/electric-power/2015-2017-national-grid-emission-factor-ngef
	These changes have been appropriately considered in the updated CPA-DD. Further, as per check of related webpage of Department of Energy of the Philippines this is the latest data available at time of validation. Besides, the data is correctly stated as per Department of Energy.			
Findings	☒	The respective requirements have widely been complied with; however; the following issues needed to be addressed in this context:		
		CAR 03, CAR 04, CAR 05		
Conclusion	☐	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.		
	☒	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 original baseline scenario of the project as per the registered CPA-DD is still valid for the 2nd CPA crediting period. Also as per provided information, the baseline for animal manure is anaerobic decay. Most of the data and parameters determined ex-ante are still valid except for the emission factor Wsite, $N_{p,y,}$ and $VS_{LT,y}$, $EF_{CO2,y}$,GWP of methane and annual elec. generation. The emission factor $EF_{CO2,y}$ was re-determined for the baseline emission calculation and the GWP for methane has been updated in accordance with IPCC or para. 66 of EB69 meeting report. The grid emission factor is correctly determined by applying weighing factors 0.25 for OM and 0.75 for BM as per latest related tool §86 (b): For Mindanao Grid: 0.25 x 0.7797 + 0.75 x 0.8045 = 0.7983 tCO_2e/MWh. Values for poultry have been additionally added as the updated PoA-DD and generic CPA now does not specify to piggery any longer but generally to livestock and animals. Hence, consideration of poultry is considered in line with the generic CPA-DD and related values			

	have been provided correctly as per IPCC and provided supporting documents. The applied values are therefore correct and determined in line with methodology and related tools.

D.5. Demonstration of eligibility of the CPAs

Means of validation	The DOE has assessed whether the coordinating/managing entity, in accordance with the relevant requirements in the "CDM project standard for programmes of activities": Updated the eligibility criteria for inclusion of CPAs in the latest CDM PoA submitted for renewal of crediting period of the PoA and if so whether the CPAs renewed under this report are in compliance with the updated eligibility criteria. The following sources of information have been used in this context: • /PoA-DD/ • /CPA-DD/ • /AMS-I.F/ • /AMS-III.D/ • /unfccc/	
	☒	DOE can confirm based on its assessment and document check that the eligibility criteria for inclusion of CPAs in the updated CDM PoA, including the conditions that the CPAs meet the requirement pertaining to the demonstration of additionality, are not changed comparing with the latest approved PoA-DD according to the relevant requirements in the "CDM project standard for programmes of activities" considering the use of latest version of methodology, methodological tools and/or applied standardized baseline, original and updated baseline, current national legislation and/or sectoral policies and circumstances, estimation of GHG emission reductions and validity of the monitoring plan.
	☒	As the elgibility criteria for then inclusion of the CPAs, including the conditions that the CPAs meet the requirement pertaining to the demonstration of additionality, have not been updated, the CPA is still in compliance with all related eligibility criteria as per registered PoA-DD.
	☒	As per check with latest PoA-DD submitted for renewal of crediting period of the PoA the eligibility criteria have been updated. Please refer to Appendix 5 w.r.t. the current list of eligibility criteria as well as related assessment for compliance with the same.
Findings	☐	The respective requirements have widely been complied with; however; the following issues needed to be addressed in this context:
		-
Conclusion	☒	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.
	☐	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 eligibility criteria for inclusion of CPAs in this CPA-DD are updated in line with the latest PoA-DD after renewal of the crediting period of the PoA. Besides editorial updates, the criteria have been updated to be fully consistent with the description of the applicability criteria as per related applied methodology versions. Further, no changes and updates have been conducted. Thus the latest approved CPA-DD has complied with the latest applicable versions of the methodologies and related PoA-DD and generic CPA-DD. No further changes to the eligibility criteria are required. It is noted that the applicability criteria as per AMS-III.D. v21.0 §5 and 6 and AMS-I.F. v3.0, §4 as no hydro, §9 and §10 as no combined heat and power generation and §11 as no biomass is used, are not provided in the PoA-DD as they are not applicable to the PoA and therefore also not considered for the CPA.	

D.6. Estimated emission reductions or net anthropogenic removals

Means of validation	For validation of the estimated GHG emission reductions the client has provided the validation team with the following documentation: - Updated CPA-DD/CPADD/ - XLS spreadsheet/XLS/.

Further, the validation team has downloaded from the UNFCCC website the applicable version of the CDM methodologies and all referenced methodological tools/unfccc/.

The ER calculation process has been duly checked. Further, it has been checked whether the fomulae have been correctly transferred to the updated CPA-DD for determination of ex-ante ER.

In the updated CPA-DD, the version of methodology AMS-III.D. is changed from 17 to 21 and AMS-I.F. from version 2 to 3, via checking the latest version, it is confirmed that no change to the ER calculation from version 17 to 21 or 2 to 3 besides the specification of determination of $N_{LT,y}$ and mass flow of methane in residual gas $F_{CH4,RG,m}$ to calculate PE_{flare} and determination of flare efficiency as per latest applicable methodological TOOL06.

Thus in the updated CPA-DD, there is no change to the formulae of estimated GHG emission reductions which will be used by this specific CPAs for ER calculation.

Based on verification of the related updated CPA-DD, it is confirmed that the calculation of ERs is done as per the applied methodologies and applied tools as well as with generic CPA-DD with follow steps listed below.

Ex ante emission reductions of this component project activity are calculated using the following formula:

$$PERy = MERy + GERy$$

Where :

MERy Emission reduction in year "y" (tCO_2-e) from methane recovery (as per AMS-III.D)

GERy Emission reduction in year "y" (tCO_2-e) from renewable electricity generation (as per AMS-I.F)

Ex ante emissions from methane recovery are calculated using the following formula:

$$MERy = MBEy - (MPEy + MLeakagey)$$

Where :

MERy	Emission reduction in year "y" (tCO_2e)
MBEy	Baseline emissions in year "y" (tCO_2e)
MPEy	Project emissions in year "y" (tCO_2e)
MLeakagey	Project leakage in year "y" (tCO_2e)

Based on AMS-III.D., baseline emissions (MBEy), project emissions (MPEy) and leakage (MLeakagey) are calculated as follows:

Baseline Emissions from methane recovery and destruction (MBEy)

Baseline emissions are calculated using the amount of the waste or raw material that would decay anaerobically in the absence of the project activity. The following formula was used:

$$MBEy = GWP_{CH4} \times D_{CH4} \times Uf_b \times \sum_{j,LT} MCF_j \times B_{0,LT} \times N_{LT,y} \times VS_{LT,y} \times MS\%_{Bl,j}$$

Where:

MBE_y	baseline emissions in year "y" (tCO2-e/yr)
GWP_{CH4}	Global Warming Potential (GWP) of CH4
D_{CH4}	CH4 density (0.00067 t/m^3 at room temperature (20 ºC) and 1 atm pressure).
LT	Index for all types of livestock
j	Index for animal waste management system
MCF_j	Annual methane conversion factor (MCF) for the baseline animal waste management system "j" in percentages (digester in project scenario).
$B_{0,LT}$	Maximum methane producing potential of the volatile solid generated for animal type "LT" (m^3 CH4/kg dm)
$N_{LT,y}$	Annual average number of animals of type "LT" in year "y" (numbers) calculated using the formula below.
$VS_{LT,y}$	Volatile solids for livestock "LT" entering the animal manure management system in year "y" (on a dry matter weight basis, kg

dm/animal/year)

$MS\%_{Bl,j}$	Fraction of manure handled in baseline animal manure management system "j"
Uf_b	Model correction factor to account for model uncertainties (0.94)

Annual average animal population ($N_{LT,y}$) for breeding and market pigs determined from actual pig census for 8 Sept - 31 December 2020, and projected (10% increase from 2020 average census) for 2021-2027 of Biotech Farms:

Breeding Swine					**Market Swine**	
Sow			Boar		Finisher	
Year	average population	average weight (kg)	average population	average weight (kg)	average population	average weight (kg)
2020	5,360	208	147	216	50,169	62
2021	5,896	208	162	216	55,186	62
2022	5,896	208	162	216	55,186	62
2023	5,896	208	162	216	55,186	62
2024	5,896	208	162	216	55,186	62
2025	5,896	208	162	216	55,186	62
2026	5,896	208	162	216	55,186	62
2027	5,896	208	162	216	55,186	62

Annual average animal population (NLT,y) for poultry determined from actual poultry census for 8 Sept - 31 December 2020, and projected (10% increase from 2020 average census) for 2021-2027 of Biotech Farms:

	Poultry	
Year	Average population	average weight (kg)
2020	906,667	1.80
2021	997,333	1.80
2022	997,333	1.80
2023	997,333	1.80
2024	997,333	1.80
2025	997,333	1.80
2026	997,333	1.80
2027	997,333	1.80

Calculation of VS: VS are calculated by adjusting default VS using site specific animal weights as follows:

$VS_{site,LT,y} = (W_{site} / W_{default}) \times VS_{default} \times nd_y$

Where:

$VS_{site,LT,y}$	Adjusted volatile solid excretion for livestock "LT" entering the animal manure management system in year "y" (on a dry matter weight basis, kg dm/animal/year)
W_{site}	Average site animal weight for defined population, in kg
$W_{default}$	Default average animal weight for defined population, in kg.
$VS_{default}$	Default value (IPCC) for the volatile solid excretion per day on a dry- matter basis for defined livestock population, in kg-dm/animal/day
nd_y	Number of days in year "y" where the treatment plant was operational

Parameter	**Wsite**	**Wdefault**	**VS default**	**ndy**	**Calculated value ($VS_{site,LT}$,y)**
$VS_{breed,y}$					

Sow	208	198	0.5	365	191.71
Boar	216	198	0.5	365	199.09
$VS_{market-,y}$	62	46	0.27	365	132.52

Parameter	Wsite	Wdefault	VS default	ndy	Calculated value ($VS_{site, LT,y}$)
Layer	1.80	1.8	0.02	365	7.29

Summary of Calculation of Annual Baseline Emissions: Summarized below are the constants and outcome of the calculation from the formula above for MBE_y.

Parameter	Value
GWP_{CH4}	25
D_{CH4}	0.00067
Uf_b	0.94
Swine	
MCF_j	0.8
Bo breed,y	0.48
Bo market,y	0.48
VS breed,y	
Sow	191.71
Boar	199.09
VS market,y	132.52
N breed,y	
For 2020	5,507
Sow	5,360
Boar	147
For 2021-2027	6,058
Sow	5,896
Boar	162
N market, y	
For 2020	50,169
For 2021-2027	55,186
MS%Bl,j	1.0
MBEy (swine)	
For 2020	**14,584 tCO_2-e/yr**
For 2021-2026	**51,055 tCO_2-e/yr**
For 2027	**34,969 tCO_2-e/yr**
Poultry	
MCFj	**0.02**
Bo	**0.24**
$VS_{default}$	**0.02**
VS_{LT}	**7.29**
N poultry	
For 2020	**906,667**
For 2021-2027	**997,333**
MS%Bl,j	**1.0**
MBEy (poultry)	
For 2020	**157 tCO_2-e/yr**
For 2021-2026	**543 tCO_2-e/yr**
For 2027	**372 tCO_2-e/yr**

Project Emissions from methane recovery and destruction (MPEy)

Project emissions are calculated using the following formula:

$MPE_y = PE_{PL,,y} + PE_{flare,y} + PE_{power,y}$

Where:

MPE_y	Project emissions in year "y" (tCO2e)
$PE_{PL,y}$	Emissions due to physical leakage of biogas in year "y" (tCO2e)
$PE_{flare,y}$	Emissions from flaring of the biogas stream in the year "y" (tCO2e)
$PE_{power,y}$	Emissions from the use of fossil fuel or electricity for the operation of the installed facilities in the year "y" (tCO2e)

Emissions due to physical leakage ($PE_{PL,y}$) are estimated as per AMS-III.D as 10% of: the maximum methane producing potential of the manure fed into the management systems implemented by the project activity. As the Biotech Farms system is not a sequential treatment system no adjustment (RVS) is necessary to account for sequential stages.

$PE_{PL,y} = 0.10 \times GWP_{CH4} \times D_{CH4} \times \sum_{j,LT} B_{0,LT} \times N_{LT,y} \times VS_{LT,y} \times MS\%_{BL,j}$

Refer to MBEy for the value of the parameters applied in $PE_{PL,y}$ equation. $PE_{PL,y}$ is calculated as 9,671 tCO2e/year on average for the crediting period.

Emissions due to flaring (PEflare,y) The Biotech Farms system will flare gas when the energy generator is not in use. The ex-ante project emissions are calculated using the calculated amount of gas that will be sent to the flare during downtime of the energy generator. Ex-post, these will be calculated using the methodological tool "Project emissions from flaring" through the following formula:

$PE_{flare} = \Sigma\ FCH_{4,RG,m} * (1 - FE_{,m}) * GWP_{CH4} / 1000$

Where:

$FCH_{4,RG,m}$	is the mass flow rate of methane in residual gas in minute, m
$FE_{,m}$	is the flare efficiency in minute m
GWP_{CH4}	is the GWP of methane according to IPCC.

Mass flow of methane in the residual gas in the minute m

$$FCH_{4\ RG,m} = FV_{RG,m} * fv_{CH4,RG,m} * \rho_{CH,4}$$

Where:

$FV_{RG,m}$	Volumetric flow rate of the residual gas in dry basis at normal (Nm^3) conditions in minute, m (also volumetric flow rate of gas going to the flare)
$fv_{CH4,RG,m}$	Volumetric fraction of methane in the residual gas on dry basis in min, m (this corresponds to w_{CH4}).
$\rho_{CH4,n}$	Density of methane at normal conditions (0.716 kg/m^3)

$PE_{flare,y}$ is calculated as 1,738 tCO2e/year on average of the crediting period based on an 80% ex-ante default value for flare efficiency and a flare use of 4% annually.

As per methodology AMS-III.D. (version 21 paragraph 6), "If recovered methane is used to power auxiliary equipment of the project it should be taken into account accordingly, using zero as its emission factor." Thus when the project activities include the generation of electricity using the recovered methane to power auxiliary equipment i.e. blowers of minimal consumption, electricity generation will be taken into account and zero will be used as its emission factor. The power is derived from the biogas system which emits no greenhouse gases relative to the baseline.

$PE_{power,y} = EC_{AE} * 0$

In the event that there is not enough gas, or for any other reason the energy generator is not operating, the project activity shall monitor the energy consumption from the grid ECPJ,y, and shall consider it as project activity emissions, where the emission factor will be that for the Philippine grid it is connected to. Where:

$PE_{power,y} = EC_{PJ,y} * EFy$

Emission for power use ($PE_{power,y}$) is conservatively estimated at 14 from the average yearly value reported of the first verification report for Biotech./VER/ The power is derived from the biogas system which emits no greenhouse gases relative to the baseline.

Total project emissions from methane recovery and destruction (MPEy)

Parameter	Value (average during CP)
$PE_{PL,,y}$	9,671
$PE_{flare,y}$	1,738
$PE_{power,y}$	0
MPE_y	**11,408 tCO2-e/yr**

Leakage from methane recovery and destruction (MLeakagey)

The Biotech CPA does not involve replacement of equipment and therefore leakage is zero.
There are no leakage emissions associated with storage of digestate as determined by following the relevant procedure in the methodological tool "Project and leakage emissions from anaerobic digesters".

The annual emission reduction from methane recovery is estimated as:

$MERy = MBEy - (MPEy + MLeakage_y)$

For 2020
$MERy = 14{,}741tCO_2\text{-}e/yr - (3{,}272tCO_2\text{-}e/yr + 0)$
$MERy = 11{,}468tCO_2\text{-}e/yr$

For 2021-2026
$MERy = 51{,}598tCO_2\text{-}e/yr - (11{,}456\ tCO_2\text{-}e/yr + 0)$
$MERy = 40{,}142\ tCO_2\text{-}e/yr$

For 2027
$MERy = 35{,}341tCO_2\text{-}e/yr - (7{,}846\ tCO_2\text{-}e/yr + 0)$
$MERy = 27{,}495\ tCO_2\text{-}e/yr$

***Ex ante* emissions from renewable electricity generation** are calculated using the following formula:

$GER_y = GBE_y - (GPE_y + GLeakage_y)$

Where:

GERy	Emission reduction in year "y" (tCO_2-e) from electricity generation
GBEy	Baseline emissions in year "y" (tCO_2-e) from renewable electricity generation
GPEy	Project emissions in year "y" (tCO_2-e) from renewable electricity generation
GLeakagey	Project leakage in year "y" (tCO_2-e) from renewable electricity generation

Baseline emissions (GBEy), project emissions (GPEy) and leakage (GLeakagey) from renewable electricity generation are to be calculated based on AMS-I.F. as shown below:

Baseline Emissions from electricity generation (GBEy)

Baseline emissions related to the use of the recovered methane for electricity generation that displaces electricity from a fossil fuel based electricity distribution system are equivalent to the amount of electricity (MWh/yr) produced by the project activity multiplied by the emission factor (tCO_2/MWh) of the relevant electrical grid.

$GBE_y = (EG_y - EG_{baseline}) \times EF_{CO2,y}$

Where:

GBEy	Baseline emissions in year y (tCO_2) from renewable electricity generation
EG_y	Electricity generated by the project in year y (MWh/yr)
$EG_{baseline}$	Baseline electricity supplied to the grid in case of modified or retrofit units (MWh/yr)
$EF_{CO2,y}$	Baseline emissions factor (tCO2e/MWh)

Electricity generated by the project (EGy) were estimated based on the rated capacity of 1,429 kW x 2 units. The generator set is assumed to run 24 hours a day, (365-n) days a year, where n=15 is the amount of days that the generator is expected to be on maintenance, for a total of 8,400 hours a year at an operating rate of 80%. The total annual amount of electricity displaced from the grid by the project activity is estimated as:

EG_y = 1.429 MW * 80% * 8,400 hours* 2 units
EG_y = 19,206 MWh / year

Baseline electricity generated ($EG_{baseline}$) is considered zero as the project does not involve any modification / retrofit or addition to an existing generating facility. This has been checked based on previous validation report and latest verification report of this CPA.

$EG_{baseline}$ = 0 MWh

Baseline emissions factor (EFy) are from the published National Grid Emission Factor by the Philippine Department of Energy using the combined margin (CM), consisting of the combination of operating margin (OM) and build margin (BM) according to the procedures prescribed in the 'Tool to calculate the emission factor for an electricity system'. The electricity system considered is the Mindanao grid.

DOE has checked the 2015-2017 National Grid Emission Factor as published by the Philippine Department of Energy[1]. Tables below shows the computed grid emission factor derived using the 2015-2017 power statistics. These are the latest available data at time of validation.

Table 1. Summary of the NEG for Mindanao Grid

a. Simple Operating Margin (OM) Emission Factor

Parameters	(t-CO_2/MWh)
2015-2017 Average $EF_{grid, OMsimple,y}$	0.7797

b. Build Margin (BM) Emission Factor

Parameters	(t-CO_2/MWh)
BM Emission Factor	0.8045

c. Combined Margin (CM) Emission Factor

Parameters	(t-CO_2/MWh)
2015-2017 $EF_{grid, CM,y}$ (Wind and solar)	0.67859
2015-2017 $EF_{grid, CM,y}$ (Other projects)	0.7921

[1] https://www.doe.gov.ph/electric-power/2015-2017-national-grid-emission-factor-ngef

EFy = 0.7797 x 0.25 + 0.8045 x 0.75 = 0.7983 tCO_2e/MWh

The total annual baseline emission to be considered in electricity generation is estimated as:

GBEy = (19,206 MWh - 0 MWh) * 0.7983 tCO2-e/MWh

GBEy = 15,332 tCO_2e / year

Project emission from electricity generation (GPEy)

As per methodology AMS-III.D. (version 21.0 paragraph 6), "If recovered methane is used to power auxiliary equipment of the project it should be taken into account accordingly, using zero as its emission factor." Thus when the project activities include the generation of electricity using the recovered methane to power auxiliary equipment i.e. blowers of minimal consumption, electricity generation will be taken into account and zero will be used as its emission factor.

$PE_{power,y} = EC_{AE} \times 0$

In the event that there is not enough gas, or for any other reason the energy generator is not operating, the project activity shall monitor the energy consumption from the grid ECPJ,y, and shall consider it as project activity emissions, where the emission factor will be that for the Philippine grid it is connected to. Where:

$PE_{power,y} = EC_{PJ,y} \times EF_y$

Leakage from electricity generation (GLeakagey)

As per AMS-I.F. version 3.0 paragraph 25,"General guidance on leakage in biomass project activities shall be followed to quantify leakages pertaining to the use of biomass residues". [not applicable] . There is no leakage to be considered as the energy generating equipment is not transferred equipment from another activity
The annual emission reduction by the generation of electricity from recovered methane that displaces fossil fuel based electricity from the grid is estimated as:

GERy = GBEy - (GPEy + GLeakagey)
For 2020

GER_y = 4,831 tCO_2-e - (0 + 0)
GER_y = 4,831 tCO_2-e / year

For 2021-2026

GERy = 15,332 tCO2-e - (0 + 0)
GERy = 15,332 tCO2-e / year

For 2027

GERy = 10,501 tCO2-e - (0 + 0)
GERy = 10,501 tCO2-e / year

The total annual emission reduction of the project activity is estimated as:
PERy = MERy + GERy

For 2020
PERy = 11,468 tCO_2-e/yr + 4,831 tCO2-e/year
PERy = 16,299 tCO_2-e/yr

For 2021-2026
PERy = 40,142 tCO_2-e/yr + 15,332 tCO2-e/year
PERy = 55,474 tCO_2-e/yr

For 2027
PERy = 27,495 tCO_2-e/yr + 10,501tCO2-e/year
PERy = 37,996 tCO_2-e/yr

	The estimated amount of GHG emission reductions of the project is **387,142 tCO_2e** during the second crediting period (7 years) from 08/09/2020 to 07/09/2027, resulting in estimated average annual emission reductions of **55,305 tCO_2e**. The ER calculation sheet has been duly checked. Further it has been checked whether the results have been correctly transferred to the updated PDD for determination of ex-ante ER. The validation team has further checked the updated PDD against the latest version of the applicable methodology incl. the referenced methodological tools for consistency. Special focus was laid on the changes against the previous crediting period.	
Findings	☐	The calculation of ERs is done as per the applied methodologies (AMS-III.D. ver 21.0 and AMS-I.F. ver 3.0). The calculation in the Excel spreadsheet and the corresponding calculation tables in the CPA-DD have been checked and no mistakes have been identified. The estimation of emission reductions for the 2nd crediting period is deemed plausible and conservative.
	☒	The respective requirements have widely been complied with; however; the following issues needed to be addressed in this context:
		CAR 03, CAR 04, CAR 05
Conclusion	☐	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.
	☒	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.
	All changes due to the upgraded methodologies and the re-assessment of the baseline have been considered appropriately and in line with the CDM-PoA-PS. The calculation in the Excel spreadsheet and the corresponding calculation tables in the CPA-DD have been checked and no mistakes have been identified. The estimation of emission reductions for the 2nd crediting period is deemed plausible and conservative.	

D.7. Validity of monitoring plan

Means of validation	The validation team has checked the monitoring plan of the updated CPA-DD against the required changes due to the update of the baseline and other methodological changes. Further, changes due to editorial updates of the applicable templates have been checked. The monitoring plan in the CPA-DD has been updated to comply with the latest applicable versions of the monitoring methodologies (AMS-III.D. ver 21.0 and AMS-I.F. ver 3.0). The basic changes from the current crediting period can be summarized as follows: ***Monitoring Parameters:***

$BG_{burnt,y}$	Biogas flared or combusted in year "y" (Nm^3)
$FV_{RG,m}$	Parameter related to project emissions from flaring of the residual gas stream in year y -Volumetric flow rate of the residual gas in dry basis at normal conditions in minute, m; also volumetric flow rate of gas going to the flare (Nm^3)
T	Temperature of the biogas (°C)
P	Pressure of the biogas (Pa)
FE	Flare efficiency in the year "y" (%)
$T_{EG,m}$	Temperature in the exhaust gas of the enclosed flare in minute *m* (°C)
$Flame_m$	Flame detection of flare in the minute *m* (Flame on or off)
$nd_{,y}$	The number of days that the animal manure management system was operational. (days)
$MS\%_{i,y}$	Fraction of manure handled in system i in project activity in year y (fraction)
$N_{p,y}$	Number of animal produced annually of type "LT" for the year *y*

	(Number)
$N_{da,y}$	Number of days animal is alive in the farm in the year "y" (days)
W_{site}	Average animal weight of the farm's livestock population. (kg)
Genetic source of the production operations livestock	Genetic source of the production operations livestock originating from an Annex I Party. (-)
FFR	Use of formulated feed rations. (-)
RVS	Relative reduction of volatile solids from the previous stage
EG_y	Total electricity generated from the recovered biogas in the year y (MWh)
EC_{AE}	Electricity consumed by the auxiliary equipment within the project activity during the year y (kWh)
$EC_{PJ,j,y}$	Quantity of electricity from the grid consumed by the project activity during the year (MWh)
EE_y	Energy conversion efficiency of the project equipment (%)

For the parameter W_{site} a sampling plan may be applied by the CPA implementer to obtain the value (average animal weight for defined population). The sampling design described below is in line with the requirements of the "Standard for sampling and surveys for CDM project activities and programme of activities":

- Target population: categories of pigs: breeding / market / sow / boar / finisher / nursery / suckling etc.
- Sampling method: stratified random sampling approach with a level of confidence and precision of 90/10. This method is applicable because population is homogeneous within each category of pigs
- Sample size: it will depend on the total number of heads per category in the farm during the monitoring period (parameter to be monitored as NLT)
    - Parameter of interest: average value of animal weight per type of animal (W_{site})
    - Target value: it will depend on the practice of the farm during the monitoring period
- Data to be collected: total number of heads per type of animal, animal weight per type and number of samples.

Besides, further elements of the monitoring plan have been established in line with the gerneic CPA-DD. As per CPA-DD a CPA operations plan is described which outlines the following:

Monitoring: To be monitored are those parameters described in the tables above which also detail the means of measurement and QA/QC procedures. These parameters were adapted to the situation of this CPA. In particular:

Type of flare or combustion system: The type of combustion system affects the default flare efficiency used as outlined below. Biotech will use a gas combustion engine(s) with an enclosed flare. Biotech will monitor and record the use and compliance with manufacturers specifications as described in the monitoring plan.

Use of sequential manure management systems: Biotech farm manure management system will not be sequential and therefore no special monitoring protocols for treatment stages are necessary.

Type of fuel used: The monitoring of the emissions from power will depend on the source of energy used in powering the system.

Use of Annex I country VS and Bo: Biotech will use VS and Bo values from Annex I countries and therefore the genetic source of the livestock will need to be monitored.

Quality Assurance and Quality Control: The proponent will have a quality assurance

and quality control plan in order to ensure that monitoring is done accurately and with properly calibrated instruments. The basic requirements are outlined in the tables in the monitoring plan section. In particular, scales, methane measurement devices, waste flow measurement devices, biogas flow meters, thermometers, pressure meters and electricity meters will be calibrated as per manufacturer specifications.

Data recording: Proper management processes and systems records will be required by the operator, as the auditors will request copies of such records to judge compliance with the required management systems. All data recording of the monitored data will include paper and/or electronic versions, backup systems and periodic checking for data entry mistakes.

Reporting: Monitoring data will be reported quarterly to LBP along with any major issues related to the monitoring system that may need attention. The estimation of emission reductions and reporting of the data for verification purposes will be done annually by LBP.

Calculation of emissions reductions: Based on the monitoring data the emission reductions will be calculated ex-post using the following approach:

$PER_y = MER_{y,\ ex\text{-}post} + GER_{y,\ ex\text{-}post}$

Where:

$MER_{y,\ ex\text{-}post}$	Emission reduction in year "y" (tCO2-e) from methane recovery (as per AMS-III.D)
$GER_{y,\ ex\text{-}post}$	Emission reduction in year "y" (tCO2-e) from renewable electricity generation (as per AMS-I.F)

The emission reductions achieved in any year from methane recovery are the lowest value of the following:

$MER_{y,ex\text{-}post} = \min [(MBE_{y,ex\text{-}post} - MPE_{y,ex\text{-}post}) , (MD_y)]$

Where:

$ER_{y,ex\text{-}post}$	Emission reductions achieved by the project activity based on monitored values for year "y" (tCO2 e)
$BE_{y,ex\text{-}post}$	Baseline emissions calculated using the formula found in Section B.4.3 using ex post monitored values of $N_{LT,y}$ and if applicable $VS_{LT,y}$
$PE_{y,ex\text{-}post}$	Project emissions calculated using the formula found in Section B.4.3 using ex post monitored values of $N_{LT,y}$, $MS\%_{i,y}$ and if applicable $VS_{LT,y}$
MD_y	Methane captured and destroyed or used gainfully by the project activity in year "y" (tCO2e)

$MD_y = BG_{burnt,y} * W_{CH4,y} * D_{CH4} * FE * GWP_{CH4}$

Where:

$BG_{burnt,y}$	Biogas flared or combusted in year "y" (m3).
$W_{CH4,y}$	Methane content in biogas in the year "y" (mass fraction)
FE	Flare efficiency in the year "y" (fraction) when biogas is flared

Methane content in biogas, W_{CH4}: As per AMS-III.D. version 21 there are three options to monitor/determine the fraction of methane in the biogas: a) should be measured with a continuous analyzer or alternatively, b) with periodical measurements at a 90/10 confidence/precision level or, alternatively c) a default value of 60% methane content can be used. For all CPAs under this PoA option c) will be adopted: a default value of 60% methane content

Flare efficiency will be determined using default values. PEflare,y will be calculated

using this default flare efficiency value.

Ex-post, these will be calculated using the Tool for "Project emissions from flaring"' through the following formula:

$PE_{flare} = \Sigma F_{CH4\ RG,m} * (1 - FE_{,m}) * GWP_{CH4} / 1000$

Where:

$F_{CH4\ RG,m}$ is the mass flow rate of methane in residual gas in minute m

$FE_{,m}$ is the flare efficiency in minute m

GWP_{CH4} is the GWP of methane according to IPCC.

$PE_{flare,y}$ is calculated using an ex-ante default value of 80% for flare efficiency.

Alternatively, if the CPA utilizes the recovered methane for power generation, MDy may be calculated as follows, based on the amount of monitored electricity generation, without monitoring methane flow and concentration:

$MD_y = EG_y \times 3600 / (NCV_{CH4} \times EE_y) \times D_{CH4} \times GWP_{CH4}$

Where:

EG_y Total electricity generated from the recovered biogas in year y (MWh)

3600 Conversion factor (1 MWh = 3600 MJ)

NCV_{CH4} NCV of methane (MJ/Nm3) use default value: 35.9 MJ/Nm3)

EEy Energy conversion efficiency of the project equipment, which is determined by adopting one of the following criteria:

- Specification provided by the equipment manufacture. The equipment shall be designed to utilize biogas as fuel, and efficiency specification is for this fuel. If the specification provides a range of efficiency values, the highest value of the range shall be used for the calculation;
- Default efficiency of 40% (more likely option to be used by the proposed CPA)

As per AMS-III.D version 21 § 33 "Project activities where a portion of the biogas is destroyed through flaring and the other portion is used for energy may consider applying the flare efficiency to the portion of the biogas used for energy, if separate measurements of the respective flows are not performed. When the amount of methane that is combusted for energy and that is flared is separately monitored, or when only the biogas flow to the flare is monitored and the biogas used for energy is calculated based on electricity generation, a destruction efficiency of 100% can be used for the amount that is combusted for energy".

In the case of § 33 wherein no separate flows are performed, and flare efficiency is applied on $BG_{burnt,y}$, $BG_{burnt,y} = FV_{RG,m}$ and corresponding PE_{flare} will be calculated.

Project emissions are estimated using the equations given in section B.4.3. of the PoA-DD.

The Physical leakage ($PE_{PL,y}$) calculation will be based on monitored parameters of $MS\%_{i,y}$, $N_{LT,y}$, $VS_{LT,y}$.

For $PE_{power,y}$ as per the methodology methane used to power auxiliary equipment of the project (ECAE) will be taken into account accordingly, using zero as its emission factor.

The emission reductions achieved in any year from renewable electricity generation are the following:

	$GBE_{y,ex\text{-}post} = (EG_{y,\ ex\text{-}post} - EG_{baseline}) * EF_{y,ex\text{-}ante}$ Where: $GBE_{y,\ ex\text{-}post}$ Baseline emissions based on monitored values for year "y" (tCO2) from renewable electricity generation $EG_{y,ex\text{-}post}$ Electricity generated based on monitored values and calculated using the formula found in Section B.4.3. for year "y" (MWh/yr) $EG_{baseline}$ Baseline electricity supplied to the grid in case of modified or retrofit units based on monitored values and calculated using the formula found in Section B.4.3 $EF_{y,ex\text{-}ante}$ Baseline emissions factor calculated using the formula found in Section B.4.3 (tCO2-e/MWh) ex-ante values applied throughout the crediting period In detail all parameters, ex-ante values and applicable formulae have been checked to determine the required changes for the next crediting period with provided supporting documents such as technical descriptions, farm layout including grid connection, weighing details, pictures of engine and flare and logbooks as well as previous verification report and related generic CPA-DD. The above stated and the monitoring plan as given in the updated CPA-DD is therefore in line with the provisions given in the related generic CPA-DD, PoA-DD as well as related applied methodologies and tools. Besides, based on that the validation team has assessed the feasibility of the required changes.	
Findings	☒	The validation team has duly assessed. All required changes due to the upgraded methodological requirements and the re-assessment of the monitoring plan. The validation team has concluded that - all necessary changes have been appropriately reflected in the updated CPA-DD, - the monitoring plan in the updated CPA-DD is in compliance with the applied monitoring methodology, - the monitoring arrangements described in the updated CPA-DD can be implemented and are feasible within the project design.
	☒	The respective requirements have widely been complied with; however; the following issues needed to be addressed in this context:
		CAR 06 and CAR 07
Conclusion	☐	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.
	☒	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.
	All necessary changes have been appropriately reflected in the updated CPA-DD, the monitoring plan in the updated CPA-DD is in compliance with the applied monitoring methodology, and the monitoring arrangements described in the updated CPA-DD can be implemented and are feasible within the project design.	

D.8. Crediting period

Means of validation	The CPA has been included and registered on 08/09/2013 under the UNFCCC registration No. 5979-P1-0002-CP1. The PPs have chosen a 7 year crediting period which the first crediting period started from 08/09/2013 and has expired on 07/09/2020. Hence, it is confirmed the project´s 2nd crediting period may start immediately after the expriation of the 1st one, given that all other applicable criteria are met.	
Findings	☒	As the respective requirements are met, the project´s 2nd crediting period may start immediately after the expriation of the 1st one, given that all other applicable criteria are met. It is further confirmed that the start date (08/06/2020) and the length of the

		crediting period (7 years) are in compliance with the project standard.
	☐	The respective requirements have widely been complied with; however; the following issues needed to be addressed in this context:
		- N/A
Conclusion	☒	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.
	☐	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.
	It is thus confirmed that the start date and the length of the 2nd crediting period (7 years) are in compliance with the project standard.	

D.9. CME and project participants

Means of validation	The validation team has checked the revised CPA-DD/PDD/ and the UNFCCC website/unfccc/ esp. the latest version of the Modalities of Communication/MOC/ to check whether the listed CME and project participants have duly been authorized and if communication requirements are met. The information on the CPA implementer has been checked with the latest business licence and other permits./BP//ECC//DP/	
Findings	☒	The names of the CME and project participants as listed in the revised CPA-DD are consistent with those listed on the dedicated UNFCCC project website as well as in the last version of the modalities of commumication/MOC/.
	☐	The respective requirements have widely been complied with; however; the following issues needed to be addressed in this context:
		- N/A
Conclusion	☒	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.
	☐	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 names of the CME and project participants are consistent with those listed on the dedicated UNFCCC project website as well as in the last version of the modalities of communication/MOC/.	

D.10. Post-registration changes

Type of post-registration changes (PRCs)	Confirmation (Y/N)	Validation report for PRCs	
		Version	Completion date
Temporary deviations from the registered monitoring plan, applied methodologies, standardized baselines or other methodological regulatory documents[2]	N	-	-
Corrections	N	-	-
Changes to the start date of the crediting period of component project activity	N	-	-
Inclusion of monitoring plan	N	-	-
Permanent changes to the registered monitoring plan, or permanent deviation of monitoring from applied methodologies, standardized baselines, or other methodological regulatory documents	N	-	-
Changes to the project design	N	-	-
Changes specific to afforestation and reforestation activities	N	-	-
Others (please specify)	N	-	-

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

SECTION E. Internal quality control

Before the submission of the final VAL RCP report a technical review of the whole validation procedure was carried out. The technical reviewers are competent GHG auditors being appointed for the scope this project falls under. The technical reviewers are not considered to be part of the validation team and thus not involved in the decision making process up to the technical review.
As a result of the technical review process the validation opinion and the topic specific assessments as prepared by the validation team leader may have been confirmed or revised. Furthermore reporting improvements might have been achieved.
After the successful technical review an overall (esp. procedural) assessment of the complete validation has been carried out by a senior assessor located in the accredited premises of TÜV NORD.
After this step the submission for requesting the renewal of programme of activities period is conducted.

SECTION F. Validation opinion

The Landbank of the Philippines has commissioned the TÜV NORD JI/CDM Certification Program to re-validate the component project activity 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" for the purpose of renewal of the CPA crediting period. The validation is based on the relevant UNFCCC requirements.

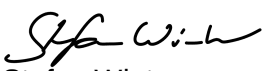
The review of the updated CPA design documentation and additional documents related to baseline and monitoring methodology; the subsequent background investigation, follow-up interviews have provided TÜV NORD JI/CDM Certification Program with sufficient evidence to validate the fulfilment of the stated criteria applicable for RCP.

In detail the conclusions can be summarized as follows:

(i) The updated CPA-DD has been completed using the valid version of the applicable CPA-DD form, following the instructions therein;
(ii) The information transferred to the later valid version of the CPA-DD form is materially the same as that in the registered CPA -DD;
(iii) The methodologies were applied in accordance with the applicable requirements in the “CDM project standard for programmes of activities”;
(iv) The baseline, the estimated GHG emission reductions or net anthropogenic GHG removals, and the monitoring plan in the updated CPA -DD comply with the applicable requirements in the “CDM project standard for programmes of activities”, and the valid versions of the methodologies and, where applicable, the standardized baselines that are applicable to the CPA;
(v) The next duration of the CPA commences on the day immediately after the expiration of the current duration;
(vi) The names of the coordinating/managing entity and the project participants in the updated CPA -DD are consistent with the names of the coordinating/managing entity and the project participants in the latest version of the MoC statement;
(vii) Updated the eligibility criteria for inclusion of CPAs as per latest PoA-DD after renewal of PoA crediting period;
(viii) The current baseline of the CPA is in line with the national and/or sectoral policies and circumstances at the time of requesting renewal of CPA period.
(ix) The monitoring plan is transparent and adequate and in line with the applicable monitoring methodology (AMS-III.D. version 21.0 and AMS-I.F. version 03.0).

The conclusions of this report show, that the CPA, as it is described in the component project activity documentation, is in line with all CDM criteria applicable for the renewal of the CPA.

Essen, 06/09/2021

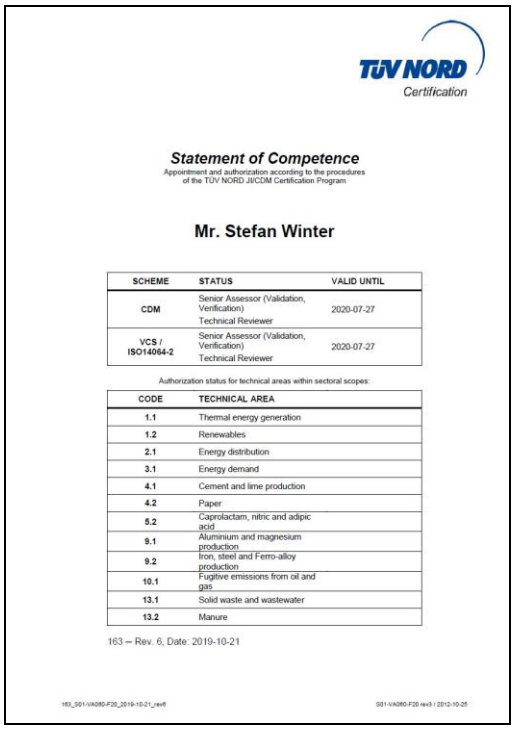


Stefan Winter

Appendix 1. Abbreviations

Abbreviations	Full texts
BAU	Business as usual
BM	Build Margin
CA	Corrective Action / Clarification Action
CAR	Corrective Action Request
CDM	Clean Development Mechanism
CER	Certified Emission Reduction
CFSF	Carbon Finance Support Facility
CL	Clarification Request
CM	Combined Margin
CME	Coordinating / Managing Entity
CO_2	Carbon dioxide
CO_2e	Carbon dioxide equivalent
COP/MOP	Conference of Parties / Meeting of Parties
CP	Certification Program
CRECOM	Land Bank of the Philippines Credit Commission Board
CPA	Component Project Activity
CPA-DD	Component Project Activity Design Document
DENR	Department of Environmental and Natural Resources
DNA	Designated National Authority
EIA	Environmental Impact Assessment
ECC	Environmental Compliance Certificate
EMB	Environmental Management Bureau
FAR	Forward Action Request
GE	General Electric
GHG	Greenhouse gas(es)
GT	Glossary of Terms
IPCC	Intergovernmental Panel on Climate Change
LoA	Letter of Approval
LBP	Land Bank of the Philippines
MOA	Memorandum of agreement
MoC	Modalities of Communication
MP	Monitoring Plan
OM	Operating Margin
ONS	National Operator of the Electric System
OSV	On-site visit
PA	Project Activity
PoA	Programme of Activities
PoA-DD	CDM Programme of Activities Design Document
PP	Project Participant(s)
QA/QC	Quality assurance/Quality control
UNFCCC	United Nations Framework Convention on Climate Change

Appendix 2. Competence of team members and technical reviewers



TÜV NORD Certification

Statement of Competence

Appointment and authorization according to the procedures of the TÜV NORD JI/CDM Certification Program

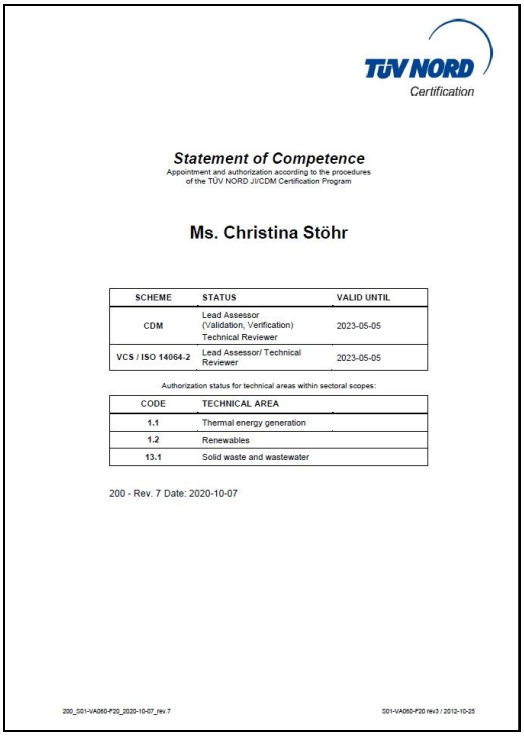
Mr. Stefan Winter

SCHEME	STATUS	VALID UNTIL
CDM	Senior Assessor (Validation, Verification) Technical Reviewer	2020-07-27
VCS / ISO14064-2	Senior Assessor (Validation, Verification) Technical Reviewer	2020-07-27

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. 6, Date: 2019-10-21



TÜV NORD Certification

Statement of Competence

Appointment and authorization according to the procedures of the TÜV NORD JI/CDM Certification Program

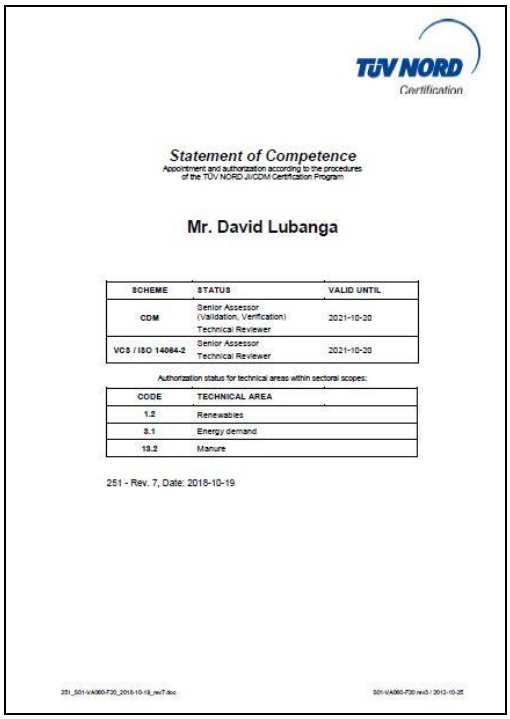
Ms. Christina Stöhr

SCHEME	STATUS	VALID UNTIL
CDM	Lead Assessor (Validation, Verification) Technical Reviewer	2023-05-05
VCS / ISO 14064-2	Lead Assessor/ Technical Reviewer	2023-05-05

Authorization status for technical areas within sectoral scopes:

CODE	TECHNICAL AREA
1.1	Thermal energy generation
1.2	Renewables
13.1	Solid waste and wastewater

200 - Rev. 7 Date: 2020-10-07



TÜV NORD Certification

Statement of Competence

Appointment and authorization according to the procedures of the TÜV NORD JI/CDM 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

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
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/COPMOP/index.html	Other
7.	**/METH/**	UNFCCC	AMS-III.D. ver. 21.0: Methane recovery in animal manure management systems AMS-I.F. ver. 3.0: 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	https://cdm.unfccc.int/Reference/Guidclarif/index.html http://cdm.unfccc.int/Reference/Stan	Other

No.	Reference	Author	Title	References to the document	Provider
			Programme Activities – version 9.0	dards/index.html	
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-Agricultral-Credit.pdf http://www.acpc.gov.ph/wp-content/uploads/2018/11/2017-Bank-Lending-to-Agriculture.pdf	Other
14.	**/EL/**	-	Environmental Legislation: - 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 Genetic source document on poultry	-	CME

No.	Reference	Author	Title	References to the document	Provider
			dated January 2021 and Sept 2020		
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. Comliance 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 Discharge Permit DP-R12-20-0547 dated 25/11/2020	-	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 Business Permit for Biotech Farms for Poultry No: 20-458 dated 13/02/2020 Business Permit for Biotech Farms for Biogas No: 21-358 dated 22/01/2021 Business Permit for Biotech Farms for Piggery No: 21-420 dated 22/01/2021 Business Permit for Biotech Farms for Poultry No: 21-421 dated 22/01/2021	-	CME
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	https://cdm.unfccc.int/PRCContainer/DB/prcp555384061/view	CME UNFCCC

No.	Reference	Author	Title	References to the document	Provider
			version 07 – 11/06/2020 The following version of the CPA-DD are prepared w.r.t. PRC5979-0003: 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 The following version is prepared after rejection of PRC5979-0003 to request renewal of the CPA: version 14 – 23/07/2021 verison 14 – 02/09/2021		
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 CPA2 CER Calculation rev 2 dated 21/07/2021 CPA2 CER Calculation rev 2.3 dated 02/09/2021	-	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" version 18 – 10/02/2020	https://cdm.unfccc.int/ProgrammeOfActivities/poa_db/06GHFO2NC9MS3YWA7PDTQR8LKZVU14/view	UNFCCC
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 Monthly pig census spreadsheets by Biotech for the weeks 37-53 of 2020 Monthly poultry census spreadsheets by Biotech for the weeks 37-53 of 2020 Hog Inventory by Biotech for the months Sept to December 2020	-	CME
26.	**/INCL/**	DNV	CPA inclusion report for CPA titled	https://cdm.unfccc	UNFCCC

No.	Reference	Author	Title	References to the document	Provider
			"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	.int/filestorage/b/n/PNRUZTIA42B8L6O7CSY1EJVQ5XGF3M.pdf/CPA-5979-VCR-04-09.pdf?t=Yzl8cWdqcXE0fDDdC_z45eqDr9WZ0zvCdOMp	
27.	**/TD/**	PP	Project technical description: - 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/poaiss287465719/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 For GWP methane (page 214 of document as per link)	www.ipcc-nggip.iges.or.jp https://www.ipcc.ch/site/assets/uploads/2018/02/ar4-wg1-chapter2-1.pdf	Other
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 Departme	- Philippine Department of Energy - Link to data for the national grid	https://www.doe.gov.ph/electric-	Other

No.	Reference	Author	Title	References to the document	Provider
		nt of Energy	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	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	
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	-	CME
39.	**/INVE/**	CPA Implementer	Inventory for different pig types, ages and phases for year 2019 December 2019 Sales and Culling Report	-	CME
40.	**/COMC/**	Sobono Energy	Certificates of Completion for Biotech Digester System providing main technical data for - Digester 1 to 8, 15/08/2015 - Retention tank 1 and 2, both 15/08/2015 - 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	-	CME
41.	**/CR/**	LBP	Landbank of the Philippines Call Report on inspection of the CPA implementer Biotech Farms dated 28-30/05/2019	-	CME
42.	**/PSP/**	CPA implementer	Pictures of the poultry stockpile including dimensions	-	CME

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

Table 3. CL from this validation

CL ID	01	Section no.	B.4.1	Date: 27/08/2021
Description of CL				
Section B.4.1 of the CPA2-DD states as following in the beginning of the section: "The emissions reductions were estimated ex-ante using the equations and procedures outlined in the PoA-DD and detailed in section below. These parameters were optimized to the situation of the Biotech CPA. In particular: *Use of sequential manure management systems*: Biotech Farms' manure management system will not be sequential and therefore no special calculation (using RVS) for treatment stages is necessary. *Emissions from power*: The calculation of the emissions from power will depend on the source of energy used in powering the system. In this case, all power used in the project activity will come from the biogas fuel produced by the project activity and therefore it is not necessary to calculate electricity use or fuel use by the project activity, or use the associated emissions factors to do so. *Use of Annex I country VS and Bo:* Biotech Farms will use VS and Bo values from Annex I countries and therefore the genetic source of the livestock will need to be monitored. *Adjustment of VS for site specific animal weight:* The default VS will be adjusted for site specific animal weight. *2015-2017 National Grid Emission Factor Operating Margin Methodology:* The national grid emission factor published by the Philippine Department of Energy found in link https://www.doe.gov.ph/electric-power/2015-2017-national-grid-emission-factor-ngef for the Mindanao electricity grid is used." Please clarify why this is stated as the gCPA-DD does not provide a related section or paragraph. Further, please clarify why this is given at the beginning of the section and not at the related paragraph in the CPA2-DD section B.4.1. e.g. why the reference to the related grid emission factor of the connected grid is given at the beginning of the section and as per gCPA-DD under sub-section "Baseline Emissions from electricity generation (GBEy)" or use of Anne I country VS and Bo which is also given in section B.4.2 under related parameter table, etc.				
Project participant response				**Date:** 01/09/2021
Section B.4.1 has been revised to follow the generic CPA-DD for CP2. The section was tracked from an earlier version for CP1 and now complies with the generic CPA-DD for CP2				
Documentation provided by project participant				
Revised CPA-DD				
DOE assessment				**Date:** 02/09/2021
Ok. The same has been removed from CPA2-DD and the section is now consistent with the generic CPA-DD. Finding closed.				

CL ID	02	Section no.	Several	Date: 31/08/2021
Description of CL				
It is recognized that the CPA-DD provided for renewal of the CP considers also GHG emission reductions from poultry. Please clarify that this is in line with the related registered CPA.				
Project participant response				**Date:** 01/09/2021
GHG emission reductions from poultry for the renewal of the CP is considered since the registered PoA-DD and the gCPA-DD allows all "livestock" including poultry. The CPA-DD was updated in line with PS-PoA version 2 paragraph 299.				
Documentation provided by project participant				
Revised CPA-DD				
DOE assessment				**Date:** 02/09/2021

OK. Clarification has been provided why poultry has been considered. As per latest registered generic CPA-DD and PoA-DD version 18 there is no specification to animal types such as piggery but it refers generic to "livestock" which includes all kinds and types of animals. Hence, accepted. Finding closed.

Table 4. CAR from this validation

CAR ID	01	**Section no.**		**Date:** 27/08/2021
Description of CAR				
Following issues w.r.t. consistency of the CPA-DD with the generic CPA-DD have been identified: 1. Section A.1 of CPA-DD: The description provided in the CPA2-DD is not fully consistent with section H.3 of the generic CPA-DD. 2. B.1: The description is not 100% consistent with the generic CPA-DD e.g. first paragraph refers additionally to related EB meetings (EB91 and EB81) when methodologies have been released. However, this is not given in generic CPA-DD. 3. B.2: The DD refers to "Emissions from Electricity Consumption from the Grid" whereas he generic CPA-DD to "Emissions from Electricity". Further, the DD refers also to N2O Emissions from Emissions from Elec consumption whereas the gCPA does not but gCPA-DD also states "Consumption from the Grid" to which the CPA2-DD does not refer. Besides, Column "Included" and "Justification/Explanation" for "onsite fossil elec. or fuel use due to the project activity" refers to both "excluded/included" as well as "(negligible/significant)" however, as per gCPA the related applicable shall be chosen and stated. Finally, w.r.t. sources and gases from AMS-I.F under "Emissions from Elec consumption from the grid" the CPA2-DD refers to GHG of CO2, CH4 and N2O whereas the gCPA-DD only refers to CO2. 4. B.3: Section is not consistent with related gCPA-DD section e.g. baseline scenario as per AMS-I.F. is missing and descriptions are not consistent.			
Project participant response				**Date:** 31/08/2021
Following issues w.r.t. consistency of the CPA-DD with the generic CPA-DD have been corrected: 1. Section A.1 of CPA-DD: The description provided in the CPA2-DD is now fully consistent with section H.3 of the generic CPA-DD. 2. B.1: The description is now 100% consistent with the generic CPA-DD e.g. first paragraph related EB meetings (EB91 and EB81) when methodologies have been released have been deleted. 3. B.2: The DD was revised to be consistent to the gCPA-DD, except for "Emissions from Electricity" and "Consumption from the Grid" which was corrected as a typographical error that should read "Emissions from Electricity Consumption from the Grid" and not two separate items. 4. B.3: Section is revised to be consistent with related gCPA-DD section e.g. baseline scenario as per AMS-I.F. is added with the applicable description.				
Documentation provided by project participant				
Revised CPA-DD				
DOE assessment				**Date:** 02/09/2021
1. Ok. CPA2-DD has been updated accordingly and is now in line with gCPA-DD. 2. Ok. The related additional references have been deleted. 3. Ok. The CPA2-DD has been corrected in line with related methodology. 4. Ok. The related missing and applicable descriptions as per gCPA-DD have now been provided in the CPA-DD. Finding closed.				

CAR ID	02	**Section no.**	B.3	**Date:** 30/08/2021
Description of CAR				
1. Please provide any evidence w.r.t. baseline for poultry stated in section B.3 "[…] Biotech Farms used to store the fresh chicken dung (piled up at least around 1.7 meters height) in an area […]".				
Project participant response				**Date:** 01/09/2021
The picture of the baseline for the chicken manure shown in section B.3 of the CPA-DD as well as additional support documents showing the area and its dimensions are provided.				
Documentation provided by project participant				
1. Biotech Poultry Baseline (photos + description)				
DOE assessment				**Date:** 02/09/2021
1. Ok. The picture provided in the DD shows a stockpile of chicken manure. From the picture, it is reasonable and plausible that the height of the stockpile is more than 1 meter. Besides, further pictures are provided which substantiate that the poultry stockpile is higher than 1.5m. Finding closed.				

CAR ID	03	Section no.	B.4.2	Date: 27/08/2021

Description of CAR

The following has been identified in section B.4.2 of CPA2-DD:

1. Wsite:
   a. the description of the parameter is inconsistent with gCPA-DD. “Average site animal weight for defined population” versus “Average site animal weight for defined population pigs (market and breeding),poultry”
   b. The source of data is inconsistent, gCPA-DD also refers to “The weight will be monthly monitored with the scale installed at the farm by project owner.” Whereas the CPA2-DD does not.
   c. Choice of data is inconsistent: gCPA states
2. Wdefault:
   a. the description of the parameter is inconsistent with gCPA-DD. “Default animal weight for defined population” versus “Default animal weight for defined population pigs(market and breeding), poultry”
   b. Under source of data CPA2-DD refers only to IPCC 2006 whereas the gCPA refers to “IPCC 2006 Vol 4 Chapter 10”. CPA2 does not refer to volume and chapter. Please clarify.
   c. Choice of data: CPA2-DD refers to North American breeds for swine however it is not clear based on which choice the value for poultry has been chosen.
3. Nda,y: Clarification is requested w.r.t. number of days market swine is alive in the farm of 365 days. Based on technical experience this is usually around 120-180 days. Similar for poultry which is given with 365 days which is not reasonable.
4. Bo,LT and VSLT,y: Choice of data for poultry is unclear. Under choice of data only reference to piggery is made.
5. FE: Inconsistency between CPA2-DD and gCPA-DD w.r.t. description under source of data. CPA2-DD refers to “Based on defaults provided in AMS-III.D and “Projectemissions from flaring” whereas gCPA-DD states “Based on defaults defined in tool for “Project emissions from flaring ””. Pls clarify and unify.
6. SPECflare: Choice of data refers to “[Choose as relevant]”. Please clarify if the stated is final or if any related choices from (a) to (c) have to made and revise accordingly if applicable.
7. MS%Bl,j: under Choice of data it is stated that “All manure was treated in the open lagoons.” This is inconsistent to the baseline description as given under section B.3 for poultry. Pls clarify and revise accordingly.
8. Ndy: Choice of data in CPA2-DD lacks description as given in gCPA-DD “Used in calculating $VS_{LT,y}$”. Related revision requested.

Project participant response **Date:** 01/09/2021

The following has been revised in section B.4.2 of CPA2-DD:

1. Wsite:

a. the description of the parameter is now consistent with gCPA-DD and revised to “Average site animal weight for defined population” from “Average site animal weight for defined population pigs (market and breeding),poultry”

b. The source of data is now consistent with gCPA-DD with the addition of “The weight will be monthly monitored with the scale installed at the farm by project owner.”

c. Choice of data is now consistent with gCPA.

2. Wdefault:

a. the description of the parameter is now consistent with gCPA-DD and revised to “Default animal weight for defined population” from “Default animal weight for defined population pigs(market and breeding), poultry”

b. Under source of data CPA2-DD revised to include “IPCC 2006 Vol 4 Chapter 10”.

c. Choice of data: CPA2-DD refers to North American breeds for swine and ‘developed’ for poultry has been chosen since there is no available value for “developing” and actual weight is close to weight default for “layer-developed”.

3. Nda,y: Number of days market swine is alive in the farm is revised to 151 days. Layer (poultry) is confirmed correct at 365 days.

4. Bo,LT and VSLT,y: Choice of data for poultry is now clarified. Under choice of data reference to poultry is added.

5. FE: Revised source of data to be consistent with the gCPA-DD which states “Based on defaults defined in tool for “Project emissions from flaring ”.

6. SPECflare: Choice of data refers to “[Choose as relevant]”. Please clarify if the stated is final or if any related choices from (a) to (c) have to made and revise accordingly if applicable.

7. MS%Bl,j: under Choice of data it is revised to “All manure was treated in the open anaerobic baseline systems.”

8. Ndy: Choice of data revised to “Used in calculating VSLT,y” as per gCPA-DD

Documentation provided by project participant	
Revised CPA-DD	
DOE assessment	**Date:** 02/09/2021

1. Wsite:
    a. Ok. Corrected in line with gCPA-DD
    b. Ok. Corrected in line with gCPA-DD
    c. Ok. Corrected in line with gCPA-DD
2. Wdefault:
    a. Ok. Corrected in line with gCPA-DD
    b. Ok. Included now as per gCPA-DD
    c. Ok. Related clarification and revision conducted in CPA2-DD.
3. Nda,y: Ok. Number of days alive of market swine has been revised to 152 which is reasonable and plausible as per onsite inspection, technical knowledge and experience in the sector and as per other CPAs visited.
4. Bo,LT and VSLT,y: Ok. Related specification is now provided. “Developing” values are considered reasonable and plausible as the value is similar to the values of the farm as based on document check. E.g. the default value for animal weight for layer is 1.8 and the average value of the farm is 1.80. Hence also reasonable fo Bo and VS.
5. FE: Ok. Ok. Corrected accordingly.
6. SPECflare: Ok. “[Choose as relevant]” has been removed.
7. MS%Bl,j: Ok. Corrected accordingly in line with gCPA-DD.
8. Ndy: Ok. Corrected as per gCPA-DD

Finding closed.

CAR ID	04	Section no.	B.4.3	Date: 30/08/2021

Description of CAR

Following issues w.r.t. ER calculation section B.4.3 have been identified:

1. Clarification is requested w.r.t. the following description provided in CPA2-DD under project emissions as this is not considered in related gCPA-DD:

“Optionally, the relevant procedure in the methodological tool “Project and leakage emissions from anaerobic digesters” may be followed. In such a case, PEPL,y is equivalent to PECH4,y in the tool”.

Thus, Equation (4) of the methodological tool “Project and leakage emissions from anaerobic digesters” may be followed. In such a case, PEPL,y is equivalent to PECH4,y in the tool.
The emissions are calculated using a default emission factor ($EFCH4,default$), as follows:

$PECH4,y = QCH4,y \times EFCH4,default \times GWPCH4$
Where:
$PECH4,y$ = Project emissions of methane from the anaerobic digester in year y (t CO2e)
$QCH4,y$ = Quantity of methane produced in the anaerobic digester in year y (t CH4)
$EFCH4,default$ = Default emission factor for the fraction of CH4 produced that leaks from the anaerobic digester (fraction); 0.1”

2. Further, clarification w.r.t. the following statement in CPA2-DD is required as the gCPA-DD only refers to the following for PEpower: “Emission for power use (PEpower,y) is zero because the farm is expected to use the power from recovered biogas for the operation of the facility.”:

“As per methodology AMS-III.D. (version 21 paragraph 6), “If recovered methane is used to power auxiliary equipment of the project it should be taken into account accordingly, using zero as its emission factor.” Thus, when the project activities include the generation of electricity using the recovered methane to power auxiliary equipment i.e. blowers of minimal consumption, electricity generation will be taken into account and zero will be used as its emission factor. The power is derived from the biogas system which emits no greenhouse gases relative to the baseline.

PEpower,y = ECAE * 0

In the event that there is not enough gas, or for any other reason the energy generator is not operating, the project activity shall monitor the energy consumption from the grid ECPJ,y, and shall consider it as project activity emissions, where the emission factor will be that for the Philippine grid it is connected to. Where:
PEpower,y = ECPJ,y * EFCO2y

Emission for power use (PEpower,y) is conservatively estimated at 1,592 tCO2-e/yr from 2020 actual values reported for Biotech."

3. Besides, CPA2-DD states that "As per paragraph 26 AMS-III.D. version 21, no leakage calculation is required; value of MLeakagey is taken to be zero." Whereas gCPA-DD states "The _____ CPA [does/not] involve replacement of equipment and therefore leakage is ___." Pls clarify the inconsistency.
4. Under baseline emission factor CPA2 refers to "$EF_{CO2,y}$" whereas the gCPA states "EFy". Pls clarify the inconsistency.

Project participant response	**Date:** 02/09/2021

Following issues w.r.t. ER calculation section B.4.3 have been revised as follows:

1. The following description provided in CPA2-DD under project emissions is deleted to be consistent with the gCPA-DD:

"Optionally, the relevant procedure in the methodological tool "Project and leakage emissions from anaerobic digesters" may be followed. In such a case, PEPL,y is equivalent to PECH4,y in the tool".

Thus, Equation (4) of the methodological tool "Project and leakage emissions from anaerobic digesters" may be followed. In such a case, PEPL,y is equivalent to PECH4,y in the tool.
The emissions are calculated using a default emission factor ($EFCH4,default$), as follows:

$PECH4,y = QCH4,y \times EFCH4,default \times GWPCH4$
Where:
$PECH4,y$ = Project emissions of methane from the anaerobic digester in year y (t CO2e)
$QCH4,y$ = Quantity of methane produced in the anaerobic digester in year y (t CH4)
$EFCH4,default$ = Default emission factor for the fraction of CH4 produced that leaks from the anaerobic digester (fraction); 0.1"

2. The following description provided in CPA2-DD for PEpower is deleted to be consistent with the gCPA-DD.

"As per methodology AMS-III.D. (version 21 paragraph 6), "If recovered methane is used to power auxiliary equipment of the project it should be taken into account accordingly, using zero as its emission factor." Thus, when the project activities include the generation of electricity using the recovered methane to power auxiliary equipment i.e. blowers of minimal consumption, electricity generation will be taken into account and zero will be used as its emission factor. The power is derived from the biogas system which emits no greenhouse gases relative to the baseline.

PEpower,y = ECAE * 0

In the event that there is not enough gas, or for any other reason the energy generator is not operating, the project activity shall monitor the energy consumption from the grid ECPJ,y, and shall consider it as project activity emissions, where the emission factor will be that for the Philippine grid it is connected to. Where:
PEpower,y = ECPJ,y * EFCO2y

Emission for power use (PEpower,y) is conservatively estimated at 1,592 tCO2-e/yr from 2020 actual values reported for Biotech."

It now states "Emission for power use (PEpower,y) is zero because the farm is expected to use the power from recovered biogas for the operation of the facility

3. CPA2-DD is revised with the deletion of "As per paragraph 26 AMS-III.D. version 21, no leakage calculation is required; value of MLeakagey is taken to be zero." It now states "The Biotech CPA does not involve replacement of equipment and therefore leakage is zero" and is now consistent with the gCPA-DD.
4. Under baseline emission factor CPA2 "EFCO2,y" is revised to "EFy".

Documentation provided by project participant
Revised CPA-DD, Revised ER spreadsheet

DOE assessment	**Date:** 02/09/2021

1. Ok. Related description has been deleted as not given in gCPA-DD.
2. Ok. Related description has been deleted as not given in gCPA-DD.
3. Ok. Related description has been revised and is now in line with the generic CPA-DD.
4. Ok. CPA-DD is corrected in compliance with gCPA-DD.

Finding closed.

CAR ID	05	**Section no.**	B.4.4	**Date:** 30/08/82021
Description of CAR				
The value provided in table in B.4.4. for year 2020 of 17,521 is inconsistent with the value provided in section B.4.3 of 17,522. Pls clarify and unify through and within the documents.				
Project participant response				**Date:** 02/09/2021
The calculation has been updated to 16,299 for 2020 and the values in section B.4.3 are now consistent with the value in B.4.4				
Documentation provided by project participant				
Revised CPA-DD, Revised ER spreadsheet				
DOE assessment				**Date:** 02/09/2021
OK. The values provided in revised CPA-DD are now consistent between the sections. Finding closed.				

CAR ID	06	**Section no.**	B.5.1	**Date:** 30/08/2021
Description of CAR				
Following issues w.r.t. section B. of CPA2-DD have been identified: 1. BGburnt,y: a. Pls clarify why under measurement method CPA2-DD does not refer to “The methane content measurement shall be carried out close to a location in the system where a biogas flow measurement takes place, and on the same basis (wet or dry)If default value for methane content is used, this will be reported on dry basis” as given in gCPA-DD. b. Besides, clarify the inconsistency in description given under monitoring frequency between CPA2-DD and gCPA-DD. 2. FE: a. Value applied is given as 0.9 applied for ex-ante. Please clarify if this is 0.9% as the related value is given with % or if the efficiency is 90 and hence 90%. b. Besides, flare efficiency under section B.4.2 is given with 80% and therefore pls clarify the application of 90% stated in section B.5.1. 3. ndy: The description under monitoring frequency is inconsistent between CPA2-DD and gCPA-DD. Pls clarify and unify. 4. $MS\%_{i,y}$: Pls clarify how the following given in gCPA-DD is reflected in CPA2 as two different manure types are considered at Biotech Farms, „ If animal manure is treated in different treatment systems manure weight delivered to each system shall be directly measured or alternatively manure volume can be measured together with the density determined from representative sample (90/10 precision). The quantity of animal manure from different farms and different animal types shall be recorded separately for cross-check. Recording of the baseline animal manure management system where the animal manure would have been treated anaerobically is also required.” 5. Np,y: Please clarify why no reference is made to poultry but only to pig census under this parameter. Besides, monitoring frequency is inconsistent with gCPA-DD. 6. Please clarify why for genetic source no reference is given for poultry. 7. Pls clarify why parameter RVS is not given in CPA2-DD but provided in gCPA-DD. 8. EGy: The description under monitoring frequency is inconsistent between CPA2-DD and gCPA-DD. Pls clarify and unify. 9. ECPJ,j,y: a. Under measurement method it is only stated “Measured”. Pls clarify. b. The description under monitoring frequency is inconsistent between CPA2-DD and gCPA-DD. Pls clarify and unify.				
Project participant response				**Date:** 02/09/2021
Following issues w.r.t. section B. of CPA2-DD have been revised: 1. BGburnt,y: a. Measurement methods and procedures was revised to add “The methane content measurement shall be carried out close to a location in the system where a biogas flow measurement takes place, and on the same basis (wet or dry)If default value for methane content is used, this will be reported				

on dry basis" as given in gCPA-DD.
b. CPA2-DD description given under monitoring frequency was revised in line with the gCPA-DD.

2. FE:
a. Value applied is revised to 80%, noting the units and the type of enclosed flare (low height enclosed flare is installed).
b. flare efficiency given under section B.5.1 is made consistent with the application of 80% stated in section B.4.2.
3. ndy: The description under monitoring frequency is revised to be consistent between CPA2- DD and gCPA-DD.
4. MS%i,y : This was revised in the CPA2-DD. There are two different manure types are considered at Biotech Farms, but in the project activity all animal manure is treated in one treatment system, so the requirements for different treatment systems will not apply.
5. Np,y: Revised Measurement methods and procedures, Monitoring frequency, values applied in CPA2-DD and it is now consistent with gCPA-DD.
6. The table on genetic source is revised to be in line with the gCPA-DD.
7. The parameter RVS is not applicable and thus was not given in CPA2-DD. However, this is added in revised CPA2-DD to be in line with the gCPA-DD.
8. EGy: The description under monitoring frequency is now consistent between revised CPA2-DD and gCPA-DD.
9. ECPJ,j,y:
a. Under measurement method it is only stated "Measured" was a typographical error and has been revised to be in line with gCPA-DD.
b. The description under monitoring frequency is now consistent between revised CPA2- DD and gCPA-DD.

Documentation provided by project participant

1. Revised CPA-DD
2. Poultry Genetic Source Proof (Sept 2020)
3. Poultry Genetic Source Proof (Jan 2021)

DOE assessment | **Date:** 02/09/2021

1. BGburnt,y:
a. Ok. Related description under measurement method is now consistent with gCPA-DD.
b. Ok. Corrected and now consistent with gCPA-DD.
2. FE:
a. Ok. The value has been corrected to 80 which reflects 80%.
b. Ok. Value has been revised to be in line with other section within the CPA-DD.
3. ndy: Ok. CPA-DD has been corrected accordingly.
4. MS%i,y : Ok. As this refers to the situation under the project scenario, the initial provided description was correct.
5. Np,y: Ok. Related corrects have been conducted and CPA-DD is now consistent with gCPA-DD.
6. Genetic source descriptions have been revised to "livestock" which covers all types of animals. Hence ok.
7. Ok. Included now in line with gCPA-DD.
8. EGy: Ok. CPA-DD updated accordingly.
9. ECPJ,j,y:
a. Ok. Related sentence as per gCPA-DD is now provided.
b. Ok. Related revised has been conducted.

Finding closed.

CAR ID	07	**Section no.**	B.5.3	**Date:** 30/08/2021

Description of CAR

Please clarify why following is provided in CPA2-DD but not given in gCPA-DD:
"Project emissions are estimated using the equations given in section B.4.3. of the CPA-DD using ex-post values of monitored parameters.

The emission reductions achieved in any year from renewable electricity generation are the following:
$GBE_{y,ex\text{-}post} = (EG_{y,\ ex\text{-}post} - EG_{baseline}) * EF_{CO2,y,ex\text{-}ante}$

Where:
$GBE_{y,\ ex\text{-}post}$ Baseline emissions based on monitored values for year "y" (tCO_2) from renewable

electricity generation $EG_{y,ex\text{-}post}$ Electricity generated based on monitored values and calculated using the formula found in Section. B.4.3 for year "y" (MWh/yr) $EG_{baseline}$ Baseline electricity supplied to the grid in case of modified or retrofit units based on monitored values and calculated using the formula found in Section B.4.3 $EF_{CO2,y,ex\text{-}ante}$ Baseline emissions factor calculated using the value found in Section B.4.3. (tCO2-e/MWh) *ex-ante* values applied throughout the crediting period"
Project participant response **Date:** 01/09/2021
The following is deleted in revised CPA2-DD to be consistent with the gCPA-DD: "Project emissions are estimated using the equations given in section B.4.3. of the CPA-DD using ex-post values of monitored parameters. The emission reductions achieved in any year from renewable electricity generation are the following: GBEy,ex-post = (EGy, ex-post - EGbaseline) * EFCO2,y,ex-ante Where: GBEy, ex-post Baseline emissions based on monitored values for year "y" (tCO2) from renewable electricity generation EGy,ex-post Electricity generated based on monitored values and calculated using the formula found in Section. B.4.3 for year "y" (MWh/yr) EGbaseline Baseline electricity supplied to the grid in case of modified or retrofit units based on monitored values and calculated using the formula found in Section B.4.3 EFCO2,y,ex-ante Baseline emissions factor calculated using the value found in Section B.4.3. (tCO2-e/MWh) ex-ante values applied throughout the crediting period"
Documentation provided by project participant
Revised CPA-DD
DOE assessment **Date:** 02/09/2021
Ok. Related description has been deleted and the section is now in line with gCPA-DD. Finding closed.

CAR ID	08	**Section no.**		**Date:** 31/08/2021
Description of CAR				
Please provide the documents from onsite inspection by CME to the CPA implementer Biotech Farms dated 26/05/2019				
Project participant response				**Date:** 02/09/2021
The date was a typographical error and should be 28-30/05/2019 as provided in the report for the onsite inspection. The LBP(CME) report is provided.				
Documentation provided by project participant				
1. Call Report for Biotech Farms - CDM Training and Site Visit (May 28-30, 2019)				
DOE assessment				**Date:** 02/09/2021
Ok. Related call report as well as latest mayor permits, wastewater permit, document on genetic source of poultry and additional pictures of the poultry storage have been provided with details on the dimensions. Finding closed.				

Table 5. FAR from this validation

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

Appendix 5. Eligibility Criteria Compliance

Table A-5-1: Assessment on CPA Compliance with Eligibility Criteria specified in the registered PoA-DD (PoA-PS, §299)

☐	Eligibility Criteria have not been changed or updated since initial inclusion of the CPAs
☒	Eligibility criteria have been updated as per below with related assessment.

CME Demonstration			DOE Assessment			
Nr.	**Eligibility Criteria**	**Justification**	**EC changed/ updated [Y/N]**	**Appro priate and suffi-cient**	**Evide nce used**	**Explanation of final result**
1	As per PoA Guidelines, CPA is not a component of another CDM programme, has not been registered as a project activity of another CDM project, is undergoing validation within another CDM project, nor is a debundled component of a large-scale project activity.	LBP CFSF Reply Form, with confirmation statement by the farm owner, indicating that the CPA is not a component of another CDM programme, has not been registered as a project activity of another CDM project, is undergoing validation within another CDM project, nor is a debundled component of a large scale project activity. LOI & confirmation statement is as per PoA Guidelines	N	☒	/unfcc c/ /INCL/ /VER/	No update or changes to this eligibility criterion. As no changes occurred the initial assessment as per CPA inclusion report is still valid. Further, DOE checked UNFCCC webpage and could not identify that this CPA is also a component of another PoA and registered as a single CDM project activity.
2	Livestock farms from livestock populations managed under confined conditions.	Livestock farms from livestock populations managed under confined conditions Documented evidence from Biotech site visit dated 26/05/2019 by LBP staff as per AMS-III.D. para. 3.	N	☒	/BP/ /VER/ /TD/ /COM C/	No update or changes to this eligibility criterion. As no changes occurred the initial assessment as per CPA inclusion report is still valid. Besides, DOE checked related document such as business licences, certificate of completion of digester project, project technical documents and verification report as well as inclusion report . Therefore, EC is still valid and CPA is still in compliance.
3	Livestock farms where manure or the streams	Livestock farms where manure or the streams obtained after treatment is	N	☒	/DP/ /VER/	No update or changes to this eligibility criterion. As no changes occurred the initial assessment as

CME Demonstration			DOE Assessment			
Nr.	**Eligibility Criteria**	**Justification**	**EC changed/ updated [Y/N]**	**Appro priate and suffi-cient**	**Evide nce used**	**Explanation of final result**
	obtained after treatment is not discharged into natural water resources (e.g. rivers and estuaries).	not discharged into natural water resources (e.g. rivers and estuaries). Documented evidence from Biotech farms as per AMS-III.D, para 3.			/ECC/	per CPA inclusion report is still valid. Besides, DOE checked related discharge permit from 2015 and latest application for 2020 discharge permit. Therefore, EC is still valid and CPA is still in compliance.
4	Annual average temperature of baseline site where anaerobic manure treatment facility is located is higher than 5°C	The Philippines has a mean annual temperature over 5°C. The mean annual temperature for the country is 26.6°C and Baguio is the coldest place in the country and has a mean annual temperature of 18.3°C. http://bagong.pagasa.dost.gov.ph/information/climate-philippines	N	☒	/VER/ /INCL/	No change was conducted to this eligibility criterion. However, the related link http://bagong.pagasa.dost.gov.ph/information/climate-philippines has been checked and therefore it can be confirmed that the mean annual temperature is above 5°C with the coldest place in the country having a mmean annual temperature of 18.3°C. Further, this has been crosschecked with the CPA incusion report as well as latest verification report. Therefore, EC is still valid and CPA is still in compliance.
5	For anaerobic treatment systems in the baseline, the retention time of manure waste must be greater than 1 month.	For anaerobic treatment systems in the baseline, the retention time of manure waste must be greater than 1 month. Documented evidence on site visit along with information provided by CPA implementer: Dimension of existing lagoon/s and water consumption and/or As per para 3. AMS-III.D	N	☒	/TD/ /VER/ /INCL/ /PSP/	No update or changes to this eligibility criterion. As no changes occurred the initial assessment as per CPA inclusion report is still valid. However, poultry is included. Poultry manure is stock piled in a storage more than 1.5m in height as per pictures provided. Besides, DOE checked related document such as business licences, certificate of completion of digester project, project technical documents and verification report as well as inclusion report Therefore, EC is still valid and CPA is still in compliance.
6	For anaerobic lagoons in the baseline the depth is at least 1 meter.	For anaerobic lagoons in the baseline the depth is at least 1 meter. Depth of anaerobic lagoon is 3 m. as described in section B.3. As per para 3. AMS-III.D	N	☒	/TD/ /VER/ /INCL/	No update or changes to this eligibility criterion. As no changes occurred the initial assessment as per CPA inclusion report is still valid. Besides, DOE checked related document such as business licences, certificate of completion of

CME Demonstration			DOE Assessment			
Nr.	**Eligibility Criteria**	**Justification**	**EC changed/ updated [Y/N]**	**Appro priate and suffi-cient**	**Evide nce used**	**Explanation of final result**
						digester project, project technical documents and verification report as well as inclusion report. Therefore, EC is still valid and CPA is still in compliance.
7	The baseline system of waste management is an open anaerobic system with no methane recovery and destruction by flaring, combustion or gainful use.	The baseline system of waste management is an open anaerobic system with no methane recovery and destruction by flaring, combustion or gainful use. As per para 3. AMS-III.D., farm had an open anaerobic system with no methane recovery and destruction by flaring, combustion or gainful use in the baseline	N	☒	/VER/ /INCL/ /PSP/	No update or changes to this eligibility criterion. As no changes occurred the initial assessment as per CPA inclusion report is still valid. Besides, DOE checked CPA inclusion report and verification report. For piggery these are open lagoons and for poultry this is a stockpile as evidenced via pictures with dimensions. Therefore, EC is still valid and CPA is still in compliance.
8	Connection to an electricity distribution system that is supplied by at least one fossil fuel generating unit.	Connection to an electricity distribution system that is supplied by at least one fossil fuel generating unit. As per para 2. AMS-I.F. v3, CPA is connected to an electricity distribution system that is supplied by at least one fossil fuel generating unit, records are provided.	N	☒	/VER/ /INCL/ /TD/	No update or changes to this eligibility criterion. As no changes occurred the initial assessment as per CPA inclusion report is still valid. Besides, DOE checked CPA inclusion report and verification report. Besides, CPA implementer provided an electricity bill demonstrating that it is connected to the local grid. Therefore, EC is still valid and CPA is still in compliance.
9	The project objective is the replacement of existing open lagoons and anaerobic ponds in livestock farms for anaerobic digesters with combustion equipment to destroy methane by utilizing either open or standardized enclosed stainless steel flares, sized to handle the generated biogas design volume to ensure high	Replacement of existing open lagoons and anaerobic ponds in livestock farms for anaerobic digesters with combustion equipment to destroy methane by utilizing either open or standardized enclosed stainless steel flares, sized to handle the generated biogas design volume to ensure high combustion efficiency, and/or use of the recovered methane for electricity generation with gas engines.	N	☒	/VER/ /INCL/ /TD/ /OP/ /PSP/	No update or changes to this eligibility criterion. As no changes occurred the initial assessment as per CPA inclusion report is still valid. Besides, DOE checked CPA inclusion report and verification report. Besides, meeting report on quarterly inspection by LBP to the CPA conducted 28-30 May 2019 as well as related provided pictures as well as project layout and engine contract and operation records as well as pictures of the flare and flare operation records. Therefore, EC is still valid and CPA is still in compliance.

CME Demonstration			DOE Assessment			
Nr.	**Eligibility Criteria**	**Justification**	**EC changed/ updated [Y/N]**	**Appro priate and suffi-cient**	**Evide nce used**	**Explanation of final result**
	combustion efficiency, and/or use of the recovered methane for electricity generation with gas engines	As per para 2. AMS-III.D., CPA provided project design documents during registration.				
10	The sludge is handled aerobically, and final application is made in proper conditions (i.e.,not resulting in methane emissions).	The sludge is handled aerobically, and final application is made in proper conditions (i.e.,not resulting in methane emissions). As per AMS-III.D., para 4. Applicability condition, this is documented in farm records	N	☒	/VER/ /INCL/	No update or changes to this eligibility criterion. As no changes occurred the initial assessment as per CPA inclusion report is still valid. Besides, DOE checked CPA inclusion report and verification report. Therefore, EC is still valid and CPA is still in compliance.
11	Technical measures are used (e.g. flared, combusted) to ensure that all biogas produced by the digester is utilized and combusted.	Technical measures are used (e.g. flared, combusted) to ensure that all biogas produced by the digester is utilized and combusted. As per AMS-III.D., para 4, this is documented in farm records.	N	☒	/VER/ /INCL/ /TD/ /OP/	No update or changes to this eligibility criterion. As no changes occurred the initial assessment as per CPA inclusion report is still valid. Besides, DOE checked CPA inclusion report and verification report. Besides, meeting report on quarterly inspection by LBP to the CPA conducted 28-30 May 2019 as well as related provided pictures as well as project layout and engine contract and operation records as well as pictures of the flare and flare operation records. Therefore, EC is still valid and CPA is still in compliance.
12	The storage time of the manure after removal from the animal barns, including transportation, should not exceed 45 days before being fed into the anaerobic digester. If the project proponent can demonstrate that the dry matter content of the manure when removed from the animal barns is larger than 20%, this time	The storage time of the manure after removal from the animal barns, including transportation, should not exceed 45 days before being fed into the anaerobic digester. As per AMS-III.D., para 4. Documented evidence from Biotech farms.	Y	☒	/VER/ /INCL/ /TD/ /OP/	This eligibility criterion has been updated editorially to be consistent with the applicability condition in the related methodology, the requirement that storage time is not allowed to be longer than 45 days is still given. Besides, DOE checked CPA inclusion report and verification report. Besides, meeting report on quarterly inspection by LBP to the CPA conducted 28-30 May 2019 as well as related provided pictures as well as project layout and engine contract and operation records as well as pictures of the flare and flare operation records.

CME Demonstration			DOE Assessment			
Nr.	**Eligibility Criteria**	**Justification**	**EC changed/ updated [Y/N]**	**Appro priate and suffi-cient**	**Evide nce used**	**Explanation of final result**
	constraint will not apply					Therefore, EC is still valid and CPA is still in compliance.
13	New facilities (Greenfield projects) and project activities involving capacity additions compared to the baseline scenario are only eligible if they comply with the related and relevant requirements in the General Guidelines to SSC CDM methodologies	New facilities (Greenfield projects) and project activities involving capacity additions compared to the baseline scenario are only eligible if they comply with the related and relevant requirements in the General Guidelines to SSC CDM methodologies. As per AMS-III.D., para 7. Farm records are available	N	☒	/BP/ /INCL/ /VER/ /TD/	No update or changes to this eligibility criterion. As no changes occurred the initial assessment as per CPA inclusion report is still valid. Besides, as per provided business licnence this is no greenfield project and as per engine contracts, verification and inclusion report as well as project layout, the project activity is also no capacity addition project. Therefore, EC is still valid and CPA is still in compliance.
14	The requirements concerning demonstration of the remaining lifetime of the replaced equipment shall be met as described in the General Guidelines to SSC CDM methodologies.	The requirements concerning demonstration of the remaining lifetime of the replaced equipment shall be met as described in the General Guidelines to SSC CDM methodologies. As per AMS-III.D., para 8.	N	☒	/BP/ /INCL/ /VER/ /TD/	No update or changes to this eligibility criterion. As no changes occurred the initial assessment as per CPA inclusion report is still valid. Besides, as per provided business licence this is no greenfield project and as per engine contracts, verification and inclusion report as well as project layout, the project activity is also no capacity addition project. Therefore, this criterion is actually not applicable. Therefore, EC is still valid and CPA is still in compliance.
15	Measures are limited to those that result in aggregate emission reductions of less than or equal to 60 kt CO_2 equivalent annually from all Type III components of the project activity.	Measures are limited to those that result in aggregate emission reductions of less than or equal to 60 kt CO_2 equivalent annually from all Type III components of the project activity to adhere to the methodology SSC threshold. As per AMS-III.D., para 9; ER spreadsheet calculation are provided.	Y	☒	/XLS/ /VER/ /TD/ /INCL/	This eligibility criterion has been updated editorially to be consistent with the criteria in the related methodology, the threshold of 60 ktCO_2e is still given. As per provided updated ex-ante ER estimation spreadsheet for 2nd crediting period, related verification report, the total amount is far below the threshold. Besides, as per verification report the emissions verified so far did not come near anywhere to 60 ktCO_2e. The emissions from type III only are in average 39,974 tCO2e during the 2nd CP and in max 40,142 tCO2e. as an increase

CME Demonstration			DOE Assessment			
Nr.	**Eligibility Criteria**	**Justification**	**EC changed/ updated [Y/N]**	**Appro priate and suffi-cient**	**Evide nce used**	**Explanation of final result**
						would mean an increase in pig or poultry this requires revised major, ECC and discharge permits. Besides, poultry only contributes to about 7.3% to the ER result of type III (2,923/40,142 x 100%). Hence increase by another 20ktCO2e by poultry would require an unplausible increase in poultry. To reach the threshold by incrrasing market swine the number would have to increase from e.g. for year 2021 from 55,186 to 85,141, an increase by 54.3%. Therefore it is still highly unlikely that the threshold will bee exceeded. Therefore, EC is still valid and CPA is still in compliance.
16	Renewable electricity generation from the recovered methane emissions with a maximum output capacity of 15 MW.	Renewable electricity generation from the recovered methane emissions with a maximum output capacity of 15 MW. As per AMS-I.F. v3 para 16, aggregate capacity of the installed gensets is less than 15 MW.	N	☒	/VER/ /INCL/ /TD/ /OP/	No update or changes to this eligibility criterion. As no changes occurred the initial assessment as per CPA inclusion report is still valid. Besides, DOE checked CPA inclusion report and verification report. Further the meeting report on quarterly inspection by LBP to the CPA conducted 28-30 May 2019 as well as related provided pictures as well as project layout and engine contract and operation records as well as pictures of the flare and flare operation records. Based on that the total installed capacity and available and considering all the six engines of 1,950 kW the threshold of 15 MW is by far not reached. Therefore, EC is still valid and CPA is still in compliance.
17	The maximum capacity of the renewable energy component (in cases where it is a combination of renewable and non-renewable) is 15	Maximum capacity of the renewable energy component is 15 MW in line with the small-scale threshold of AMS-I.F. As per AMS-I.F. v3 para 8	N	☒	/VER/ /INCL/ /TD/ /OP/	No update or changes to this eligibility criterion. As no changes occurred the initial assessment as per CPA inclusion report is still valid. Besides, DOE checked CPA inclusion report and verification report. Further the meeting report on quarterly inspection by LBP to the CPA conducted

CME Demonstration			DOE Assessment			
Nr.	**Eligibility Criteria**	**Justification**	**EC changed/ updated [Y/N]**	**Appro priate and suffi-cient**	**Evide nce used**	**Explanation of final result**
	MW					28-30 May 2019 as well as related provided pictures as well as project layout and engine contract and operation records. Based on that the total installed capacity and available and considering all the engines is 8.834 MW the threshold of 15 MW is by far not reached. Therefore, EC is still valid and CPA is still in compliance.
18	Installation of additional generation units utilizing the recovered methane emissions at an existing renewable energy facility provided that the added capacity of the project should be lower than 15 MW and is physically distinct[3] from the existing units.	Installation of additional generation units utilizing the recovered methane emissions at an existing renewable energy facility provided that the added capacity of the project should be lower than or equal to 15 MW and is physically distinct. As per AMS-I.F. v3 para 6, farm documents are available	N	☒	/VER/ /INCL/ /TD/ /OP/	No update or changes to this eligibility criterion. As no changes occurred the initial assessment as per CPA inclusion report is still valid. Besides, DOE checked CPA inclusion report and verification report. Further the meeting report on quarterly inspection by LBP to the CPA conducted 28-30 May 2019 as well as related provided pictures as well as project layout and engine contract and operation records as well as pictures of the flare and flare operation records. Based on that the total installed capacity and available and considering all the engines is 8.834 MW the threshold of 15 MW is by far not reached. Therefore, EC is still valid and CPA is still in compliance.
19	Retrofitting or modification of an existing electricity generation facility to utilize the recovered methane emissions as fuel with the total output of the modified or retrofitted generating unit not exceeding 15 MW	Retrofitting or modification of an existing electricity generation facility to utilize the recovered methane emissions as fuel with the total output of the modified or retrofitted generating unit not exceeding 15 MW	N	☒	/VER/ /INCL/ /TD/ /OP/	No update or changes to this eligibility criterion. Further, as there is no retrofitting of equipment this EC is not applicable. DOE checked CPA inclusion report and verification report. Further the meeting report on quarterly inspection by LBP to the CPA conducted 28-30 May 2019 as well as related provided pictures as well as project layout and engine contract and operation records as well as pictures of the flare

[3] Physically distinct units are those that are capable of generating electricity without the operation of existing units and that do not directly affect the mechanical, thermal or electrical characteristics of the existing facility.

CME Demonstration			DOE Assessment			
Nr.	**Eligibility Criteria**	**Justification**	**EC changed/ updated [Y/N]**	**Appro priate and suffi-cient**	**Evide nce used**	**Explanation of final result**
						and flare operation records. Based on that the total installed capacity and available and considering all the engines is 8.834 MW the threshold of 15 MW is by far not reached. Therefore, EC is still valid and CPA is still in compliance.
20	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: 1- Project technology involves the installation of a biogas collection and flare/use system 2- Project needs to be financed with future carbon revenues, used as securities to repay the loan.	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. As per "General guidelines for SSC CDM methodologies", farm records, letter are available.	N	☒	/VER/ /INCL/ /TD/ /OP/	No update or changes to this eligibility criterion. Further, as there is no retrofitting of equipment this EC is not applicable. DOE checked CPA inclusion report and verification report. Further the meeting report on quarterly inspection by LBP to the CPA conducted 28-30 May 2019 as well as related provided pictures as well as project layout and engine contract and operation records as well as pictures of the flare and flare operation records. Based on that the total installed capacity and available and considering all the engines is 8.834 the threshold of 15 MW is by far not reached. Based on that it is ensured that CPA involved installation of biogas collection and destruction equipment. Point 2 is already assessed during CPA inclusion. Therefore, EC is still valid and CPA is still in compliance.
21	The farm is compliant with the applicable Philippine environmental rules and regulations	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	N	☒	/DP/ /VER/ /INCL/ /ECC/ /TD/	No update or changes to this eligibility criterion. DOE checked CPA inclusion report. Further the meeting report on quarterly inspection by LBP to the CPA conducted 28-30 May 2019 as well as related provided pictures besides, ECC and Discharge Permits have been checked.

CME Demonstration			DOE Assessment			
Nr.	**Eligibility Criteria**	**Justification**	**EC changed/ updated [Y/N]**	**Appro priate and suffi-cient**	**Evide nce used**	**Explanation of final result**
		requirements for construction, operation and maintenance than continued operation of the open system. As per "General guidelines for SSC CDM methodologies", farm records, letter are available.				Therefore, EC is still valid and CPA is still in compliance.
22	After all the above conditions have been met and documented, the project proponent must have signed an MOA with LBP to be in a CPA in this program.	Project proponent must have signed an MOA with LBP to be in a CPA in this program. Environmental compliance evidenced by ECC	N	☒	/INCL/	Not update or change to initial eligibility criterion. As per validation report of the CPA for inclusion a related MOA with LBP has been provided and checked by DOE validated the inclusion. Therefore as no changes applied this criterion is still fulfilled.
23	Emission reductions claimed under the CPA are those derived only from gas use for electricity generation and/or flared. No credits shall be claimed for any other uses of the gas.	Emission reductions claimed under the CPA are those derived only from gas use for electricity generation and/or flared. Farm records are available.	N	☒	/XLS/ /CEN SUS/	Not update or change to initial eligibility criterion. Related ex-ante ER calculation has been updated w.r.t. actual pig and poultry census of year 2019 and 2020. The related values have been checked with related supporting documents such as farm records as well as previous validation and ER calculation as well as related verification documents. Accoridngly, it is still confirmed that emission reductions are only claimed for gas use for electricity generation and/or flaring. Criterion fulfilled and still correct.
24	The project must have undertaken an environmental analysis as outlined in section E and a stakeholder consultation as outlined in Section F.	Conduct of Stakeholder's consultation. Invitation, list of attendees and Stakeholder comments for Biotech farms are available	N	☒	/INCL/	Not updated or changed from initial eligibility criterion. Related stakeholder consultation has been taken place initially prior to inclusion of the CPA as per related CPA-DD as well as CPA inclusion report. Criterion fulfilled and still correct.
25	Geographical boundaries of CPAs should be consistent with the geographical boundary of the PoA	As per CDM project standard for programmes of activities (version 2), paragraph 124. Geographical location of farm/project;	N	☒	/INCL/ /VER/ /ECC/ /DP/	Not updated or changed from the initial eligibility criterion. Based on check of CPA inclusion report as well as latest verification report the project boundary is

CME Demonstration			DOE Assessment			
Nr.	**Eligibility Criteria**	**Justification**	**EC changed/ updated [Y/N]**	**Appro priate and suffi-cient**	**Evide nce used**	**Explanation of final result**
		documented evidence from site visit by LBP staff.				consistent with related lates PoA-DD and generic CPA-DD as recently submitted for renewal of CP of the corresponding PoA. Besides, substantiated via ECC and discharge permit. Criterion fulfilled and still correct.
26	Double counting of GHG emission reductions or net anthropogenic GHG removals, should be avoided through measures such as unique identifications of product and end-user locations (e.g. programme logo)	As per CDM project standard for programmes of activities (version 2), paragraph 124. Documented as per project design	N	☒	/INCL/ /VER/ /BP/ /ECC/ /DP/	Not updated or changed from the initial eligibility criterion. This is checked vide CPA inclusion report and verification report. Besides, farms can easily be identified via GPS location as well as Busines licence has been checked along with ECC and discharge permit. Criterion fulfilled and still correct.
27	Start date of CPA should be checked through documentary evidence	As per CDM project standard for programmes of activities (version 2), paragraph 124. Documented evidence provided by CPA implementer.	N	☒	/INCL/ /unfcc c/	Not updated or changed from the initial eligibility criterion. As the CPA has already started this has been checked via UNFCCC project webpage as well as CPA inclusion report. Criterion fulfilled and still correct.
28	Compliance with the applicability of the applied methodologies, the applied standardized baselines and the other applied methodological regulatory documents	As per CDM project standard for programmes of activities (version 2), paragraph 124. Documented as per project design	N	☒	/INCL/ /VER/ /ECC/ /BP/ /TD/ /MET H/ /TOO L/	Not updated or changed from the initial eligibility criterion. All related applicability criteria are included in the list of eligibility crtieria and where applicable have been updated in accordance with latest versions. Please refer to assessment to corresponding eligibility criteria. Besides, crosschecked with inclusion report, verification report, related supporting documents and methodologies and tools Criterion fulfilled and still correct.
29	If the generic CPA is small-scale or microscale, conditions for the de-bundling check based on the “Methodological tool:	As per CDM project standard for programmes of activities (version 2), paragraph 124. Documented as per project design	N	☒	/INCL/ /VER/ /BP/ /ECC/ /DP/	Not updated or changed from the initial eligibility criterion. This is checked vide CPA inclusion report and verification report. Besides, farms can easily be identified via GPS location as well as Busines

CME Demonstration			DOE Assessment			
Nr.	**Eligibility Criteria**	**Justification**	**EC changed/ updated [Y/N]**	**Appro priate and suffi-cient**	**Evide nce used**	**Explanation of final result**
	Assessment of de-bundling for small-scale project activities". However, if the generic CPA consists solely of units that qualify as "microscale CDM units", these conditions are not required.					licence has been checked along with ECC and discharge permit. Criterion fulfilled and still correct.

*) In case clarifications have been requested by the validation team corresponding rows shall be added

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Document information

Version	*Date*	*Description*
03.0	31 May 2019	Revision to: • Ensure consistency with version 02.0 of the "CDM validation and verification standard for programmes of activities" (CDM-EB93-A08-STAN); • Make editorial improvements.
02.0	29 December 2017	Revision to align with the requirements of the "CDM validation and verification standard for programme of activities" (version 01.0). Change form symbol from CDM-CPA-RCP-FORM to CDM-CPA-RCPV-FORM.
01.0	3 August 2015	Initial publication.

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