Verification and certification report form for GS Voluntary Project Activity		
Complete this form in accordance with the instructions attached at the end of this form.		
BASIC INFORMATION		
Title and GS reference number of the Voluntary Project Activity (VPA)	African Biogas Carbon Programme (ABC) – Uganda VPA003 GS: 4236 (PoA: African Biogas Carbon Programme (ABC) (GS2747)) Project No: 20/067 – MY-PVerGS 20/11	
Version number(s) of the VPA-DD to which this report applies	3.1	
Version number of the verification and certification report	1.0	
Completion date of the verification and certification report	01/09/2020	
Monitoring period number and duration of this morning period	CP I MP: 3 Duration: 01/04/2019 – 30/04/2020 (both dates inclusive)	
Number and version number of the monitoring report to which this report applies	Number: 1 Version: 1.3	
Coordinating/managing entity (CME)	HIVOS Foundation	
Host Parties	Host Parties of the PoA	Is this a host Party to a VPA covered in this report? (yes/no)
	Uganda, Kenya, Tanzania	Uganda
Applied methodologies and standardized baselines	Technologies and Practices to Displace Decentralized Energy Consumption (11/04/2011) v.1	
Mandatory sectoral scopes linked to the applied methodologies	Scope 1: Energy industries (renewable-/non-renewable sources) Scope 13: Waste handling and disposal	
Conditional sectoral scopes linked to the applied methodologies, if applicable	-	
Estimated amount of ex-ante GHG emission reductions or GHG removals for this monitoring period in the included CPAs covered in this report	**11,130 tCO_2e**	
Certified amount of GHG emission reductions or GHG removals for this monitoring period for the included CPAs covered in this report	**23,791 tCO_2e**	

Name of the VVB	TÜV NORD CERT GmbH
Name, position and signature of the approver of the verification and certification report	Stefan Winter Senior Assessor Digital unterschrieben von Winter Stefan Datum: 2020.10.02 13:47:31 +02'00'

SECTION A. Executive summary

HIVOS Foundation has commissioned the TÜV NORD JI/CDM Certification Program to carry out the 3rd periodic verification of the Voluntary Project Activity:

"African Biogas Carbon Programme (ABC) – Uganda VPA003"

The VPA was registered with GS on 09/04/2017, registration GS 4236 with the 1st crediting period from 19/04/2015 to 18/04/2022 (including both dates) according to the GS registration review.

The VPA aims to reduce GHG emissions to stimulate the use of biogas systems to replace traditional thermal energy generation methods by making biogas systems affordable and available to households.

This verification report covers the monitoring period from 01/04/2019 – 30/04/2020 (including both days).

Details of the VPA location in table A-1 below:

Table A-1: Project Location

No.	Project Location
Host Country	Uganda
Region:	All regions of Uganda
Latitude:	4°12'53.79" to -1°28'19.22" N,
Longitude:	29°34'17.52" to 35°2'33.81" E.

The technology implemented in this VPA are biodigesters of fixed dome type installed underground to treat animal waste anaerobically to generate biogas for use as cooking fuel and the bio-slurry as organic fertilisers for farming.

The below table for the number of units installed by size.

Table A-2: Digester capacities installed in this MP

Size (m^3)	Quantity	Percentage
4	319	3.9
6	5158	62.7
9	1785	21.7
12	245	3.0
13	676	8.2
>13	39	0.5
sum	**8,222**	**100**

Table A-2: Technical specification of the digester[1]

Plant Specification	Unit	4 m^3	6 m^3	9 m^3	12 m^3
Plant Volume	l	3,900	5,850	8,775	13,163
Gas Storage Volume	l	900	1,350	2,025	3,038
Digester Volume	l	3,000	4,500	6,750	10,125
Min. Feeding	Kg/day	25	38	56	84

[1] As per BSUL technical information: Specific about MCD document. Larger digesters than 13 m^3 are installed, but these compromise just 0.5% of all units installed and therefore not detailed. The performance of these digesters will be proportional to the increase in digester volume. The 13 m^3 digester is relatively popular with 8.2% of all digesters installed. This digester has a comparable technical specification with the 12 m^3 as the size difference is small

Max. Feeding	Kg/day	38	56	84	127
Min. daily gas production	m^3/day	1.00	1.50	2.25	3.38
Max. daily gas production	m^3/day	1.50	2.25	3.38	5.06
Average daily feeding	Kg/day	31	47	70	105
Average gas production	m^3/day	1.25	1.88	2.81	4.22

As a result, of this verification, the verifier confirms that:

- all operations of the project are implemented and installed as planned and described in the approved Transition Annex for the PoA and VPA.
- the monitoring plan is in accordance with the applied approved GS methodology, i.e., Technologies and Practices to Displace Decentralized Energy Consumption (version 1.0)
- the monitoring system is in place and functional. The VPA has generated GHG emission reductions.

As the result of the 3rd periodic verification, the verifier confirms that the GHG emission reductions are calculated without material misstatements in a conservative and appropriate manner:

SECTION B. Verification team, technical reviewer and approver

B.1. Verification team members

No.	Role	Type of resource	Last name	First name	Affiliation (e.g. name of central or other office of VVB or outsourced entity)	Involvement in			
						Desk review	On-site inspection	Interview(s)	Verification findings
1.	Team Leader	EI	Cheong	Chun Yuen (Robert)	TN Malaysia	x	x	x	x

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

No.	Role	Type of resource	Last name	First name	Affiliation (e.g. name of central or other office of VVB or outsourced entity)
1.	Technical reviewer	EI	Lubanga	David	-
2.	Approver	IR	Winter	Stefan	TÜV NORD CERT GmbH

SECTION C. Means of verification

C.1. Desk/document review

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

- the approved Transition Annex of the PoA including the monitoring plan;
- the registered version of the VPA-DD;
- the GS approved version of the VPA validation report;
- the monitoring report, including the claimed emission reductions for the VPA;

- Emission reduction calculation spreadsheet;
- Survey reports and results;
- Database

Other supporting documents, such as any publicly available information and background information were reviewed.

C.2. Remote inspection*

Duration of remote audit: 08/06/2020, 09/06/2020 to 11/06/2020, 06/07/2020 to 07/07/2020				
No.	**Activity performed remotely**	**Remote location**	**Date**	**Team member**
1.	Opening meeting, review of MR, ER, DB, Survey reports, KPT, Leakage	Kuala Lumpur	08/06/2020	Cheong, Chun Yuen (Robert)
2.	Review of MR, ER and relevant documents		09/06/2020 to 11/06/2020	
3.	Review of telephone interview of households and mason results		01/07/2020 to 03/0/2020	
4	Discussion of MR, ER, DB, Survey reports, Leakage, KPT, interview of survey results		06/07/2020 07/07/2020	

Interviews /IM/

No.	**Interviewee**			**Date**	**Subject**	**Team member**
	Last name	**First name**	**Affiliation**			
1.	Otolo Kalanda	Natasha	HIVOS (ABPP) / Programme Officer /IM01/	08/06/2020	Opening meeting	Cheong, Chun Yuen (Robert)

No.	Interviewee			Date	Subject	Team member
	Last name	First name	Affiliation			
	Buysman	Eric	Carbon Consultant /IM02/			
	Okello	Anthony Walter	Quality, CSC, & Extension Manager Biogas Solutions Uganda Limited /IM013			
2.	Otolo Kalanda	Natasha	HIVOS (ABPP) / Programme Officer /IM01/	06/07/2020	Telephone Interviews results, Grievance Tracker, Database, Masons & BECs, survey results	
	Buysman	Eric	Carbon Consultant /IM02/			
	Okello	Anthony Walter	Quality, CSC, & Extension Manager Biogas Solutions Uganda Limited /IM03/			
3	Ndemere	Joseph Arinaitwe	CIRCODU Director General /IM04/		Survey A Survey B Sampling Plan PFT	
	Atuyamba,	Alexander	CIRCODU Director /IM04/			
4	Buysman	Eric	Carbon Consultant /IM02/	07/07/2020	Final review of MR, ER, DB, Grievance, Survey and Reporting	

The verification team sought support from Technobrain to conduct telephone interviews of BCEs, masons and householders to obtain feedback for compliance of SDG requirements.

Telephone interview of masons and BCEs conducted on 19/06/2020 to 22/06/2020

List of BCEs

Name of BCE	Name of Person Interview
AFSED	Onyunyu James
BIOMEL	Tumureebe Mathias
ENERCOM	Yiga Vicor
MECOD	Ewidu John

List of Masons

Name of Mason	Name of BCE
Aine John Bosco	RMDA
Cheptoek Harriet	THRT
Kataita Ivan	Kataita Ivan
Mbeine Peter	BIOMEL
Siwa Martin	THRT
Turahe Ivan	BIOMEL

Telephone interviews of households from 19/06/2020 to 29/06/2020

List of Households /HH/**:**

Name	**Name**	**Name**	**Name**
Alex Kibuuka	Mugisha Twine, Samuel	Victoria Nsimbi	Sekitto, Isa
Nabulya Teopista	Marcel Saali	Muluko Yafesi	Justine, Oriema
Natukunda, irenc	Nassazi Teddy	Agirim Charles	Sekyanzi, Bernard
Cheptoek Emmanuel	Wamukota Samuel	Kizza Vicent	John Yamulemye
Namono, Margret	Kitimbo Erieza	Leonard Mukwaya	Lokut Peter
Bintariho Fred	Bwire Fred	Fred Ssekitooleko	Wakimwayi Willison
Senyonjo Ivan	Engoru John	Wakhabenye Kenneth	Mukaye Florence
Mugunga Freddie Emmanuel	Muyobo Zaina	Rev Karamuzi Enock	Pr.Musasizi Dawson
Irangolet John Robert	Sengendo Ahmed	Mujongola Nathan	Batala John
Ikwap Micheal	Beatrice Nabuzale (Jacob Sabakaki)	Namugi Paul	Nanjela Joyce
Himigu John	Ssebudde Denis (Keneth)	Tinkamalirwe Florence	Ouya Asaph
Kasolo Abdala	Topisita Nabunje Besisira	Rwashema Enos	Fr. Vicent, Ankunda
Murunga Nimrod	Wandera Yonasan	John Bosco Nsubuga	Ngaana Wilson
Elepu Augustine Wood	Wandera Amos	Samuel Rwamugizi (plant no. 2)	Nandawula Sarah
Joseph Kabogoza	Namuddu Franbea	Bagambe Vicent	Tindyebwa Perezi
Ndalike Angella Clovis	Nathan Ahimbisibwe No	Jashau, Kwagala	Anet Muheme
Ochwo Noah	Mpora Deborah	Oketcho Anthony	Wanasolo Bisai
Jacinta Bua	Mutebi Hajji Nuhu	Namusoke Florence	Gastone Byamgisha
Kalange, John Bezaaleri	Mukiibi, Kayeba	Sande Steven	Kiirya Erisa
Light Mbazira	Esugut Dan	Middy Apio Esther	Aliyinza Madina Hakim
Muhammad Sebugenyi	Kasozi John	David Kiyaga	Muhwana Mick
Hassan Muyeye	Nalongo Tapilisita Sendawula (Plant 1)	Mwebehaire, Joan	Asodio Erasmas
Ssemwanga Muhamud	David Alimubanji	Ofwono George	Lwanga Robert
Bazirake Charles Ntawera	Alwodo Ben	Elolu Martin	Otim Filio Pam
Saada Nazuwa	Ruzigye Zefania	Lukenge Gingo	Wangaya Rashid
Rwabutururuma Yoram	KIAGA (U) Ltd	Wilson Gingo	Murokole, Efriam
Eng. Besigiroha, Nickemia	Ssali Israel	Boney Lwasa	Bwanika, Larwence
Katetegirwe Ignicius	Kisakye Primary School	Kobusheshe Vallance	Chekwemboi, Evelin
Kaziba Deziranta	Ecil Francis Milly	Sendi Yokosani	Vincent, Twahirwa
Mugisha Kyanjara Mustaf	Hfrkituuma Herman	James, Jjumba	Karumaguza Charles
Nampijja Maria	Fred, Mbangirwoha	Agoo Michol	Nkambwe Idi

Sengooba Hassan	Batungwake Gaston	Rwamunahe Charles	William Kiwanuka George
Mubiru Aloysius	Uwera, Peninnah	Okello Emmanuel	Bahwiremu Adrine
Kaaya Angelo	Nnalongo Nyanzi	Khisa Joshua	Merith N Wakinya

The verification team further selected households from the survey B list to crosscheck on the information obtained during the survey.

Addition Households from Survey B

Name	**Name**	**Name**	**Name**
Tsimwire Moses	Beyongera Julius	Wantsala Godfrey	Nakitende Gorrette
Sophia Nabuya Amili	Joseph Ruhoza	Richard Mujuni	John Betungura
Abdu Byasaali	Sekandi Francis	Mugyema Abert	Kareerangabo Akiim Deus
Sekaboga Godfrey	Okello Paul Peter	Ogoj Simon	Katurebe Jenipher
Makanga Musoke Samuel	Nathan Tuhweziine	Aminah Mugwanya	Ocuna James
Beyinda Musoke	Orokode Joe Joseph	Opio Martin	Byensi Christopher
Zimurinda Joseph	Rev Gidongo Wilson	Wilfred Mubiru	Mugisha Yusuf
Musana Richard	Aisha Faruku	Mbazira Coas	Akello Janet
Rev Fred Ssempijja	Bukenya Stephen	Alice Akalugaba	Joshua Watti
Turinawe Simeo	Rutahwire Plaxeda	Isabirye Moses	Otto Christine
Kajuri John	Alifunsi Butamanya	Kanyunya Criderious	Serwawudde Daniel
Bua George	Gakyaro Allan	Mwesigye Elivaida	Elizabeth Ndyabagye
Sendege Ponsiano	Nankunda Apollo	Tuhwerirwe Victor	Stephen Musisi
Webisa Asia	Wilson Buyungo	Muhangi Richard	David Senkubuge
Tarasio Kavindi	Nuwagira Joseph	Luyima Martin	Kamulegeya Siraji
Kabiito Ssalongo	Balirwa Nathan	Waca Levei	Lugoloobi Lawrence

Due to the recent COVID-19 pandemic, travel restrictions are imposed by the country where the project is located. The team leader who is based in Malaysia was not able to participate the physical on-site inspection activity in Uganda.

On the basis of the COVID-19 Interim Measures dated 06/04/2020 rules update issued GS Secretariat to relax mandatory site visits by VVBs on an exceptional basis the VVB may apply alternative measures of verification to mandatory on-site inspections until 01/09/2020.

On this basis, the team leader undertook the following considerations:

- Conduct the verification remotely
- Discussion and interview via Skype with CME, carbon consultant, VPA implementer and Survey Consultant.
- Review survey reports, outcome of survey results, photos of digester for households surveyed and interview and households GPS coordinates;
- Telephone interviews of households, masons and biogas construction enterprises supported by Technobrain the call centre.

C.3. Sampling approach

The verification team has applied the sampling plan based on 90/10 confidence level to ensure the households interviewed are representative to meet GS requirements. The number of installed units as at 30/04/2020 is 8,222 units.

Using the link http://www.raosoft.com/samplesize.html to calculate the sample size, 96 households will be sufficient to obtain a confidence level of 90 with 10% margin error.

The households are randomly select using a sampling generator at the link https://www.graphpad.com/quickcalcs/randomselect1/ for conservativeness

For conservativeness, the verification team has selected a sample size of 230 households from the database from different regions, zone, county, sub-county, parish and village for telephone interviews to obtain more information of the project implementation and monitoring of the SDG indicators. Out of the 230 selected, 136 households were reached.

In addition, the verification team has randomly selected 78 households from the survey B list to countercheck the results of which 64 households were also reached.

Therefore, the number of households interviewed to ensure the results are representative.

The following questions were asked during the telephone interviews to crosscheck on SDG requirements:

1. Family size
2. Is the digester working
3. Type and number of animals
4. What other fuels used – firewood, charcoal, LPG
5. Do you use Bio-slurry for farming
6. Do you have more free time using biogas
7. What do you do with the free time
8. Is your health better using biogas
9. Any training provided by BCE and mason
10. Any complaint.

The summary as below table:

Questions for households during telephone interviews	Summary of feedback
What is your family size	The average family members of the interviewed households are 4.
Type of animals	Mainly cattle and pigs.
Bio-slurry usage	For farming of vegetables, fruits and coffee Some of the households apply the bio-slurry directly to the fields and some kept in the bio-slurry huts / pits before application in the farm.
Other fuels used	Firewood is the alternative fuels. No LPG or kerosene used.
More free time	Households informed with the digester they have more free time.
What do you do with the free time	The interviewed households informed the main activity with the save time is leisure chat. Some informed assist in the vegetable gardens.

Questions for households during telephone interviews	Summary of feedback
Is your health better using biogas	Generally using biogas, improve health with no less eyes irritation and less respiratory problems
Any training provided by BCE and mason?	Masons provide briefing in feeding dung to the digester, mixing and remove bio-slurry for the discharge compartment during commissioning. Cleaning of gas stove and removal of water in the gas pipe.
Any complaints	Interviewed householders informed the main issues are no or low gas, block pipes, digester not operating well and crack dome

Interview of Biogas Construction Enterprises (BCEs) and Masons

Questions	Summary of feedback
Type of training and support provided by BSUL	Quality check, digester installation, usage bio-slurry,
What are the main concerns in constructing biodigester	Location far away from main access roads, raw materials prices, not enough water, dung not available.
Do you provide training to households	Yes. During commissioning, the households are briefed on dung feeding, remove slurry from compartment and remove water from block pipes.
How long for you to respond to households for technical issues	Normally 2-3 days. Sometime longer about 1 week if busy or no transport to the location.
Type of complaint from households	Low gas, water in gas pipe, stove not working and crack dome.

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

Verification Topics	No. of CAR	No. of CL	No. of FAR
A: Description of project activity A.1. Purpose and general description of project A.2. Location of project A.3. Reference of applied methodology A.4. Crediting period of project	3	1	0
B: Project Implementation B.1: Description of implemented project B.2: Post-registration changes	3	1	0
C: Description of monitoring system applied by the project Article 1: Organisational Setup of the carbon and SDG monitoring Article II. Description of human resources Article III. Survey design Article IV. Biogas user survey (US + CMS) Article V. Survey implementation Article VI. Baseline Fuel Test (BFT) and the Project Performance Field Test (PFT) Article VII. KPT survey design Article VIII. KPT implementation	1	0	0
D: Data and parameters	3	1	1

Verification Topics	No. of CAR	No. of CL	No. of FAR
D.1. Data and parameters fixed ex ante or at renewal of crediting period D.2. Data and parameters monitored D.3. BUS survey results D.4. Emission reduction calculation D.5. Implementation of sampling plan			
E: Calculation of SDG outcomes E.1. Calculation of baseline value or estimation of baseline situation of each SDG outcome E.2. Calculation of project value or estimation of project situation of each SDG outcome E.3. Calculation of net benefits as difference of baseline and project values or direct calculation for each SDG outcome E.4. Summary of ex-post values of each SDG outcome for the current monitoring period E.5. Comparison of actual value of outcomes with estimates in approved PDD	7	3	0
F: Stakeholder inputs and legal disputes F.1. List all inputs/grievances which have been received for the project during the monitoring period together with their respective answers/actions F.2. List all inputs/grievances from previous monitoring period where follow up action is to be verified in this monitoring period F.3. Provide details of any legal contest or dispute that has arisen with the project during the monitoring period	1	1	1
SUM	**18**	**7**	**2**

SECTION D. Verification findings

D.1. General

D.1.1. Remaining forward action requests from validation and/or previous verifications

During the validation the validating VVB might have raised issues that could not be closed or resolved during the validation stage. For this purpose, FARs might have been raised. Likewise, FARs might have been raised in the course of previous verifications.

In the course of this verification, the GS4GG transition annex latest version of the PoA and VPA is review. GS review confirmation is consulted. For the current monitoring period the following applies:

(i) Open issues from validation:

☒	There were no open issues which have been addressed in the latest version of the GS review report.
☐	All open issues from the validation have been appropriately addressed in the context of previous verifications.
☐	All issues related to the validation have been appropriately addressed in the course of the current monitoring period (for details please refer to appendix 4)
	The following issues related to the validation have **not** yet been appropriately addressed (for details please refer to appendix 4):

☐	N/A

(ii) Open issues from previous verifications:

☐	N/A – as this is the first monitoring period for this GS VPA.
☒	There were no open issues which have been addressed in the previous verification report
☐	All issues related to the previous verification have been appropriately addressed in the course of the current monitoring period (for details please refer to appendix 4)
☐	The following issues related to the previous verification have **not** yet been appropriately addressed (for details please refer to appendix 4):
	N/A

D.2. Description of project activity

Means of verification	An in-depth review of the MR section A was carried out during desk review to confirm whether the project purpose, description, location, applied methodology and crediting period are consistent with the approved GS4GG Transition Annex, registered PoA-DD and VPA-DD and registration details provided by CME. **Purpose and general description of project** Section A.1 describe the project purpose and description is crosschecked against the VPA-DD for consistency. **Location of Project:** The location of the project covers the entire Republic of Uganda. The GPS coordinates listed have been crosschecked with Google Earth for accuracy & correctness. **Reference of applied methodology** The applied methodology is according to GS methodology since registration. **Crediting period of project:** The 1st crediting period is a 7 years renewable from 19/04/2015 to 18/04/2022 inclusive both dates as defined in GS review during inclusion of this VPA. The following sources of information have been used in this context: • /TA/ • /MR/ • /VPADD/ • /GSM/ • /GSR/ • /ge/	
Findings	☐	The project description as described in the latest version of the Transition Annex and VPPA-DD as well as in section A of the monitoring report. No deviations thereof have been identified in the course of this verification.
	☒	The following from the project description in the MR have been identified in the course of this verification
	☒	In this context the following CARs, CLs have been raised: CL A-1; CAR A-2; CAR A-3; CAR A-4
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. For details please refer to Appendix 4.
	This verification is conducted remotely. The project documentation has been reviewed to confirm the project description, location and methodology described in the GS4GG approved Transition Annex and VPA-DD. Based on the documents review and after minor corrections, it could be concluded the VPA is described appropriately.	

D.2.1. Project Implementation

Means of verification	The verification team conducted an in-depth review of the draft monitoring report and compared against the Transition Annex and registered VPA-DD related to information of the project on the digester specification, number installed for each size, post registration changes, corrections, change to crediting period and permanent changes. **Description of implemented project** The VPA is implemented in accordance to the description in the registered VVPA-DD as Uganda Domestic Biogas Programme to disseminate domestic biogas in Uganda with the objective is to improve the livelihoods and quality of life of rural and peri-urban farmers through utilizing of domestic biogas as cooking and lighting fuel. The VPA implementer of this project is Biogas Solutions Uganda Ltd, responsible for coordinating, facilitating and monitoring the programme and supporting the technical, financial and institutional architecture. The capacities of the domestic biogas systems are 4 m^3, 6 m^3, 9 m^3, 12 m^3, 13 m^3 and 15 m^3. The common capacity installed are 6 and 9 m^3. Table 1 provide a breakdown of the size of digester and number per size and crosscheck with the database. The technical specification is crosscheck with the digester design provided by VPA implementer. **Post-registration changes** There are no temporary deviations, corrections, change of crediting period and design change. This is crosscheck on documents and interview of CME, and VPA implementer A permanent change to the monitoring plan due to the transition from the initial GS standard v2.2 of the PoA to GS4GG Principles & Requirements v 1.0 with the monitoring parameters are update to SDG requirements. The transition annex was approved by GS on 23/07/2019 and implemented for this monitoring period. The following sources of information have been used in this context: • /TA/ • /VPADD/ • /MR/ • /GS4GG/ • /GSM/ • /DB/ • /TD/ • /IM01 – IM04/	
Findings	☐	The project implementation as described in the Transition Annex and VPA-DD as well as in section B of the monitoring report. No deviations thereof have been identified in the course of this verification.
	☐	Deviations are found the project implementation description in the MR have been identified in the course of this verification
	☒	In this context the following CARs, CLs have been raised: CL B-1; CAR B-2; CAR B-3; CAR B-4;
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. For details please refer to Appendix 4.
	This verification is conducted remotely. On the basis of reviewed the project documentation and interviews conducted it can be confirmed that w.r.t. the VPA implementation, realized digester specification, technology and changes to monitoring parameters.	

	After minor corrections, the VVB concludes that the implementation of the VPA is in accordance to VPA-DD and the GS4GG Transition Annex.

D.2.2. Post-registration changes

D.2.2.1. Temporary deviations from Certified Key Project Information, Project Design Document, Monitoring & Reporting Plan, applied methodology of applied standardise baseline.

It has been checked whether Temporary deviations from the registered monitoring plan (TDfrMP) or Temporary deviations from monitoring methodology or standardized baseline (TDfMM) have been applied during this monitoring period. The result is summarized in the table below.

☒	No Temporary deviations from the registered monitoring plan (TDfrMP) or Temporary deviations from monitoring methodology or standardized baseline (TDfMM).have been submitted to the GS prior to the current monitoring period.		
☐	The following TDfrMP or TDfMM have been approved or are under approval by GS		
	1	Title	
		Status	☐ under approval; ☐ approved
		Appr.date	
		Ref. No.	
	2	Title	
		Status	☐ under approval; ☐ approved
		Appr.date	
		Ref.No.	
☒	During the verification of the current MP no need for a TDfrMP or TDfMM has been identified. The monitoring plan is in accordance with the approved methodology applied by the PA		
☐	The following TDfrMP or TDfMM is submitted to GS for the current MP together with issuance request		
	1	Issue:	
	2	Issue:	

D.2.2.2. Corrections

It has been checked whether any corrections to PoA-DD information or parameters fixed at validation have been approved during this monitoring period or submitted with this monitoring report. The result is summarized in the table below.

☒	During the verification of the current MP no corrections have been identified.		
☐	The following corrections have been applied:		
	1.	Issue:	
	2.	Issue:	
	3.	Issue:	
	PoA-DD has been revised accordingly: (New) version No.: NA Revision date: NA		

	It is confirmed that the updated / corrected information is an accurate reflection of the actual project information and that the corrected parameters are in accordance with the applied methodology and the monitoring plan.
	☐ A related post registration change has been submitted to GS prior to the issuance request. ☐ A related post registration change is submitted along with this issuance request.

D.2.2.3. Changes to start date of crediting period

There is no change to start date of crediting period. Therefore, not applicable.

D.2.2.4. Permanent changes from registered monitoring plan, applied methodology, or applied standardized baseline.

It has been checked whether any permanent changes from the registered monitoring plan (PCfrMP) or applied methodologies (PCfMM) including standardized baselines (PCfSB) have been approved prior or during this monitoring period or submitted with this monitoring report. The result is summarized in the table below.

☐	No PCfrMP, PCfMM or PCfSB have been submitted to GS prior to the current monitoring period		
☒	The following PCfrMP, PCfMM or PCfSB have been approved or are under approval by GS		
	1	Title	Transition from GS v 2.2 to GS4GG Principle & Requirements version 1.0
		Status	☐ under approval; ☒ approved
		Appr.date	23/07/2019
		Ref. No.	NA
☒	During the verification of the current MP no need for a PCfrMP, PCfMM or PCfSB has been identified. The monitoring plan is in accordance with GS4GG requirements and applied methodology.		
☐	An approval of the following PCfrMP, PCfMM or PCfSB is to be request from GS for the current MP as per GS4GG Annex 1.		
	1	Issue:	
	2	Issue:	

D.2.2.5. Changes to the project design of approved project

It has been checked whether any changes to the PoA-DD design (CoPD) have been approved prior or during this monitoring period or submitted with this monitoring report. The result is summarized in the table below.

☒	No CoPD has been submitted to GS prior to the current monitoring period		
☐	The following CoPD have been approved or are under approval by GS.		
	1	Title	
		Status	☐ under approval; ☐ approved
		Appr. date	
		Ref. No.	
	2	Title	
		Status	☐ under approval; ☐ approved
		Appr. date	
		Ref. No.	

☒	During the verification of the current MP no need for a CoPD has been identified. The monitoring plan is in accordance with the approved methodology applied by the PoA		
☐	An approval of the following CoPD is to be request from GS for the current MP as per Annex 1 of GS4GG requirements.		
	1	Issue:	
	2	Issue:	

D.2.3. Description of monitoring system applied by the project

Means of verification	The verification team conducted a review of Section C of the draft monitoring report for the monitoring system applied of the VPA by means of comparison of the MR with (i) Applied GS methodology (ii) GS4GG Principles & Requirements (iii) Transition Annex (iv) VPA-DD (v) Interview of CME, VPA Implementer, carbon consultant The following sources of information have been used in this context: • /MR/ • /TA/ • /VPADD/ • /GSM/ • /GS4GG/ • /IM01/IM02/IM03/			
Findings	☒	The MP is completely in accordance with the approved methodology applied by the GS project (registered version of the VPA-DD)		
	☐	The breakdown of MP accordance of the referenced tools is as follows:		
		1	Title (of the tool)	-
			Version	
			MP compliance	☐ full compliance ☐ findings have been raised ☐ N/A (for MP)
		2	Title (of the tool)	-
			Version	
			MP compliance	☐ full compliance ☐ findings have been raised ☐ N/A (for MP)
	☐	The breakdown of MP accordance of the applicable SB is as follows:		
		1	Title (of the SB)	-
			Version	
			MP compliance	
	☒	In this context the following CARs, CLs, FARs have been raised:		
		CAR C-1;		
Conclusion	☐	No CARs / CLs / FARs have been raised in this context. No correction was required. The project is in line with the respective requirements.		
	☒	The raised CARs / CLs / FARs have been addressed appropriately. For details please refer to Appendix 4.		
	The monitoring plan complies with the Transition Annex, registered VPA-DD and methodology after minor correction.			

D.2.3.1. Data and parameters fixed ex ante or at renewal of crediting period

Means of verification

The verification team has checked the ex-ante parameters and data stated in Section D.1 of MR and compared with section B.6.2 of the registered VPA-DD and Section A.3 of approved Transition Annex whether all fixed ex-ante parameters for the crediting period have been applied correctly.

The following parameters are fixed at validation or at renewal of crediting period:

No.	SDG Indicator	Parameter	Value	Unit
1	13.2.1	$f_{NRB,y}$	82	%
2	13.2.1	$EF_{b,\ bio}$	112	tCO_2/TJ
3	13.2.1	$EF_{p,\ bio}$	112	tCO_2/TJ
4	13.2.1	$EF_{p,\ fuel}$	Kerosene = 71.9 LPG = 63.1	tCO_2/TJ
5	13.2.1	NCV_{bio}	0.015	TJ/tonne
6	13.2.1	$EF_{b,\ fuel}$	71.9 (Kerosene) 63.1 (LPG)	tCO_2/TJ
7	13.2.1	NCV_{fuel}	0.0438 (Kerosene) 0.0473 (LPG)	TJ/tonne
8	13.2.1	V_{ST}	Dairy cows = 1.90 Other cattle = 1.50 Market and breeding swine = 0.30 Goats = 0.35 Sheep = 0.32 Poultry = 0.02	kg/head/day
9	13.2.1	B_{OT}	Dairy cows = 0.13 Other cattle = 0.10 Market swine = 0.29 Breeding swine = 0.29 Goats = 0.13 Sheep = 0.13 Poultry = 0.24	$m^3\ CH_4/kg$
10	13.2.1	$\eta_{biogas\ stove}$	0.55	Fraction
11	13.2.1	$MCF_{x,k}$	15.48	%
12	13.2.1	$EF_{awms,T}$	Dairy cows = 0.0015 Other cattle = 0.0001 Market swine = 0.0026 Breeding swine = 0.0026 Goats = 0.0000 Sheep = 0.0000 Poultry = 0.0000	m^3CH^4/kg
13	13.2.1	PL	10	%

The following sources of information have been used in this context:

- /MR/
- /TA/
- /VPADD/
- /GSM/

	• /GS4GG/ • /IPCC/ • /IM02/	
Findings	☐	The MR and the ER calculation have considered the parameters fixed ex-ante for the crediting period correctly, no deviations have been observed.
	☒	The following deviations from the parameters fixed ex-ante or at renewal of crediting period have been identified in the course of this verification: Several inconsistencies in values and parameter not listed.
	☒	In this context the following CARs, CLs, FARs have been raised:
		CAR D-2;
Conclusion	☐	No CARs / CLs / FARs have been raised in this context. No correction was required. The project is in line with the respective requirements.
	☒	The raised CARs / CLs / FARs have been addressed appropriately. For details please refer to Appendix 4.
	After correction made, the data and parameters listed in the section D.1 of MR are consistent with Transition Annex and registered VPA-DD.	

D.2.3.2. Data and parameters monitored

Means of verification	During the verification the monitoring parameters listed in Section D.2 of MR is crosscheck with Section C.1 of the approved Transition Annex and Section D.7.1 of registered VPA-DD with regard to (i) appropriateness of the applied measurement / determination method, (ii) the correctness and accuracy of the values applied for ER calculation, (iii) the correctness and accuracy of the values applied for SDG requirements, (iv) applied QA/QC measures. The results as well as the verification procedure described parameter wise in the project specific verification checklist (Appendix 5). FAR 01 is raised on plant ID no. BSU/3087 that the owner has intention to reinstall the expansion chamber unit to restart unit. The VPA Implementer is to monitor when the expansion chamber will be installed to allow the plant restart prior to the next MP verification The following sources of information have been used in this context: • /MR/ • /TA/ • /ER/ • /DB/ • /GSM/ • /GS4GG/ • /US/ • /PFT • /L/ • /IM02/	
Findings	☐	The MR and the ER calculation have considered the monitored parameters correctly, no deviations have been observed.
	☒	The following have been identified in the course of this verification: Refer CAR D-3.
	☒	In this context the following CARs, CLs, FARs have been raised:
		CAR D-3; FAR 01;
Conclusion	☐	No CARs / CLs / FARs have been raised in this context. No correction was required. The project is in line with the respective requirements.

	☒	The raised CARs / CLs / FARs have been addressed appropriately. For details please refer to Appendix 4.
	After appropriate corrections were carried out, it could be concluded that all monitoring parameters have been measured / determined without material misstatements and in line with Transition Annex and registered VPA-DD. FAR o1 was raised that will be verified by the VVB in the next verification.	

D.2.3.3. Implementation of sampling plan

Means of verification	The verification team has been checked Section D.3 of MR on the sampling approach applied by CME to determine the monitored values. There are 3 surveys namely Survey A, B and C. - Survey A is user survey gather information on household socio-economic indicators, fuel use for cooking, renewability and non-renewability indicators, animal waste handling, use of bio-slurry on agricultural fields, perceived improvement of living conditions, financial and time savings, and user satisfaction with biogas, bio-slurry and trainings - Survey B is usage survey collect data about the actual functioning of the biogas digesters. - Survey C is project fuel test (PFT) collect fuel use data of households with a biodigester in operation in form of Kitchen Performance Tests (KPTs). Sampling Approach: The CME applied a multi-stage sampling approach for selection of the households in a proportionate representation of different regions and counties in the sample. Survey B: Usage Survey. The sampling is based on 10 age groups with 30 households per group as per applied methodology requirements. Survey A: User survey a minimum of 100 households from survey B households Survey C: PFT survey in a subsample of the Survey A households Sampling methodology: The survey consultant selected 70 households from each age group using the random sample generator. This oversampling in lieu of some sampled households could not be reached or unwilling to be surveyed. These households will be replaced by other households from the list of 70 in each age group selected. The outcome for the number of households reached for each survey are tabulated in table 2. Survey B: 389 households were reached out of which 222 (57%) were physically visited and 167 (43%) telephone interviews. Therefore, meets the minimum requirements of 50% must be visited. Survey A: 152 households were reached Survey C: 50 households were reached to conduct the PFT. The verification team has checked on the sampling plan and considered appropriate since oversampling is applied to ensure the minimum number of households for usage survey is met. Further it has been checked whether the CME has correctly applied the implemented sampling plan including (i) description of the implemented sampling design (ii) collected data (iii) analysis of collected data (iv) demonstration on whether the required confidence / precision has been met. The following sources of information have been used in this context: • /MR/ • /US/

	• /TA/ • /PFT/ • /GT/ • /ER/ • /VPADD/ • /DB/ • /IM01/IM02/IM04/	
Findings	☐	The CME has not applied sampling approaches for the survey
	☒	The CME has applied sampling approaches for the survey.
	☒	In this context the following CARs, CLs, FARs have been raised:
		CL D-1; CAR D-4;
Conclusion	☐	No CARs / CLs / FARs have been raised in this context. No correction was required. The project is in line with the respective requirements.
	☒	The raised CARs / CLs / FARs have been addressed appropriately. For details please refer to Appendix 4.
	After appropriate corrections, it could concluded that the sampling method is plausible.	

D.2.4. Calculation of SDG outcomes

D.2.4.1. Calculation of baseline value or estimation of baseline situation of each SDG outcome

Means of verification	During the verification, the determination of the baseline situation has been checked. According to the GS4GG, SDG requirements are to be monitored as described in the Transition Annex. In the baseline scenario, the SDG requirements for: SDG Indicator 2.4.1: Proportion of agricultural area under productive and sustainable agriculture for parameter Percentage of biogas users who use slurry as a fertilizer is zero since there are no bio-digesters installed. SDG Indicator 3.9.1: Mortality rate attributed to household and ambient air pollution for parameter number of users with a reduced, increased or no change in the incidence of eye problems and respiratory illness that is zero for baseline scenario with no bio-digesters installed. SDG Indicator 5: Achieve gender equality and empower all women and girls for parameter 1) Percentage of women that report time-savings attributed to the installation of a biodigester and (2) usage of saved time. In the baseline scenario, there no bio-digester installed with zero information. SDG Indicator 7.1.2: Proportion of population with primary reliance on clean fuels and technology for parameters Number of biogas units installed and Number of masons and biogas enterprise staff attending training programmes. In the baseline scenario, both situations are zero with no biogas units installed and no training conducted without the digester. SDG Indicator 8.5 By 2030, achieve full and productive employment and decent work for all women and men for parameter number of man-days involved in the construction of biodigesters where in the baseline scenario there are no digesters installed therefore, zero man-days. SDG Indicator 13.2.1 generally the baseline emissions of the project to combat climate change The baseline emissions have 2 components: 1. The baseline emissions for fuel use consists of 4 types of fuel with 3 types are woody biomass and 1 for fossil fuel of LPG. These emissions are the comparing of fuel consumption in a project scenario to the baseline scenario according to the approved methodology, the Transition Annex and registered VPA-DD. The equation applied to determine the each of the scenario as follows:

	$BE_{bCO2,y} = (\sum_b BB_{b,fuel} * NCV_{fuel} * EF_{b,fuel}) + (BB_{b,bio} * NCV_{bio} * EF_{b1bio} * f_{NRB})$ The inputs for the fuel usage data derived from the baseline survey. Baseline emission for this component is **6,844 $tCO_2e/y/hh$**. 2. The baseline emissions from the handling of animal waste is determined with IPCC Tier 2. The equation applied: $BE_{b,CH4,y} = (V_{ST}*365) * (B_{o,T} *0.67lk/m^3 * MCFx,k * MST_{,x,k} * GWP_{CH4} * N_{T,h}) / 1000$ The inputs for the type of animals and average population of animals are from the usage survey. Baseline emissions for this component is **1,778 $tCO_2e//y/hh$** The following sources of information have been used in this context: • /MR/ • /ER/ • /US/ • /KPT/ • /DB/ • /TA/ • /VPADD/ • /IPCC/	
Findings	☐	The calculation of the baseline emissions was found to be fully compliant with the above stated principles. The calculations of baseline GHG emissions or baseline net GHG removals have been carried out in accordance with the formulae and methods described in the registered monitoring plan, the applied methodology and, where applicable, the applied standardized baseline. Any assumptions used in emission or removal calculations have been justified. Appropriate emission factors, IPCC default values, GWPs and other reference values have been correctly applied. No errors, miscalculations, omissions, misstatements or incomplete information has been identified.
	☒	The verification team has identified mistakes in the baseline emissions calculation or the underlying calculation approaches.
	☒	In this context the following CARs, CLs, FARs have been raised:
		CAR E-4; CAR E-5;
Conclusion	☐	No CARs / CLs / FARs have been raised in this context. No correction was required. The project is in line with the respective requirements.
	☒	The raised CARs / CLs / FARs have been addressed appropriately. For details please refer to Appendix 4.
	With appropriate corrections, it can be concluded that the baselines are determined in accordance to SDG requirements as correct and the emissions are conservatively determined.	

D.2.4.2. Calculation of project value or estimation of project situation of each SDG outcome

Means of verification	Section E.2 of the MR has been reviewed for the project value and estimation of project situation for each SDG outcome. The table demonstrates the non-carbon project situation of each SDG in accordance to the Transition Annex. The results are derived from the survey input, database and training records provided by VPA implementer.

SDG	Indicator	Estimation of project situation of each SDG outcome

2.4.1	Percentage of biogas users who use slurry as a fertilizer	92%
3.9.1	Perceived improvement in health by the user (incidence of eye problems and respiratory illness)	88% report improvement
5	Female time savings	94% report having more time available
	Usage of saved time	Income generating including farming: 28% Education: 4% Leisure (chat, recreation, church resting): 58% Other: 10%
7.1.2	Number of units installed	8,222
8.5	Number of man-days involved in the construction of biodigesters.	Number of mason days: 219,886
8.3.1	Number of employees attending training programmes	102

For SDG13, project GHG emissions are derived from 3 sources contributed from:

1. Accounting for project emissions due to the continued use of fossil fuels and non-renewable biomass;

   The equation applied:

   $PE_{p,CO2,y} = \Sigma (BB_{p,fuel} * NCV_{fuel} * EF_{p,fuel}) + (BB_{p,bio} * NCV_{bio} * EF_{p,fuel} * f_{NRB})$

   The inputs for the fuel usage data are derived from the KPT survey.

   Project emission for this situation is **3.921 $tCO_2e/y/hh$**.

2. Accounting for project emissions due to the methane emissions from manure handling;

   The equation applied:

   $PE_{p1,CH4,y} = GWP_{CH4} * \sum (N_{T,h,y} * EF_{awms,T}) * PL_y + \sum (N_{T,h,y} * EF_{awms,T}) * (1- \eta_{new\ stove}) (1- PL_y)$

   The input for the type of animals and number of animals are from the usage survey.

   The default value of 10% applied for physical leakage of biodigester.

   Project emission for this situation is **0.151 $tCO_2e/y/hh$.**

3. Accounting for project emissions due to bio-slurry:

   Emissions from bio-slurry must be taken into account if it is found they account for more than 1% of baseline emissions

   The CME has demonstrated the steps for the calculating the emissions for bio-slurry. The data applied in the calculation are derived from:

   Estimation of the total amount of VS entering the biodigester;

   Assessment of the methane potential of bio-slurry;

   The calculated emission for bio-slurry is **0.002 $tCO_2e/y/hh$**.

   Since the emission is less than 1% of total emissions, therefore excluded.

The total project emissions for this monitoring period for the three above components is **4.072 $tCO_2/y/hh$.**

Leakage:

<table>
<tr><td></td><td colspan="2">According to applied methodology, leakage will be assessed for any potential sources where applicable.

According to the applied methodology “leakage risks deemed very low can be ignored as long as the case for their insignificance is substantiated” (p.11 – 12). Section 6.3.3 of the VPA-DD provides an overview of potential sources of leakage, including their applicability and justification for excluding the sources of leakage.

Leakages considered, are bio-slurry, leakage from digester and leakage from incomplete combustion. Other sources of leakage were assessed when necessary.

During the 1st verification, the verifying VVB did not discover any sources of leakage other than mentioned in the MR of physical leakage, incomplete combustions and bio-slurry.

Similarly in the 2nd MP leakage are not considered as per Gold Standard email dated 20/10/2016, the risk of other leakages is negligible and can be ignore.

Therefore, no leakage will be considered according to the registered VPA-DD addition comments and GS email.
The following sources of information have been used in this context:
• /MR/
• /TA/
• /DB/
• /US/
• /VPADD/
• /T/
• /L/
• /VER/
• /ER/</td></tr>
<tr><td rowspan="4">Findings</td><td>☐</td><td>The calculation of the project emissions was found to be fully compliant with the above stated principles.
The calculations of project GHG emissions or actual net GHG removals have been carried out in accordance with the formulae and methods described in the registered monitoring plan, the applied methodology and, where applicable, the applied standardized baseline. Any assumptions used in emission or removal calculations have been justified. Appropriate emission factors, IPCC default values, GWPs and other reference values have been correctly applied.
No errors, miscalculations, omissions, misstatements or incomplete information have been identified.</td></tr>
<tr><td>☒</td><td>The verification team has identified mistakes in the project emissions calculation or the underlying calculation approaches.</td></tr>
<tr><td rowspan="2">☒</td><td>In this context the following CARs, CLs, FARs have been raised:</td></tr>
<tr><td>CL E-1; CAR E-6</td></tr>
<tr><td rowspan="3">Conclusion</td><td>☐</td><td>No CARs / CLs / FARs have been raised in this context. No correction was required. The project is in line with the respective requirements.</td></tr>
<tr><td>☒</td><td>The raised CARs / CLs / FARs have been addressed appropriately. For details please refer to Appendix 4.</td></tr>
<tr><td colspan="2">After corrections, the calculations of project GHG emissions and SDG outcome are in accordance with the registered VPA-DD, applied methodology and Transition Annex</td></tr>
</table>

D.2.4.3. Calculation of net benefits as difference of baseline and project values or direct calculation for each SDG outcome

Means of verification

During the verification, Section E.3 of the MR is review for the respective SDGs listed are according to the Transition Annex for the outcome for this monitoring period.

The table demonstrate the non-carbon project situation of each SDG with the results derived from the survey input, database and training records provided by VPA implementer.

SDG	Indicator	Baseline	Project	Net difference
2.4.1	Percentage of biogas users who use slurry as a fertilizer	0	92%	92%
3.9.1	Perceived improvement in health by the user (incidence of eye problems and respiratory illness)	0	88%	88%
5	Female time savings	0	94%	94%
	Usage of saved time	N/A	Income generating including farming: 28% Education: 4% Leisure (chat, recreation, church resting): 58% Other: 10%	See project levels
7.1.2	GS-08 Access to affordable and clean energy services	0	8,222	8,222
	GS-12 Technology transfer and technological self-reliance	0	219,886 mason days	219,886
8.3.1	Number of employees attending training programmes	0	102	102

SDG 13.2.1: The emissions reductions achieved for this monitoring period is calculated using below equation:

$ER_y = U_y \times (BE_{y,h} – PE_{y,h}) * NP_{,y}$

= 63.35% x (8.622 – 4.072) x 8,222

= **24,511 tCO_2e (cumulative and round down to the integral)**

The following sources of information have been used in this context:

- /MR/
- /ER/
- /T/
- /US/

	• /DB/ • /VPA-DD/ • /TA/	
Findings	☐	The determination f the SDG outcomes found to be fully compliant with the above stated requirements. The calculations of emissions reductions have been carried out in accordance with the formulae and methods described in the registered monitoring plan and the applied methodology. Any assumptions used in emission or removal calculations have been justified. Appropriate emission factors, IPCC default values, GWPs and other reference values have been correctly applied. No errors, miscalculations, omissions, misstatements or incomplete information have been identified.
	☒	The verification team has identified mistakes in the SDG determination and emissions calculation or the underlying approaches.
	☒	In this context the following CARs, CLs, FARs have been raised:
		CL E-2; CAR E-7
Conclusion	☐	No CARs / CLs / FARs have been raised in this context. No correction was required. The project is in line with the respective requirements.
	☒	The raised CARs / CLs / FARs 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.
	After appropriate corrections, the SDG benefits and emissions reductions are considered correct.	

D.2.4.4. Summary of ex-post values of each SDG outcome for the current monitoring period

Means of verification

The verification team has checked Section E.4 the MR includes a summary table of the SDG outcome for this monitoring period.

It has been assessed whether the values are correct or need to be revised.

The table demonstrate the ex-post value of each SDG result derived from the survey input, database and training records provided by VPA implementer and ER calculations.

SDG	Indicator	Unit	Ex-post value
2.4.1	Percentage of biogas users who use slurry as a fertilizer	%	92%
3.9.1	Perceived improvement in health by the user (incidence of eye problems and respiratory illness)	%	88%
5	Female time savings	%	94%
	Usage of saved time	N/A	Income generating including farming: 28% Education: 4% Leisure (chat, recreation, church resting): 58% Other: 10%
7.1.2	GS-08 Access to affordable and clean energy services	units	8,222
	GS-12 Technology transfer and technological self-reliance	Mason day	219,886

	8.3.1	Number of employees attending training programmes	Masons	102
	13.2.1	Emission reductions	tCO_2e	24,511

The following sources of information have been used in this context:

- /MR/
- /ER/
- /T/
- /TA/
- /VPADD/
- /DB/
- /US/

Findings	☒	Section E.4 of the MR includes in a summary table of the SDG outcome
	☒	During the verification, issues have been identified.
	☒	In this context the following CARs, CLs, FARs have been raised:
		CL E-2; CAR E-7
Conclusion	☐	No CARs / CLs / FARs have been raised in this context. No correction was required. The project is in line with the respective requirements.
	☒	The raised CARs / CLs / FARs haves 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.
	After appropriate corrections, the values in the summary table are been filled correctly.	

D.2.4.5. Comparison of actual value of outcomes with estimates in approved PDD

Means of verification

The verification team has checked the MR Section E.5 includes a comparison of actual values of the monitoring period with the estimations in the registered VPA-DD and Transition Annex for the respective SDG indicators.

The table demonstrate the actual value of each SDG result derived from the survey input, database and training records provided by VPA implementer and ER calculations.

SDG	Indicator	Values estimated in ex ante calculation of approved PDD	Actual values achieved during this monitoring period
2.4.1	Percentage of biogas users who use slurry as a fertilizer	Not estimated	92%
3.9.1	Perceived improvement in health by the user (incidence of eye problems and respiratory illness)	Not estimated	88%
5	Female time savings	Not estimated	94%
	Usage of saved time	Not estimated	Income generating including farming: 28% Education: 4%

			Leisure (chat, recreation, church resting)	58%
			Other	10%
7.1.2	GS-08 Access to affordable and clean energy services	9,534	8,222 units	
	GS-12 Technology transfer and technological self-reliance	Not estimated	219,886 mason days	
8.3.1	Number of employees attending training programmes	Not estimated	102	

SDG 13.2.1 demonstrates the amount of emission reductions achieved for this monitoring period against the estimated ex-ante emission reductions.

Period	Amount achieved during this monitoring period ($t CO_2e$)	Amount estimated ex ante ($t CO_2e$)
01/03/19 to 31/12/2019	16,649	7,445
01/01/2020 to 30/04/2020	7,862	3,685
Total	**24,511**	**11,130**

The ex-post ERs for this monitoring period is higher than ex-ante.

In lieu of GS FAR raised during MPII, "If the usage survey demonstrates lower rate in different age groups than the value used in this MP, emission reduction of MP2 shall be adjusted in next MP". The usage rate for this MP is **63.35%** whilst for MPII was **64.75%,** therefore lower than MPII. In this aspect, the amount of ER to be adjusted in this MP is **720 tCO_2e**. Therefore, deducted from this MP ERs.

Thus, the final ER for this MP is **23,791 tCO_2e**.

The following sources of information have been used in this context:

- /MR/
- /ER/
- /VPADD/
- /TA/
- /DB/
- /US/
- /VER (MPII)/
- /T/

Findings	☐	*Case 1:* The ex-ante estimated value was found to be proportionally higher than the ex-post determined value. No further action is deemed required.
	☐	*Case 2:* The ex-ante estimated value fits very good to the actually monitored value. No further justification is deemed required.
	☒	*Case 3:* The ex-ante estimated value was found to be proportionally lower than the ex-post determined value.
	☒	In this context the following CARs, CLs, FARs have been raised:
		CL E-2; CAR E-7; CAR E-8
Conclusion	☐	No CARs / CLs / FARs have been raised in this context. No correction was required. The project is in line with the respective requirements.

	☒	The raised CARs / CLs / FARs 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.
	After appropriate corrections, it could conclude the ex-ante estimated value is proportionally lower than the ex-post determined value.	

D.2.4.6. Remarks on difference from estimated value in approved PDD

Means of verification	On the basis of the above comparison of actual values of the monitoring period with the estimations in the registered VPA-DD the verification team has checked whether (in case 3 as above) an appropriate explanation is included in the MR. For this monitoring period, the actual emission reductions were found higher than the estimated emission reductions in the registered VPA-DD.	
Findings	☐	No further justification or explanation is deemed required as actual emissions of this MP do not exceed significantly the ex-ante calculated emission reductions
	☒	The CME has provided a related justification in the MR. The reasons for the increase are as follows: The ex-ante MCF was 3.59% as compared with ex-post of 15.48%. The ex-ante emission reductions from fuel use was 0.666 tCO_2/hh/yr as compared to ex-post of 6.844 tCO2/hh/yr for this monitoring period.
	☒	In this context the following CARs, CLs, FARs have been raised: CL E-3; CAR E-9;
Conclusion	☐	No CARs / CLs / FARs have been raised in this context. No correction was required. The project is in line with the respective requirements.
	☒	The raised CARs / CLs / FARs 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.
	After appropriate corrections, it could conclude the ex-post ERs are higher than ex-ante estimation with appropriate justification described. There are no ex-ante SDG indicators as compared to ex-post for this monitoring in lieu of the addition requirements for GS4GG in the Transition Annex.	

D.2.5. Stakeholder inputs and legal disputes

Means of validation	☒	The verification team has checked Section F.1 to F.3 of the monitoring report and grievance trackers for the current and previous monitoring report on the complaints and issues raised directly to VPA implementer. Section F.1 captures the current cases in the grievance tracker with a breakdown on the type of case and how many have been closed, pending and on-going. Section F.2 describes the number of cases in last monitoring period and number of cases brought forward to this monitoring period. It is reported 33 cases are not closed that will be carry forward to the next MP. FAR 02 is raised on this for the next verifying VVB to check in the next verification. Section F.3 describes of any legal contest or dispute that has arisen with the project during the monitoring period with 1 case to be closed due to issue of the stove. The following sources of information have been used in this context: • /MR/

		• /GT/ • /TA/ • /VPADD/ • /IM01/IM02/IM03/
Findings	☐	The monitoring of stakeholder inputs and legal disputes are included in the respective sections of F.1 to F.3 in accordance to GS4GG requirements.
	☒	There are concerns found during the verification.
	☒	In this context the following CARs, CLs, FARs have been raised:
		CL F-1; CAR F-2; FAR 02
Conclusion	☐	No CARs / CLs / FARs have been raised in this context. No correction was required. The project is in line with the respective requirements.
	☒	The raised CARs / CLs / FARs have been addressed appropriately. For details please refer to Appendix 4.
		After corrections, it could be concluded that the stakeholders' input and issues are addressed appropriately. The FAR raised will be verify by the VVB in the next verification.

SECTION E. Internal quality control

Before the submission of the final verification report a technical review of the whole verification 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 verification team and thus not involved in the decision-making process up to the technical review.

As a result of the technical review process the verification opinion and the topic specific assessments as prepared by the verification 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 verification has been carried out by a senior assessor located in the accredited premises of TÜV NORD CERT GmbH.

After this step the submission for requesting for issuance is conducted.

SECTION F. Verification opinion

HIVOS Foundation has commissioned the TÜV NORD JI/CDM Certification Program to carry out the 3rd periodic verification of **"African Biogas Carbon Programme (ABC) GS2747 – Uganda VPA003"**, with regard to the Gold Standard project and programme activities requirements. The voluntary project activity aims to stimulate the use of biogas systems to replace traditional thermal energy generation methods by making biogas systems affordable and available to households. This verification covers the period from 01/04/2019 to 30/04/2020 (including both days).

As a result of this verification, the verifier confirms that:

- all operations of the VPA are implemented and installed as planned and described in the validated VPA-DD.
- the monitoring plan is in accordance with the applied approved GS methodology, i.e., Technologies and Practices to Displace Decentralized Thermal Energy Consumption (version 1.0).
- the monitoring system is in place, functional and have generated GHG emission reductions.

As the result of this periodic verification, the verifier confirms that the GHG emission reductions have been calculated without material misstatements in a conservative and appropriate manner. TÜV NORD JI/CDM CP herewith confirms that the project has achieved emission reductions in the above mentioned reporting period as follows:

Emission reductions: **23,791 tCO_2e**

SECTION G. Certification statement

As a duly accredited VVB, TÜV NORD CERT confirms that the VPA

"African Biogas Carbon Programme (ABC) GS2724 – Uganda VPA003"

registered under

GS ID.: 4236

has achieved emission reductions in accordance with all applicable requirements for registered GS project activities during the current monitoring period

MP-No.:	MP3
from:	01/04/2019
to:	30/04/2020

(including both days) as follows:

Emission reductions: **23,791 tCO_2e**

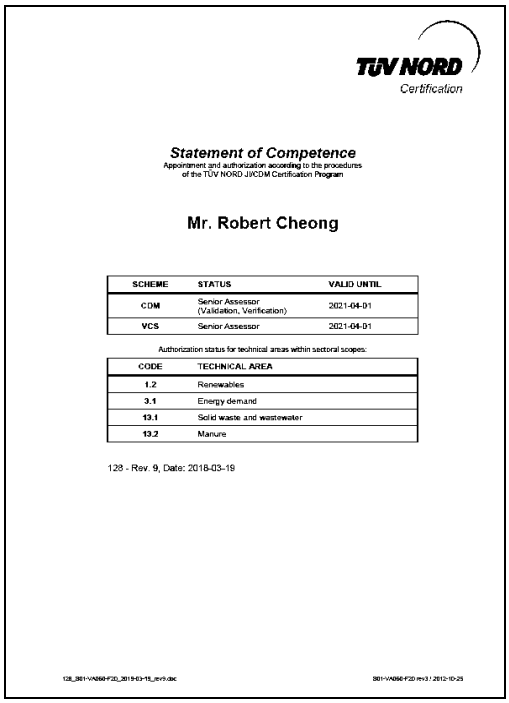
Puchong, 01/09/2020

Cheong, Chun Yuen (Robert)
TÜV NORD JI/CDM CP
Verification Team Leader

Appendix 1. Abbreviations

Abbreviations	Full texts
CAR	Corrective Action Request
CL	Clarification
VPA	Voluntary Project Activity
VPA-DD	Voluntary Project Activity Design Document
CME	Coordinating Managing Entity
CO_2eq	Carbon dioxide equivalent
ER	Emission Reduction
FAR	Forward Action Request
GHG	Greenhouse gas(es)
GS	Gold Standard
GS4GG	Gold Standard for the Global Goals
IM	Interview
IPCC	Intergovernmental Panel on Climate Change
MP	Monitoring Plan
MR	Monitoring Report
NTB	Nusa Tenggara Barat
NTT	Nusa Tenggara Timur
PoA	Programme of Activities
PoA-DD	Programme of Activities Design Document
PRC	Post Registration Changes
PS	CDM project standard for project activities
QA/QC	Quality Assurance / Quality Control
UNFCCC	United Nations Framework Convention on Climate Change
VVS	Validation and Verification Standard

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. Robert Cheong

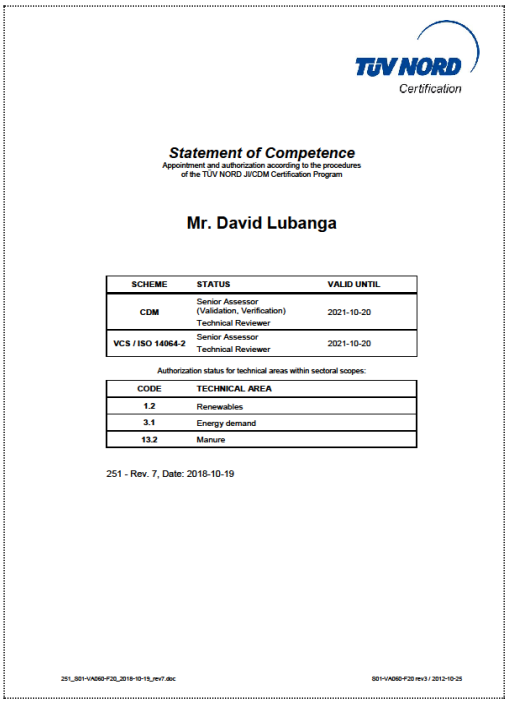
SCHEME	STATUS	VALID UNTIL
CDM	Senior Assessor (Validation, Verification)	2021-04-01
VCS	Senior Assessor	2021-04-01

Authorization status for technical areas within sectoral scopes.

CODE	TECHNICAL AREA
1.2	Renewables
3.1	Energy demand
13.1	Solid waste and wastewater
13.2	Manure

128 - Rev. 9, Date: 2018-03-19

128_801-VA060-F20_2018-03-19_rev9.doc 801-VA060-F20 rev3 / 2012-10-25



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

251_801-VA060-F20_2018-10-19_rev7.doc 801-VA060-F20 rev3 / 2012-10-25

Appendix 3. Documents reviewed or referenced

No.	Author	Reference	Title	References to the document	Provider
1.	GS	**/GSM/**	Technologies and Practices to Displace Decentralized Thermal Energy Consumption (version 1.0)		Others
2	GS	**/GS4GG/**	Gold Standard for the Global Goals Principles & Requirements version 1.0		Others
3	UNFCCC	**/GT/**	Glossary "CDM terms" (version 10.0)	https://cdm.unfccc.int/Reference/Guidclarif/glos_CDM.pdf	Others
4	UNFCCC	**/KP/**	Kyoto Protocol (1997)	http://unfccc.int/kyoto_protocol/items/2830.php	Others
5	UNFCCC	**/MA/**	Decision 3/CMP. 1 (Marrakesh – Accords)	http://cdm.unfccc.int/Reference/COPMOP/index.html	Others
6	IPCC	**/IPCC/**	Good Practice Guidance and Uncertainty Management in National Greenhouse Gas Inventories: 1. Non-CO2 Stationery Combustion 2. Emissions from Livestock and Manure Management (Chapter 10) 1. 3. IPCC Second Assessment Report – Climate Change 1995: A Report of the Intergovernmental Panel on Climate Change	www.ipcc-nggip.iges.or.jp	Others
7	VVB	**/CPM/**	TÜV NORD JI / CDM CP Manual (incl. CP procedures and forms)		VVB
8	CME	**/PoADD/**	Registered PoA Design Document for GS PoA: "African Biogas Carbon Programme (ABC)" version 07, dated 29/10/2015 Registered PoA Design Document for GS PoA: "African Biogas Carbon Programme (ABC)" version 8.1, dated 29/06/2020		CME
9	CME	**/VPADD/**	Registered VPA-Design Document for VPA003: "African Biogas Carbon Programme (ABC) – Uganda – VPA03" version 3.1, dated 02/05/2017		CME
10	GS	**/GSR/**	GS VPA Inclusion Review dated 16/04/2019		Others
11	CME	**/TA/**	Transition Annex version 2.2 dated 12/07/2019		CME

			GS Review dated 23/07/2019		
12	CME	**/VAL/**	Validation Report for African Biogas Carbon Programme (ABC) – Uganda – VPA003" version 02 dated 03/03/2017		CME
13	CME	**/VER/**	Documents of previous verifications (Monitoring report, verification report, ER calculation sheet) GS Issuance review		CME
14	CME	**/MR/**	Monitoring Report version 1.0 dated 18/05/2020 Monitoring Report version 1.1 dated 05/08/2020 Monitoring Report version 1.2 dated 21/08/2020 Monitoring Report version 1.3 dated 27/08/2020		CME
15	CME	**/ER/**	SDG ER spreadsheet dated 06/06/2020 SDG ER spreadsheet version 1.1 dated 01/08/2020 SDG ER spreadsheet version 1.2 dated 21/08/2020		CME
16	CIRCODU	**/US/**	Usage & User Survey 2019 Inception Report dated 07/02/2020 Final Survey Report dated June 2020 Questionnaires for Survey A & B		Others
17	CME	**/DB/**	Database and SDG 8 dated 06/06/2020 Database and SDG 8 version 1.1 dated 08/07/2020 Database and SDG 8 version 1.2 dated 21/08/2020		CME
18	CME	**/AC/**	Agreements and Certificates of households for year 2019 and 2020		CME
19	CME	**/PFT/**	Project fuel test for biomass and fossil fuels. Questionnaires for Survey C		CME
20	CME	**/T/**	Training for Mason & BCEs		CME
21	CME	**/GT/**	Grievance Tracker 2019 & 2020 dated 19/07/2020		CME
22	UNBS	**/C/**	Weigh Balance Calibration Certificates issued by Uganda National Bureau of Standards		Others
23	CME	**/TD/**	Technical Design of Digester		CME
24	CME	**/REC/**	Declaration of double counting dated 08/05/2018		

25	GS	**/L/**	GS Confirmation Leakage dated 20/10/2016		Others
Websites					
26		**/gs/**	http://www.goldstandard.org/		Others
27		**/ipcc/**	www.ipcc-nggip.iges.or.jp		Others
28		**/rs/**	http://www.raosoft.com/samplesize.html		Others
29		**/gp/**	https://www.graphpad.com/quickcalcs/randomselect1/		Others
30		**/ge/**	Google earth		Others

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

Table 3. Remaining FARs from validation and/or previous verification

FAR ID		**Section No.**		**Date:**	
Description of FAR					
NA					
Project participant response				**Date:**	
Documentation provided by project participant					
☐ Changes in the MR		Section(s): C		New version No.:	
☐ Changes in XLS		Worksheet(s):		New version No.:	
☐ Other:					
VVB assessment				**Date:**	

Table 4. CLs from this verification

CL ID	A-1	**Section no.**	Cover page	**Date:**	07/07/2020
Description of CL					
MR version 1.0, Cover Page: 1. Estimated amount of annual average certified SDG impact (as per approved PDD): The representation for SDG13 data is unclear. 2. Total amount of certified SDG impact (as per approved methodology) achieved in this monitoring period: The representation for SDG 8 & 13 data is unclear.					
CME response				**Date:**	25/07/2020
1. The unit is now added, (tCO_2e), now it should be clear 2. Idem as response 1, the units are added					
Documentation provided by CME					
☒ Changes in the MR		Section(s): cover		New version No.:1.1	
☐ Changes in XLS		Worksheet(s):		New version No.:	
☐ Other:					
VVB assessment				**Date:**	26107/2020
MR version 1.1, Cover Page: 1. Estimated amount of annual average certified SDG impact (as per approved PDD): The representation for SDG13 data updated as tCO_2e. 2. Total amount of certified SDG impact (as per approved methodology) achieved in this monitoring period: The representation for SDG 8 & 13 updated accordingly.					
Conclusion *Tick the appropriate checkbox*	☐ Additional action should be taken (finding remains open) ☒ The finding is closed				

CL ID	B-1	**Section no.**	B.1	**Date:**	07/07/2020
Description of CL					
MR version 1.0 Section B.1, Description of implemented project. Table 1: Clarification request what does frequency represents?					
CME response				**Date:**	25/07/2020
Frequency in statistics/excel means occurrence, thus, i.e. the occurrences of a 4m3 digester is 319. This is changed to units however to avoid ambiguously					
Documentation provided by CME					
☒ Changes in the MR		Section(s): B.1		New version No.: 1.1	
☐ Changes in XLS		Worksheet(s):		New version No.:	
☐ Other:					

VVB assessment	Date:	26/07/2020
MR version 1.1 Section B.1, Description of implemented project. Table 1: The frequency is updated to read as units.		
Conclusion *Tick the appropriate checkbox*	☐ Additional action should be taken (finding remains open) ☒ The finding is closed	

CL ID	D-1	Section no.	D.3	Date:	07/07//2020
Description of CL					
MR version 1.0, Section D.3, table 2: Clarification for age group year 1 on the sampled period is until 31/08/2019.					
CME response				Date:	25/07/2020
The sampling period 01/01/2019 to 31/08/2019 represents the period 01/01/2019 to 30/04/2020. The GS requirement is that units are in use for at least half a year in each age group, thus period sampled is therefore shorter than the age-group period. When the households were visited, which was in the period 28 February to 6 March 2020 (see survey B in the VPA03 MPIII survey_SDG_ER file), the units had to be older than 6 months. This was the case with all the plants. (a small number of plants were visited on 28 February 2020, all these plants were in use over 6 months however). Given that usage declines with age, the results are conservative.					
Documentation provided by CME					
☒ Changes in the MR		Section(s): D3		New version No.:1.1	
☐ Changes in XLS		Worksheet(s):		New version No.:	
☐ Other:					
VVB assessment				Date:	26/07/2020
MR version 1.1, Section D.3, table 2: The above explanation on the units considered for sampling of units for monitoring period. The survey is conducted in Feb. 2020. Therefore, units up to 31/082/2019 are applied in the sampling. According to GS requirements, units must be at least 6 months in operation will be considered in the age group. In this aspect, it is correct that sampled group period is shorter than age group.					
Conclusion *Tick the appropriate checkbox*	☐ Additional action should be taken (finding remains open) ☒ The finding is closed				

CL ID	E-1	Section no.	E.2	Date:	07/07/2020
Description of CL					
MR version 1.0, Section E.2: 1. SDG 5: Clarification request on the value applied for Leisure (chat, recreation, church resting). 2. Clarification request on the equation number for calculation of bio-slurry emissions					
CME response				Date:	25/07/2020
1. The values were incorrectly calculated and one response was double counted. This is now adjusted in the excel sheet survey A analysis and MR section E.2, E.3, E.4 and E.5 2. The equation is not mentioned in the VPA03-DD, the PoA-DD nor the transition Annex, the source is MRI section F.2 which is included as evidence. A footnote is added in section E.2 with the reference					
Documentation provided by CME					
☒ Changes in the MR		Section(s): E.2, E.3, E.4 and E.5		New version No.:1.1	
☒ Changes in XLS		Worksheet(s):analysis A		New version No.:1.1	
☐ Other:					
VVB assessment				Date:	26/07/2020
MR version 1.1, Section E.2: 1. SDG 5: The value applied for Leisure (chat, recreation, church resting) is updated and according to revised survey A analysis. 2. The equation number for calculation of bio-slurry emissions is adopted from MRII and crosscheck for consistency.					

Conclusion *Tick the appropriate checkbox*	☐ Additional action should be taken (finding remains open) ☒ The finding is closed

CL ID	E-2	**Section no.**	E.3, E.4 & E.5	**Date:**	07/07/2020

Description of CL

MR version 1.0, Sections E.3, E.4 & E.5: SDG 5: Clarification request on the value applied for Leisure (chat, recreation, church resting).

CME response **Date:** 25/07/2020

The values were incorrectly calculated and one response was double counted. This is now adjusted in the excel sheet survey A analysis and MR section E.2, E.3, E.4 and E.5

Documentation provided by CME

☒ Changes in the MR	Section(s): E.2, E.3, E.4 and E.5	New version No.:1.1
☒ Changes in XLS	Worksheet(s):analysis A	New version No.:1.1
☐ Other:		

VVB assessment **Date:** 26/07/2020

MR version 1.1, Sections E.3, E.4 & E.5: SDG 5: The value applied for Leisure (chat, recreation, church resting) is updated and according to revised survey A analysis

Conclusion *Tick the appropriate checkbox*	☐ Additional action should be taken (finding remains open) ☒ The finding is closed

CL ID	E-3	**Section no.**	E.6	**Date:**	07/07/2020

Description of CL

MR version 1.0, Section E.6: Clarification request for the source of the ex-ante on the quantity of biomass used in the baseline scenario value estimated at 3.38 tonnes/year

CME response **Date:** 25/07/2020

The value of 3.38 ton is removed as in another comment the VVB request that a comparison should be based on ERs and added.

Documentation provided by project participant

☒ Changes in the MR	Section(s): E.6	New version No.:1.1
☐ Changes in XLS	Worksheet(s):	New version No.:
☐ Other:		

VVB assessment **Date:** 26/07/2020

MR version 1.1, Section E.6: The source of the ex-ante on the quantity of biomass used in the baseline scenario value estimated at 3.38 tonnes/year is deleted since not applicable.

The comparison is updated and based on ex-ante against ex-post for fuel use as the most significant difference.

Conclusion *Tick the appropriate checkbox*	☐ Additional action should be taken (finding remains open) ☒ The finding is closed

CL ID	F-1	**Section no.**	F.1	**Date:**	07/07/2020

Description of CL

MR version 1.0, Section F.1: Clarification request for following:

1. There are 82 pending cases for the period May 2019 to April 2020. Are these plants considered as non-operational and not accounted for ERs?
2. How are the plans to resolve those plants not working, plant cracked and low gas production.

CME response **Date:** 25/07/2020

1. These plants are temporarily out of operation. The usage rate is calculated using survey B. The sampling frame of survey B includes all the plants in the grievance list and the results are therefore representative and covers the plants mentioned in the grievance list. Given that the usage survey is representative and includes all plants in the grievance list, the ratio non-functional units will include those out of operation in the grievance list by definition. As per methodology, units out of operation are discounted from the calculated ERs.
2. As above. Pending cases indicate that action must occur to close the grievance, in some cases this is due to COVID-19 travel restrictions and in other cases as farmers do not have sufficient money to fix the plant (out of warrantee cases only, within warrantee it is covered by the program). Once their income improves, i.e. after harvest of their crops, they are able pay for the necessary repairs

Documentation provided by CME		
☐ Changes in the MR	Section(s):	New version No.:
☐ Changes in XLS	Worksheet(s):	New version No.:
☐ Other:		

VVB assessment	**Date:**	26/07/2020

MR version 1.1, Section F.1: Clarification request for following:

1. CME explained the 82 pending cases for the period May 2019 to April 2020 are temporarily out of operation. These units are considered as non-operational and not included in ER calculations on account of the usage rate.
2. As explained above, pending cases with action to be taken to close the grievance. In lieu of travel restrictions those plants in warrantee cannot be fixed whilst those plants out of warrantee, the farmers do not have sufficient funds to fix.

Conclusion *Tick the appropriate checkbox*	☐ Additional action should be taken (finding remains open) ☒ The finding is closed

Table 5. CARs from this verification

CAR ID	A-2	**Section no.**	Cover page	**Date:**	07/07/2020
Description of CAR					
MR version 1.0, Cover page: The duration of previous monitoring period does not state if both dates are inclusive.					
CME response				**Date:**	25/07/2020
This is now updated					
Documentation provided by project participant					
☒ Changes in MR		Section(s): cover		New version No.:1.1	
☐ Changes in XLS		Worksheet(s):		New version No.:	
☐ Other:					
VVB assessment				**Date:**	26/07/2020
MR version 1.1, Cover page: The both dates are inclusive updated to the duration of previous monitoring period.					
Conclusion *Tick the appropriate checkbox*	☐ Additional action should be taken (finding remains open) ☒ The finding is closed				

CAR ID	A-3	**Section no.**	A.1	**Date:**	07/07/2020
Description of CAR					
MR version 1.0, Section A.1 Purpose and general description of project: The capacity for the biogas system shall be in accordance to the VPA-DD.					
CME response				**Date:**	25/07/2020
This is now updated by copying the sentence from the VPA-DD					
Documentation provided by project participant					
☒ Changes in MR		Section(s):A.1		New version No.:1.1	
☐ Changes in XLS		Worksheet(s):		New version No.:	
☐ Other:					
VVB assessment				**Date:**	26/07/2020

MR version 1.1, Section A.1 Purpose and general description of project: The capacity for the biogas system is updated and in accordance to the VPA-DD.

Conclusion *Tick the appropriate checkbox*	☐ Additional action should be taken (finding remains open) ☒ The finding is closed

CAR ID	A-4	**Section no.**	A.4	**Date:**	07/07/2020
Description of CAR					
MR version 1.0, Section A.4: The dates for the crediting period shall state if inclusive of both dates.					
CME response				**Date:**	25/07/2020
This is now updated					
Documentation provided by CME					
☒ Changes in MR		Section(s):a4		New version No.:1.1	
☐ Changes in XLS		Worksheet(s):		New version No.:	
☐ Other:					
VVB assessment				**Date:**	26/07/2020
MR version 1.1, Section A.4: The dates for the crediting period updated to include both dates.					
Conclusion *Tick the appropriate checkbox*	☐ Additional action should be taken (finding remains open) ☒ The finding is closed				

CAR ID	B-2	**Section no.**	B.1	**Date:**	07/07/2020
Description of CAR					
MR version 1.0, Section B.1, Description of implemented project: The capacity for the biogas system shall be in accordance to the VPA-DD.					
CME response				**Date:**	25/07/2020
This is now updated by copying the sentence from the VPA-DD					
Documentation provided by CME					
☒ Changes in MR		Section(s):B.1		New version No.:1.1	
☐ Changes in XLS		Worksheet(s):		New version No.:	
☐ Other:					
VVB assessment				**Date:**	26/07/2020
MR version 1.1, Section B.1, Description of implemented project: The capacity for the biogas system updated and in accordance to the VPA-DD.					
Conclusion *Tick the appropriate checkbox*	☐ Additional action should be taken (finding remains open) ☒ The finding is closed				

CAR ID	B-3	**Section no.**	B.2.2	**Date:**	07/07/2020
Description of CAR					
MR version 1.0, Section B.2.2: The next MP reference shall be stated.					
CME response				**Date:**	25/07/2020
The wording is from the GS, in brackets it is mentioned it is this MP, now also a footnote is added					
Documentation provided by project participant					
☐ Changes in MR		Section(s):		New version No.:	
☐ Changes in XLS		Worksheet(s):		New version No.:	
☐ Other:					
VVB assessment				**Date:**	26/07/2020
MR version 1.1, Section B.2.2: The next MP reference is updated with a footnote.					
Conclusion *Tick the appropriate checkbox*	☐ Additional action should be taken (finding remains open) ☒ The finding is closed				

CAR ID	B-4	**Section no.**	B.2.4	**Date:**	07/07/2020
Description of CAR					
MR version 1.0, Section B.2.4: The updated monitoring parameters shall be stated.					
CME response				**Date:**	25/07/2020
This is now added					

Documentation provided by CME		
☐ Changes in MR	Section(s):	New version No.:
☐ Changes in XLS	Worksheet(s):	New version No.:
☐ Other:		

VVB assessment	Date:	26/07/2020
MR version 1.1, Section B.2.4: The section is updated to describe the updated monitoring parameters to SDG requirement and accordance to the Transition Annex. Therefore, this is appropriate.		
Conclusion *Tick the appropriate checkbox*	☐ Additional action should be taken (finding remains open) ☒ The finding is closed	

CAR ID	C-1	Section no.	C	Date:	07/07/2020
Description of CAR					
MR version 1.0, Section C Description of monitoring system applied by the project; The phrase in sentence "as per the PoA-DD, VPA-DD and Passport" shall be corrected since Passport no longer applicable with the project applied the transition annex.					
CME response				Date:	25/07/2020
This is updated and the transition annex is now mentioned instead.					
Documentation provided by project participant					
☒ Changes in MR		Section(s): C		New version No.:1.1	
☐ Changes in XLS		Worksheet(s):		New version No.:	
☐ Other:					
VVB assessment				Date:	26/07/2020
MR version 1.1, Section C Description of monitoring system applied by the project; The phrase in sentence "as per the PoA-DD, VPA-DD and Passport" corrected to delete Passport and updated to transition annex.					
Conclusion *Tick the appropriate checkbox*	☐ Additional action should be taken (finding remains open) ☒ The finding is closed				

CAR ID	D-2	Section no.	D.1	Date:	07/07/2020
Description of CAR					

MR version 1.0, Section D.1:

1. Parameter VS_T: The description in value applied for Market and breeding swine inconsistent with Transition Annex.
2. Parameter $\eta_{biogas\ stove}$: The value applied inconsistent with the registered VPA-DD
3. Parameter $MCF_{x,k}$: The value applied inconsistent with the registered VPA-DD
4. Parameter $EF_{awms,T}$ is not listed.

CME response	Date:	25/07/2020

1. Updated to TA description. The source is IPCC, the transition Annex did not include the correct information from the IPCC chapter. In chapter B2.2 change this is described
2. Updated and made consistent with the VPA-DD, the ER spreadsheet was also updated which affect all the ER values which have been updated through the MR
3. Correct, as the VPA-DD did not include an ex-post value, this was established in MRI as described in the VPA03-DD page 27. This is now described in additional comments
4. The parameter is now added

Documentation provided by project participant		
☒ Changes in MR	Section(s):D1	New version No.:1.1
☐ Changes in XLS	Worksheet(s):	New version No.:
☐ Other:		

VVB assessment	Date:	26/07/2020

MR version 1.1, Section D.1:

1. Parameter VS_T: The description in value applied for Market and breeding swine corrected and consistent with Transition Annex.
2. Parameter $\eta_{biogas\ stove}$: The value applied is update and consistent with the registered VPA-DD
3. Parameter $MCF_{x,k}$: The value applied corrected and consistent with the registered VPA-DD
4. Parameter $EF_{awms,T}$ is added and according to registered VPA-DD.

Conclusion *Tick the appropriate checkbox*	☐ Additional action should be taken (finding remains open) ☒ The finding is closed

CAR ID	D-3	**Section no.**	D.2	**Date:**	07/07/2020

Description of CAR

MR version 1.0, Section D.2:

1. The reference MP in the source of data is incorrect for all parameters
2. Parameter GS-08 Access to affordable and clean energy services and $N_{op,y}$: According to the survey B conducted, it is reported plant ID no. BSU/3087 is no longer at the location. This unit shall be removed from the DB as recommended by the surveyor. The total number of units in the DB shall be corrected.
3. Parameter Usage of saved time: The reference cells of the spreadsheet for the values applied do not correspond to the survey results
4. Parameters $U_{p,y}$,, $N_{p,y}$, $N_{op,y}$, $O_{p,y}$ and $LE_{p,y}$: The representation inconsistent with registered VPA-DD.
5. Parameter $N_{p1,y}$: The value shall be corrected with the deletion of plant ID BSU3087 in item 2 above
6. Parameter $N_{p1,y}$: The value is inconsistent with the value in cell G12 of Analysis B sheet
7. Parameter $N_{op1,y}$: The value shall be corrected with the deletion of plant ID BSU3087 in item 2 above.
8. Parameter $O_{p1,y}$: The value shall be corrected with the deletion of plant ID BSU3087 in item 2 above.
9. Parameter $LE_{,y}$, Additional Comment: The reference to ignore leakage should refer to GS email confirmation during the initial validation.
10. Parameters $MS_{P,S,K}$ and $MS_{T,S,k}$: The description in value applied inconsistent with the Transition Annex

CME response **Date:** 25/07/2020

1. This is now updated to the correct survey period (MPIII in the reference)
2. The survey consultant visited that household and these were the findings:

   We have been able to visit the household in Mpigi (BSU/3087, Mr. Posiano Sendege) that we had surveyed through a phone interview. We have confirmed that indeed, part of the digester structure (the expansion chamber) was dug up and replaced with a structure (chicken house). The attached images (1 and 2) show our field staff with Mr. Sendege at the site. Image 3 shows the GPS coordinates of the household. The household would like to speak with someone at the Project office to discuss what can be done to get their system working in future. [the 3 images have been shared by email on the 10th of July]. Most of the biodigester structure is intact with the exception of the expansion chamber. Since household indicate that they want to speak with BSUL on how to restore their plant, we cannot consider the plant to be permanently out of operation. The plant is considered temporarily non-functional and will therefore not be removed from the database.
3. This is now updated with the correct values
4. The parameters are now updated referring to the correct scenario p1 instead of p
5. No update necessary as per 2
6. Value is updated and made consistent
7. No update necessary as per 2
8. No update necessary as per 2
9. A sentence is added with the reference
10. Small changes made, i.e. MSdairy cow is now dairy cow as in VPA03-DD. The order is a bit different from the VPA03-DD but consistent with other parameters (i.e. Nt,h). Table heading is also added

Documentation provided by project participant		
☒ Changes in MR	Section(s):D2	New version No.:1.1
☐ Changes in XLS	Worksheet(s):	New version No.:
☐ Other:		

VVB assessment	Date:	26/07/2020

MR version 1.1, Section D.2:

1. The reference MP in the source of data corrected for all parameters
2. Parameter GS-08 Access to affordable and clean energy services and $N_{op,y}$: The explanation above with further clarification by BSUL that the owner of plant ID no. BSU/3087 has intention to reinstall the expansion chamber to restart the unit. The images of the unit are provided for assessment to confirm the base unit is still intact. In this aspect this finding will be closed temporarily with a FAR raised for further assessment in next verification.
3. Parameter Usage of saved time: The values are updated and correspond to the Analysis A sheet cells.
4. Parameters $U_{p,y}$,, $N_{p,y}$, $N_{op,y}$, $O_{p,y}$ and $LE_{p,y}$: The representation corrected and consistent with registered VPA-DD.
5. Parameter $N_{p1,y}$: The value need not to be corrected as per above 2 assessment.
6. Parameter $N_{p1,y}$: The value is updated and consistent with the value in cells G12 and C57 of Analysis B sheet
7. Parameter $N_{op1,y}$: The value need not to be corrected as per above 2 assessment.
8. Parameter $O_{p1,y}$: The value need not to be corrected as per above 2 assessment.
9. Parameter $LE_{,y}$, Additional Comment: The reference to ignore leakage is update with reference to GS email confirmation dated 26/10/2015 during the initial validation.
10. Parameters $MS_{P,S,K}$ and $MS_{T,S,k}$: The description in value applied corrected and consistent with the Transition Annex

Conclusion *Tick the appropriate checkbox*	☐ Additional action should be taken (finding remains open) ☒ The finding is closed

CAR ID	D-4	Section no.	D.3	Date:	07/07/2020

Description of CAR

MR version 1.0, Section D.3:

1. The referred MP is incorrect throughout the section.
2. ii. Target population / sampling frame: The country referred in the paragraph is incorrect.

CME response	Date:	25/07/2020

1. Updated to MPIII in the reference
2. Changed to Uganda

Documentation provided by project participant		
☒ Changes in MR	Section(s):D3	New version No.:1.1
☐ Changes in XLS	Worksheet(s):	New version No.:
☐ Other:		

VVB assessment	Date:	26/07/2020

MR version 1.1, Section D.3:

1. The referred MP corrected throughout the section.
2. ii. Target population / sampling frame: The country referred in the paragraph corrected.

Conclusion *Tick the appropriate checkbox*	☐ Additional action should be taken (finding remains open) ☒ The finding is closed

CAR ID	E-4	Section no.	E.1	Date:	07/07/2020

Description of CAR

MR version 1.0, Section E.1, 7.1.2: Proportion of population with primary reliance on clean fuels and technology: The baseline scenario for “Number of masons and biogas enterprise staff attending training programmes is not described.

CME response	Date:	25/07/2020
The baseline scenario is now included		
Documentation provided by project participant		
☒ Changes in MR	Section(s):E-1	New version No.:1.1
☐ Changes in XLS	Worksheet(s):	New version No.:
☐ Other:		
VVB assessment	**Date:**	26/07/2020
MR version 1.1, Section E.1, 7.1.2: Proportion of population with primary reliance on clean fuels and technology: The baseline scenario for "Number of masons and biogas enterprise staff attending training programmes is update as zero and is appropriate.		
Conclusion *Tick the appropriate checkbox*	☐ Additional action should be taken (finding remains open) ☒ The finding is closed	

CAR ID	E-5	Section no.	E.1	Date:	07/07/2020
Description of CAR					
MR version 1.0, Section E.1: 1. The equation for Baseline emissions from fuel use inconsistent with the Transition Annex equation 3 2. The MP referred in footnotes 9 & 10 are incorrect. 3. Table 4: The baseline emissions value for each scenario inconsistent with ER calculation BE sheet.					
CME response				**Date:**	25/07/2020
1. the correct equation is now added 2. references are now corrected 3. updated and corrected					
Documentation provided by project participant					
☒ Changes in MR			Section(s):E.1	New version No.:1.1	
☐ Changes in XLS			Worksheet(s):	New version No.:	
☐ Other:					
VVB assessment				**Date:**	26/07/2020
MR version 1.1, Section E.1: 1. The equation for Baseline emissions from fuel use is update and consistent with the Transition Annex equation 3 2. The MP referred in footnotes 9 & 10 are corrected. 3. Table 4: The baseline emissions value for each scenario updated and consistent with ER calculation BE sheet.					
Conclusion *Tick the appropriate checkbox*	☐ Additional action should be taken (finding remains open) ☒ The finding is closed				

CAR ID	E-6	Section no.	E.2	Date:	07/07/2020
Description of CAR					
MR version 1.0, Section E.2: 1. SDG 7.1.2 Number of units installed shall be corrected with correction for Parameter GS-08. 2. The equation number applied for source 2 Accounting for project emissions due to the methane emissions from manure handling and EFawms, T, inconsistent with Transition Annex 3. Footnotes 11, 12 and 13 reference MP is incorrect. 4. The reference MP at paragraph for Parameter $PE_{p1\ bio\text{-}slurry}$ is incorrect					
CME response				**Date:**	25/07/2020

1. This change is not required as argued in CAR D-3
2. The internal number of the equations of the MR are removed, thus there is no inconsistency anymore.
3. Updated
4. updated

Documentation provided by project participant		
☒ Changes in MR	Section(s):E2	New version No.:1.1
☐ Changes in XLS	Worksheet(s):	New version No.:
☐ Other:		

VVB assessment	**Date:**	26/07/2020

MR version 1.1, Section E.2:

1. SDG 7.1.2 Number of units installed need not to be corrected as per assessment for Parameter GS-08 in CAR D-3 above.
2. The equation number are removed to avoid inconsistency.
3. Footnotes 11, 12 and 13 reference MP corrected.
4. The reference MP at paragraph for Parameter $PE_{p1\ bio\text{-}slurry}$ corrected.

Conclusion *Tick the appropriate checkbox*	☐ Additional action should be taken (finding remains open) ☒ The finding is closed

CAR ID	E-7	**Section no.**	E.3, E.4 & E.5	**Date:**	07/07/2020

Description of CAR

MR version 1.0, Sections E.3, E.4 & E.5: SDG 7.1.2 Number of units installed shall be corrected with correction for Parameter GS-08.

CME response	**Date:**	25/07/2020

This change is not required as argued in CAR D-3

Documentation provided by project participant		
☒ Changes in MR	E.3, E.4 & E.5	New version No.:1.1
☐ Changes in XLS	Worksheet(s):	New version No.:
☐ Other:		

VVB assessment	**Date:**	26/07/2020

MR version 1.1, Sections E.3, E.4 & E.5: SDG 7.1.2 Number of units installed need not to be corrected as per assessment in CAR D-3 for Parameter GS-08.

Conclusion *Tick the appropriate checkbox*	☐ Additional action should be taken (finding remains open) ☒ The finding is closed

CAR ID	E-8	**Section no.**	E.5	**Date:**	07/07/2020

Description of CAR

MR version 1.0, Section E.5: Referred MP in footnote 14 and sentence below table SDG 13.2.1 is incorrect.

Project participant response	**Date:**	25/07/2020

Updated to MPIII in the footnote 16 and sentence.

Documentation provided by project participant		
☒ Changes in MR	Section(s):E.5	New version No.:1.1
☐ Changes in XLS	Worksheet(s):	New version No.:
☐ Other:		

VVB assessment	**Date:**	26/07/2020

MR version 1.1, Section E.5: Referred MP in footnote 14 is now footnote 16 and sentence below table SDG 13.2.1 is updated accordingly.

Conclusion *Tick the appropriate checkbox*	☐ Additional action should be taken (finding remains open) ☒ The finding is closed

CAR ID	E-9	**Section no.**	E.6	**Date:**	07/07/2020

Description of CAR

MR version 1.0, Section E.6: The comparison of ex-port and ex-ante shall be in ERs.

Project participant response			**Date:**	25/07/2020
This is now updated				
Documentation provided by CME				
☒	Changes in MR	Section(s):E6	New version No.:1.1	
☐	Changes in XLS	Worksheet(s):	New version No.:	
☐	Other:			
VVB assessment			**Date:**	26/07/2020
MR version 1.1, Section E.6: The comparison of ex-port and ex-ante are updated as ERs				
Conclusion *Tick the appropriate checkbox*	☐ Additional action should be taken (finding remains open) ☒ The finding is closed			

CAR ID	E-10	**Section no.**	SDG ER	**Date:**	07/07/2020
Description of CAR					
VPA03 MPIII SDG ER: 1. Analysis B sheet: Cells F12, G12 and G13 to be corrected with the deletion of plant ID BSU/3087. 2. BE sheet: Cells G13 to G18 and G57 to G60 reference VPA is incorrect 3. SDG13 sheet: Cells D21, E21 and B57 to be corrected with correction of above item 1.					
Project participant response				**Date:**	25/07/2020
1. This change is not required as argued in CAR D-3 2. Updated – the source is a 'linked cell' in all cases linking to a value in Analysis A, which is the analysis of the survey data 3. This change is not required as argued in CAR D-3					
Documentation provided by project participant					
☐	Changes in MR	Section(s):	New version No.:		
☒	Changes in XLS	Worksheet(s):BE	New version No.:1.1		
☐	Other:				
VVB assessment				**Date:**	26/07/2020
VPA03 MPIII SDG ER version 1.1: 1. Analysis B sheet: Cells F12, G12 and G13 need not to be corrected as per assessment in CAR D-3 for Parameter G2-08. 2. BE sheet: Cells G13 to G18 and G57 to G60 updated as linked cells to the referred sheet Analysis A in the data cells. 3. SDG13 sheet: Cells D21, E21 and B57 need not to be corrected as per assessment in CAR D-3 for parameter GS-08					
Conclusion *Tick the appropriate checkbox*	☐ Additional action should be taken (finding remains open) ☒ The finding is closed				

CAR ID	F-2	**Section no.**	F.2	**Date:**	07/07/2020
Description of CAR					
MR version 1.0, Section F.2: This section request for list all inputs/grievances from previous monitoring period where follow up action is to be verified in this monitoring period. This list is not made available and reported.					
Project participant response				**Date:**	25/07/2020
The list is now made available and reported. In 3 cases the plant was dismantled, these have been removed from the Database. One case was already removed prior to this MP. See section F.2					
Documentation provided by project participant					
☒	Changes in MR	Section(s):F2	New version No.:1.1		
☐	Changes in XLS	Worksheet(s):	New version No.:		
☒	Other: VPA03 MPII complaints tracker update 10july20				
VVB assessment				**Date:**	26/07/2020

MR version 1.1, Section F.2: The summary list outstanding grievances from MPII is updated in the section and crosscheck with the grievance tracker. The outstanding of 33 cases will brought forward to MPIV. A FAR is raised to track these outstanding 33 cases that will be addressed and resolved prior to the next MP.

Conclusion *Tick the appropriate checkbox*	☐ Additional action should be taken (finding remains open) ☒ The finding is closed

Table 6. FARs from this verification

FAR ID	FAR 01	**Section No.**	D.2	**Date:**	26/07/2020
Description of FAR					
Refer plant ID no. BSU/3087 that the owner has intention to reinstall the expansion chamber unit to restart unit. The VPA Implementer is to monitor when the expansion chamber will be installed to allow the plant restart prior to the next MP verification					
CME response				**Date:**	
Documentation provided by project participant					
☐ Changes in MR		Section(s):		New version No.:	
☐ Changes in XLS		Worksheet(s):		New version No.	
☐ Other:					
VVB assessment				**Date:**	

FAR ID	FAR 02	**Section No.**	F.2	**Date:**	26/07/2020
Description of FAR					
The VPA implementer has to track on the outstanding 33 cases to be resolve prior to the next MP verification.					
CME response				**Date:**	
Documentation provided by project participant					
☐ Changes in MR		Section(s):		New version No.:	
☐ Changes in XLS		Worksheet(s):		New version No.	
☐ Other:					
VVB assessment				**Date:**	

Appendix 5. Monitored Parameters

Table A-5: Periodic Verification Checklist – Monitored Parameters

1. SDG 2.4.1: GS-03 Soil condition		**Description: Percentage of biogas users who use slurry as a fertilizer**		
Measurement / Determination method (VVS, §§ 363-367) *Describe how the monitoring parameter was measured / determined. Focus primarily on the original data level (ODL) but also describe the applied data aggregation trails (from ODL to data aggregation level zero (DAL0)).* *Check if relevant equipment has been exchanged and if in cases of failures / downtimes of standard equipment other measurement / determination methods have been used. Furthermore, verify the frequency of measurements as per the requirements.* *Assess whether the measurement / determination method is in line with the registered monitoring plan of the VPADD and the applied methodology.*	/MR/ /ER/ /US/ /VPADD/ /TA/ /HH/	*Description:* The number of households used bio-slurry for farming activities reported is 92%. The data derived from the Usage Survey conducted by a 3rd party. *Verifier´s action:* The usage survey results are review and crosscheck. During the telephone interviews of households the percentage of households applies bio-slurry for farming and vegetable gardening is approx. 52%. *Conclusion:* The monitoring of the indicator is according to the VPA-DD and Transition Annex. ☒ In this context the following findings have been raised: ☒ CAR D-3 ☐	~~CAR D-3~~	OK
2. SDG 3.9.1: GS-01 Air quality		**Description: Perceived improvement in health by the user. (incidence of eye problems and respiratory illness)**		
Measurement / Determination method (VVS, §§ 363-367) *Describe how the monitoring parameter was measured / determined. Focus primarily on the original data level*	/MR/ /US/ /VPADD/	*Description:* The chosen parameter monitors users report a perceived improvement in health through reduced smoke inhalation derived from the usage survey conducted by a 3rd party.	~~CAR D-3~~	OK

<table>
<tr>
<td>(ODL) but also describe the applied data aggregation trails (from ODL to data aggregation level zero (DAL0)).
Check if relevant equipment has been exchanged and if in cases of failures / downtimes of standard equipment other measurement / determination methods have been used. Furthermore, verify the frequency of measurements as per the requirements.
Assess whether the measurement / determination method is in line with the registered monitoring plan of the VPADD and the applied methodology.</td>
<td>/TA/
/HH/</td>
<td>The situation as at 30/04/2020 as below:
<table>
<tr><td>Perceived health improvement</td><td>88%</td></tr>
<tr><td>No changed</td><td>22%</td></tr>
<tr><td>Deterioration in health</td><td>0%</td></tr>
</table>
Verifier´s action:
The usage survey results are review and crosscheck.
During telephone interviews of households, they informed using biogas does not cause eyes problem and respiratory health issues of the family as compared to using firewood.
Conclusion:
The monitoring of the indicator is according to Transition Annex and VPA-DD.
☒ In this context the following findings have been raised:
☒ CAR D-3
☐</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. SDG 5: Achieve gender equality and empower all women and girls</td>
<td></td>
<td>Description: Time savings</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Measurement / Determination method (VVS, §§ 363-367)
Describe how the monitoring parameter was measured / determined. Focus primarily on the original data level (ODL) but also describe the applied data aggregation trails (from ODL to data aggregation level zero (DAL0)).
Check if relevant equipment has been exchanged and if in cases of failures / downtimes of standard equipment other measurement / determination methods have been used. Furthermore, verify the frequency of measurements as per the requirements.
Assess whether the measurement / determination method is in line with the registered monitoring plan of the VPADD and the applied methodology.</td>
<td>/MR/
/US/
/TA/
/HH/
/ER/</td>
<td>Description:
The chosen parameter monitors time-savings of households attributed to the installation of a biodigester.
<table>
<tr><td>Yes, more time available than before having biogas</td><td>94%</td></tr>
<tr><td>No, just the same as before (between before and after having Biogas)</td><td>4%</td></tr>
<tr><td>Yes, less time available than before having biogas</td><td>1%</td></tr>
<tr><td>Similar</td><td>1%</td></tr>
</table>
The data derived from the Usage Survey conducted by a 3rd party.
Verifier´s action:
The usage survey results are review and crosscheck.</td>
<td><s>CAR D-3</s></td>
<td>OK</td>
</tr>
</table>

<table>
<tr><td></td><td></td><td>During telephone interviews of households 56% responded they have more time available using biogas.

Conclusion:

The monitoring of the indicator is according to the Transition Annex.

☒ In this context the following findings have been raised:
☒ CAR D-3
☐</td><td></td><td></td></tr>
<tr><td>4. SDG 5: Achieve gender equality and empower all women and girls</td><td></td><td>Description: Usage of saved time</td><td></td><td></td></tr>
<tr><td>Measurement / Determination method
(VVS, §§ 363-367)
Describe how the monitoring parameter was measured / determined. Focus primarily on the original data level (ODL) but also describe the applied data aggregation trails (from ODL to data aggregation level zero (DAL0)).
Check if relevant equipment has been exchanged and if in cases of failures / downtimes of standard equipment other measurement / determination methods have been used. Furthermore, verify the frequency of measurements as per the requirements.
Assess whether the measurement / determination method is in line with the registered monitoring plan of the VPADD and the applied methodology.</td><td>/MR/
/US/
/ER/
/TA/
/HH/</td><td>Description:

The chosen parameter monitors usage of saved time.

<table>
<tr><td>Income generating including farming</td><td>28%</td></tr>
<tr><td>Education</td><td>4%</td></tr>
<tr><td>Leisure (chat, recreation, church resting)</td><td>58%</td></tr>
<tr><td>Other</td><td>10%</td></tr>
</table>

The data derived from Usage Survey conducted by a 3rd party.

Verifier´s action:

The survey results are review and crosscheck.

During the telephone interviews of households most of them informed the saved time is generally for leisure chat.

Conclusion:

The monitoring of the indicator is according to the Transition Annex.

☒ In this context the following findings have been raised:
☒ CAR D-3
☐</td><td><s>CAR D-3</s></td><td>OK</td></tr>
</table>

5. SDG7.1.2: GS-08 Access to affordable and clean energy services		**Description: Number of biogas units installed**		
Measurement / Determination method (VVS, §§ 363-367) *Describe how the monitoring parameter was measured / determined. Focus primarily on the original data level (ODL) but also describe the applied data aggregation trails (from ODL to data aggregation level zero (DAL0)).* *Check if relevant equipment has been exchanged and if in cases of failures / downtimes of standard equipment other measurement / determination methods have been used. Furthermore, verify the frequency of measurements as per the requirements.* *Assess whether the measurement / determination method is in line with the registered monitoring plan of the VPADD and the applied methodology.*	/MR/ /DB/ /VPADD/ /TA/ /IM01/ /IM02/ /IM03/	*Description:* The number of bio-digesters implemented as at 30/04/2020 is 8,222 units The data derived from the project database with the number of digesters commissioned with the data captured by the VPA Implementer. *Verifier´s action:* The project database is review and interview with VPA implementer and CME personnel. Plant ID no. BSU/3087 owner has intention to reinstall the expansion chamber to restart the unit. The images of the unit is provided for assessment to confirm the base unit is still intact. In this aspect a FAR raised for further assessment in next verification. *Conclusion:* The monitoring of the indicator is according to the Transition Annex and VPA-DD ☒ In this context the following findings have been raised: ☒ CAR D-3 ☒ FAR 01	~~CAR D-3~~ FAR 01	OK
6. SDG7.1.2: GS-12 Technology transfer and technological self-reliance		**Description: Number of masons and biogas enterprise staff attending training programmes**		
Measurement / Determination method (VVS, §§ 363-367) *Describe how the monitoring parameter was measured / determined. Focus primarily on the original data level (ODL) but also describe the applied data aggregation trails (from ODL to data aggregation level zero (DAL0)).* *Check if relevant equipment has been exchanged and if in cases of failures / downtimes of standard equipment other measurement / determination methods have been*	/MR/ /T/ /GSP/ /VPADD /IM03/	*Description:* The data is derived from the annual training records of the VPA implementer, Biogas Solutions Uganda Ltd (BSUL) provided to the masons and biogas enterprise staff. During this monitoring period, the reported data is 102 masons & biogas enterprises personnel. *Verifier´s action:*	~~CAR D-3~~	OK

used. Furthermore, verify the frequency of measurements as per the requirements. *Assess whether the measurement / determination method is in line with the registered monitoring plan of the VPADD and the applied methodology.*		The training records and results are verified and through interview of the VPA implementer *Conclusion:* The monitoring of the indicator is according to the Transition Annex and VPA-DD. ☒ In this context the following findings have been raised: ☒ CAR D-3 ☐		
7. SDG 8.5: GS-10 Technology transfer and technological self-reliance		**Description: Man-days**		
Measurement / Determination method (VVS, §§ 363-367) *Describe how the monitoring parameter was measured / determined. Focus primarily on the original data level (ODL) but also describe the applied data aggregation trails (from ODL to data aggregation level zero (DAL0)).* *Check if relevant equipment has been exchanged and if in cases of failures / downtimes of standard equipment other measurement / determination methods have been used. Furthermore, verify the frequency of measurements as per the requirements.* *Assess whether the measurement / determination method is in line with the registered monitoring plan of the VPADD and the applied methodology.*	/MR/ /DB/ /ER/ /TA/ /VPADD/ /IM02/ /IM03/	*Description:* The parameter monitored the number of man days required to install a digester. The data is determined by multiplying the number of days required to install a digester times the number of units installed by size. The calculated data for this monitoring period is 219,886 man days. *Verifier´s action:* Sheet SDG8 of DB was reviewed to crosscheck the reported man-days required to build each size of digester. The calculated data for this monitoring is crosscheck for correctness. The CME and VPA implementer are interviewed on the man days required to install the digester. *Conclusion:* The monitoring of the indicator is according to the Transition Annex, and registered VPA-DD. ☒ In this context the following findings have been raised: ☒ CAR D-3	~~CAR D-3~~	OK

			☐		
Checklist Item (incl. guidance for the verification team)	**Refe-rence**	**Verification Team Comments** (Means and results of assessment)		**Draft Concl.**	**Final Concl.**
8. SDG 13.2.1: $U_{p1,y}$		**Description: Cumulative usage rate for technologies in project scenario p1 in year y, based on cumulative adoption rate and drop off rate (fraction)**			
Measurement / Determination method (VVS, §§ 363-367) *Describe how the monitoring parameter was measured / determined. Focus primarily on the original data level (ODL) but also describe the applied data aggregation trails (from ODL to data aggregation level zero (DAL0)).* *Check if relevant equipment has been exchanged and if in cases of failures / downtimes of standard equipment other measurement / determination methods have been used. Furthermore, verify the frequency of measurements as per the requirements.* *Assess whether the measurement / determination method is in line with the registered monitoring plan of the PDD and the applied methodology.*	/MR/ /US/ /TA /ER/ /VPADD/ /GSM/ /IM01-IM03/	*Description:* The cumulative usage rate of bio-digesters for the monitoring period is 63.35%. The data is consolidated from the usage survey results conducted by the 3rd party consultant. The data is applied to calculate the emission reductions.		~~CAR D-3~~	OK
		Verifier´s action: The usage survey report is verified on the cumulative results. The data applied for ER calculations is crosschecked against the survey report for consistency. CME and VPA implementer are interviewed.			
		Conclusion: The parameter is monitored in accordance with the Transition Annex, registered VPA-DD and applied methodology.			
		☒	In this context the following findings have been raised:		
			☒ CAR D-3		
			☐		
9. SDG 13.2.1: $N_{p1,y}$		**Description: Cumulative number of project technology-days included in the project database for project scenario p1 against baseline scenario b1 in year y**			
Measurement / Determination method	/MR/	*Description:*		~~CAR D-3~~	OK

(VVS, §§ 363-367) *Describe how the monitoring parameter was measured / determined. Focus primarily on the original data level (ODL) but also describe the applied data aggregation trails (from ODL to data aggregation level zero (DAL0)).* *Check if relevant equipment has been exchanged and if in cases of failures / downtimes of standard equipment other measurement / determination methods have been used. Furthermore, verify the frequency of measurements as per the requirements.* *Assess whether the measurement / determination method is in line with the registered monitoring plan of the PDD and the applied methodology.*	/TA/ /US/ /ER/ /VPADD/ /GSM/ /IM01-IM03/	The cumulative number of project technology days during the monitoring period is 4,946. The data is calculated from the survey results conducted by an independent consultant. The equation applied to determine the number of digester is ($N_{p,y}$ = $N_{op,y}$ * ($O_{p,y}$ / 365). *Verifier´s action:* The survey results are reviewed on the data applied in the calculation and crosscheck the value applied in the ER spreadsheet for consistency. The data applied in the equation are verify for correctness. CME and VPA implementer are interviewed. *Conclusion:* The parameter is monitored in according to the Transition Annex, registered VPA-DD and applied methodology. ☒ In this context the following findings have been raised: ☒ CAR D-3 ☐		
10. SDG 13.2.1: $N_{Op1,y}$		**Description: Cumulative number of project technologies included in the project database for project scenario p1 in year y**		
0) ***Measurement / Determination method (VVS, §§ 363-367)*** *Describe how the monitoring parameter was measured / determined. Focus primarily on the original data level (ODL) but also describe the applied data aggregation trails (from ODL to data aggregation level zero (DAL0)).* *Check if relevant equipment has been exchanged and if in cases of failures / downtimes of standard equipment other measurement / determination methods have been used. Furthermore, verify the frequency of measurements as per the requirements.*	/MR/ /TA/ /DB/ /ER/ /VPADD/ /GSM/ /IM01-IM03/	*Description:* The number of units installed as of 30/04/2020 is 8,222. The data is derived from the database based on commissioning reports collated by VPA implementer from the BCEs and masons. *Verifier´s action:* The project database is review and crosschecked with the selected households for the onsite visits and telephone interviews to confirm the data in the database are correct. VPA Implementer and CME were interviewed.	CAR D-3	OK

Assess whether the measurement / determination method is in line with the registered monitoring plan of the PDD and the applied methodology.		*Conclusion:* The parameter is monitored in accordance to the Transition Annex, registered VPADD and applied methodology. ☒ In this context the following findings have been raised: ☒ CAR D-3 ☐		
11. SDG 13.2.1: $O_{p1,y}$		**Description: The average technology-days during which the bio digesters are operational for project scenario p1 against baseline scenario b1 in year y**		
1) ***Measurement / Determination method (VVS, §§ 363-367)*** *Describe how the monitoring parameter was measured / determined. Focus primarily on the original data level (ODL) but also describe the applied data aggregation trails (from ODL to data aggregation level zero (DAL0)).* *Check if relevant equipment has been exchanged and if in cases of failures / downtimes of standard equipment other measurement / determination methods have been used. Furthermore, verify the frequency of measurements as per the requirements.* *Assess whether the measurement / determination method is in line with the registered monitoring plan of the PDD and the applied methodology.*	/MR/ /US/ /TA/ /ER/ /VPADD/ /GSM/ /IM01/ /IM03/ /HH/ /HH/	*Description:* The data is calculated using the surveyed results from 3rd party For this monitoring period, the average number of technology days which the digesters in operation is 321.12 days. *Verifier´s action:* The survey results are review to crosscheck on the number of units not functioning are replicate for correct calculation. The ER spreadsheet is crosscheck on the operation days applied. The interviewed households informed on operation of the units. The 3rd party surveyor is interview on the survey results. VPA implementer and CME interview on data. *Conclusion:* The parameter is monitored according to the Transition Annex, registered VPADD and applied methodology. ☒ In this context the following findings have been raised: ☒ CAR D-3 ☐	~~CAR D-3~~	OK
12. SDG 13.2.1: $LE_{p1,y}$		**Description: Leakage in project scenario p1 during year y**		

Measurement / Determination method (VVS, §§ 363-367) *Describe how the monitoring parameter was measured / determined. Focus primarily on the original data level (ODL) but also describe the applied data aggregation trails (from ODL to data aggregation level zero (DAL0)).* *Check if relevant equipment has been exchanged and if in cases of failures / downtimes of standard equipment other measurement / determination methods have been used. Furthermore, verify the frequency of measurements as per the requirements.* *Assess whether the measurement / determination method is in line with the registered monitoring plan of the PDD and the applied methodology.*	/MR/ /US/ /BFT/ /VPADD/ /GSM/ /IM03/ /IM02/ /IM01/	*Description:* According to the registered VPA-DD, the value of the parameter is zero. In the addition comments: According to the methodology applied "leakage risks deemed very low can be ignored as long as the case for their insignificance is substantiated" (p.11 – 12). Section 6.3.3 of the VPA-DD provides an overview of potential sources of leakage, including their applicability and justification for excluding the sources of leakage. This approach was approved by the Gold Standard on 20 October 2016. There is no survey conduct to determine the leakage besides physical leakage, leakage from combustion and emissions from bioslurry. Therefore, leakage is consider zero. *Verifier´s action:* The registered VPA-DD is review to crosscheck the addition comments and GS email dated 20/10/2016 that no leakage will be considered. The value in the MR and ER spreadsheet was crosscheck for consistency. The VPA implementer and CME is interview on the data. *Conclusion:* The parameter is monitored according to the Transition Annex, registered VPA-DDs and applied methodology. ☒ In this context the following findings have been raised: ☒ CAR D-3 ☐	~~CAR D-3~~	OK
13. SDG 13.2.1: $N_{T,h}$		**Description: Number of animals of livestock category T in premise h**		
Measurement / Determination method	/MR/	*Description:*	~~CAR D-3~~	OK

<table>
<tr>
<td>(VVS, §§ 363-367)
Describe how the monitoring parameter was measured / determined. Focus primarily on the original data level (ODL) but also describe the applied data aggregation trails (from ODL to data aggregation level zero (DAL0)).
Check if relevant equipment has been exchanged and if in cases of failures / downtimes of standard equipment other measurement / determination methods have been used. Furthermore, verify the frequency of measurements as per the requirements.
Assess whether the measurement / determination method is in line with the registered monitoring plan of the PDD and the applied methodology.</td>
<td>/ER/
/US/
/TA/
/VPADD/
/GSM/
/IM04/
/IM02/</td>
<td>The data for the number of animals for each category is derive from the usage survey report.
For this monitoring period, the average number of animals per household as below:
<table>
<tr><th>Animal T</th><th>Average</th></tr>
<tr><td>Dairy cows</td><td>5.63</td></tr>
<tr><td>Other cattle</td><td>0.89</td></tr>
<tr><td>Market swine</td><td>1.01</td></tr>
<tr><td>Breeding swine</td><td>0.59</td></tr>
<tr><td>Poultry</td><td>10.08</td></tr>
<tr><td>Sheep</td><td>0.86</td></tr>
<tr><td>Goat</td><td>2.88</td></tr>
</table>
Verifier´s action:
The results from the usage survey data is crosschecked with the ER spreadsheet for consistency.
Conclusion:
The parameter is monitored in accordance with the Transition Annex, registered VPA-DD and applied methodology.
☒ In this context the following findings have been raised:
☒ CAR D-3
☐</td>
<td></td>
<td></td>
</tr>
<tr>
<td>14. SDG 13.2.1: $BB_{b\ ratio}$</td>
<td></td>
<td>Description: Baseline scenario ratios</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Measurement / Determination method
(VVS, §§ 363-367)
Describe how the monitoring parameter was measured / determined. Focus primarily on the original data level (ODL) but also describe the applied data aggregation trails (from ODL to data aggregation level zero (DAL0)).
Check if relevant equipment has been exchanged and if in cases of failures / downtimes of standard equipment other measurement / determination methods have been used. Furthermore, verify the frequency of measurements as per the requirements.</td>
<td>/MR/
/ER/
/US/
/TA
/VPADD/
/IM01/
/IM04/</td>
<td>Description:
The baseline scenarios are the type of fuel used prior to biogas.
<table>
<tr><th>Baseline scenario</th><th>#</th><th>%</th></tr>
<tr><td>B1: Firewood used to meet (more than 50%) of my cooking needs</td><td>103</td><td>67.8</td></tr>
<tr><td>B2: Charcoal used to meet (more than 50%) of my cooking needs</td><td>30</td><td>19.7</td></tr>
<tr><td>B3: Firewood & charcoal used to meet (more than 50%) of my cooking</td><td>18</td><td>11.8</td></tr>
</table>
</td>
<td>OK</td>
<td>OK</td>
</tr>
</table>

Assess whether the measurement / determination method is in line with the registered monitoring plan of the PDD and the applied methodology.	/HH/	B4:Other fuels | 1 | 0.7 The data derived from the usage survey conducted by 3rd party. *Verifier´s action:* The data in the ER was crosschecked with the results from the usage survey. During the telephone interviews, the household informed firewood, charcoal and combination of firewood and charcoal are the main fuel used prior to the installation of the biogas digester. *Conclusion:* The parameter is monitored in accordance with the Transition Annex, registered VPADD and applied methodology ☒ In this context the following findings have been raised: ☒ CAR D-3 ☐		
15. SDG 13.2.1: $BB_{b1,bio}$		**Description: Amount of woody biomass used in the baseline scenario b1**		
Measurement / Determination method (VVS, §§ 363-367) *Describe how the monitoring parameter was measured / determined. Focus primarily on the original data level (ODL) but also describe the applied data aggregation trails (from ODL to data aggregation level zero (DAL0)).* *Check if relevant equipment has been exchanged and if in cases of failures / downtimes of standard equipment other measurement / determination methods have been used. Furthermore, verify the frequency of measurements as per the requirements.* *Assess whether the measurement / determination method is in line with the registered monitoring plan of the PDD and the applied methodology.*	/MR/ /ER/ /BFT/ /VPADD/ /IM01/ /IM04/ /LHH/	*Description:* The firewood is the woody biomass in the baseline scenario b1. The amount of firewood used by the households in the baseline scenario survey conducted in April 2017. The reported value is 3.527t/y *Verifier´s action:* The BFT b1 survey results are verify for correctness The data in the ER is crosscheck with the results from the BFT survey value for consistency. During the remote telephone interview, it could be confirmed firewood is one of the woody biomass used prior to the bio-digester is installed. *Conclusion:*	OK	OK

		The parameter is monitored in accordance with the registered VPA-DD and applied methodology ☐ In this context the following findings have been raised: ☐ ☐		
16. SDG 13.2.1: $BB_{b2,bio}$		**Description: Amount of woody biomass used in the baseline scenario b2**		
Measurement / Determination method (VVS, §§ 363-367) *Describe how the monitoring parameter was measured / determined. Focus primarily on the original data level (ODL) but also describe the applied data aggregation trails (from ODL to data aggregation level zero (DAL0)).* *Check if relevant equipment has been exchanged and if in cases of failures / downtimes of standard equipment other measurement / determination methods have been used. Furthermore, verify the frequency of measurements as per the requirements.* *Assess whether the measurement / determination method is in line with the registered monitoring plan of the PDD and the applied methodology.*	/MR/ /ER/ /BFT/ /VPADD/ //IM012 /IM04/ /LHH/	*Description:* The charcoal is one of the woody biomass in the baseline scenario b2. The amount of charcoal used by the households in the baseline scenario is based on the BFT survey conducted in April 2017. The reported data is 7.042t/y. *Verifier´s action:* The BFT b2 survey results are verify for correctness The data in the ER is crosscheck with the results from the BFT survey value for consistency. During the remote telephone interview it could be confirmed charcoal is one of the woody biomass used prior to the bio-digester is installed. *Conclusion:* The parameter is monitored in accordance with the registered VPA-DD and applied methodology ☐ In this context the following findings have been raised: ☐ ☐	OK	OK
17. SDG 13.2.1: $BB_{b3,bio}$		**Description: Amount of woody biomass used in the baseline scenario b3**		

Measurement / Determination method (VVS, §§ 363-367) *Describe how the monitoring parameter was measured / determined. Focus primarily on the original data level (ODL) but also describe the applied data aggregation trails (from ODL to data aggregation level zero (DAL0)).* *Check if relevant equipment has been exchanged and if in cases of failures / downtimes of standard equipment other measurement / determination methods have been used. Furthermore, verify the frequency of measurements as per the requirements.* *Assess whether the measurement / determination method is in line with the registered monitoring plan of the PDD and the applied methodology.*	/MR/ /ER/ /BFT/ /VPADD/ /IM01/ /IM04/ /LHH/	*Description:* The firewood and charcoal are the woody biomass in the baseline scenario b3. The amount of firewood and charcoal used by the households in the baseline scenario is based on the BFT conducted in April 2017 The value reported is 10.034 t/y according to the survey results. *Verifier´s action:* The BFT b3 survey results are verify for correctness. The data in the ER is crosscheck with the results from the BFT survey data for consistency. During the remote telephone interviews, it could be confirmed firewood and charcoal are the woody biomass used prior to the bio-digester is installed. *Conclusion:* The parameter is monitored in accordance with the registered VPA-DD and applied methodology ☐ In this context the following findings have been raised: ☐ ☐	OK	OK
18. SDG 13.2.1: $BB_{b1,2,3,fuel}$		**Description: Amount of fossil fuel used in the baseline scenarios b1, b2 and b3**		
Measurement / Determination method (VVS, §§ 363-367) *Describe how the monitoring parameter was measured / determined. Focus primarily on the original data level (ODL) but also describe the applied data aggregation trails (from ODL to data aggregation level zero (DAL0)).* *Check if relevant equipment has been exchanged and if in cases of failures / downtimes of standard equipment other measurement / determination methods have been*	/MR/ /ER/ /BFT/ /TA/ /GSM/ /VPADD/ /IM02/	*Description:* The amount of fossil fuel used by the households in the baseline scenario is based on the BFT conducted during MPI and fixed for the crediting period. The value applied is zero (0) *Verifier´s action:* The BFT survey data are review for correctness.	OK	OK

used. Furthermore, verify the frequency of measurements as per the requirements. *Assess whether the measurement / determination method is in line with the registered monitoring plan of the PDD and the applied methodology.*	/IM04/ /HH/	The data in the ER was crosschecked with the results from the BFT primary data and analysis for consistency. During the telephone interview, households informed firewood and charcoal is the fuel used prior to the bio-digester is installed. *Conclusion:* The parameter is monitored in accordance with the Transition Annex, registered VPA-DD and applied methodology ☐ In this context the following findings have been raised: ☐ ☐		
19. SDG 13.2.1: $BB_{p1, bio}$		**Description: Amount of woody biomass used in the project scenario p1 (one value)**		
Measurement / Determination method (VVS, §§ 363-367) *Describe how the monitoring parameter was measured / determined. Focus primarily on the original data level (ODL) but also describe the applied data aggregation trails (from ODL to data aggregation level zero (DAL0)).* *Check if relevant equipment has been exchanged and if in cases of failures / downtimes of standard equipment other measurement / determination methods have been used. Furthermore, verify the frequency of measurements as per the requirements.* *Assess whether the measurement / determination method is in line with the registered monitoring plan of the PDD and the applied methodology.*	/MR/ /US/ /ER/ /PFT/ /VPADD/ /TA/ /IM01/ /IM04/ /HH/	*Description:* The quantity of biomass used by the households in the project scenario is measured by means of PFT conducted once in every 2 years. The quantity of biomass used during the monitoring period is 2.846t/y The biomass consumed in the project scenario is firewood and charcoal. *Verifier´s action:* The reported value was crosschecked with the PFT survey for correctness. The data in the ER is crosscheck with the results from the PFT survey results for consistency. During the telephone interviews, the households informed firewood and charcoal are used as supplement fuel. *Conclusion:* The parameter is monitored in accordance with the Transition Annex, registered VPA-DD and applied methodology.	~~CAR D-3~~	OK

		☒	In this context the following findings have been raised:		
			☒ CAR D-3		
			☐		
20. SDG 13.2.1: $BB_{p1,fuel}$		**Description: Quantity of fossil fuel consumed in project scenario p1**			
Measurement / Determination method (VVS, §§ 363-367) *Describe how the monitoring parameter was measured / determined. Focus primarily on the original data level (ODL) but also describe the applied data aggregation trails (from ODL to data aggregation level zero (DAL0)). Check if relevant equipment has been exchanged and if in cases of failures / downtimes of standard equipment other measurement / determination methods have been used. Furthermore, verify the frequency of measurements as per the requirements. Assess whether the measurement / determination method is in line with the registered monitoring plan of the PDD and the applied methodology.*	/MR/ /ER//TA/ /GSM/ /PFT/ /VPADD/ //IM02/ /IM04/ /HH/	*Description:* The quantity of fossil fuel used by the households in the project scenario is based on the PFT survey conducted once in every 2 years. The fossil fuel in the project scenario is LPG and Kerosene. The survey results reported zero usage.		~~CAR D-3~~	OK
		Verifier´s action: The PFT survey results verified and found zero usage. The data in the ER is crosscheck with the results from the PFT survey results for consistency. During the telephone interviews households informed they do not use LPG and kerosene as supplementary fuel.			
		Conclusion: The parameter is monitored in accordance with the Transition Annex, registered VPA-DD and applied methodology.			
		☒	In this context the following findings have been raised:		
			☒ CAR D-3		
			☐		
21. SDG 13.2.1: $MS_{T,S,k}$		**Description: Fraction of livestock category T's manure fed into the bio-digester, S in climate region k**			
Measurement / Determination method	/MR/	*Description:*		~~CAR D-3~~	OK

<table>
<tr>
<td>(VVS, §§ 363-367)
Describe how the monitoring parameter was measured / determined. Focus primarily on the original data level (ODL) but also describe the applied data aggregation trails (from ODL to data aggregation level zero (DAL0)).
Check if relevant equipment has been exchanged and if in cases of failures / downtimes of standard equipment other measurement / determination methods have been used. Furthermore, verify the frequency of measurements as per the requirements.
Assess whether the measurement / determination method is in line with the registered monitoring plan of the PDD and the applied methodology.</td>
<td>/US/
/ER/
/VPADD/
/GSM/
/IM04/
/IM02/
/HH/</td>
<td>The fraction of manure fed in the biodigesters for respective animal category as follows:
<table><tr><th>Animal T</th><th>Average</th></tr><tr><td>Dairy cow</td><td>87.5%</td></tr><tr><td>Other cattle</td><td>86.9%</td></tr><tr><td>Market swine</td><td>51.3%</td></tr><tr><td>Breeding swine</td><td>32.5%</td></tr><tr><td>Poultry</td><td>4.6%</td></tr><tr><td>Sheep</td><td>7.1%</td></tr><tr><td>Goat</td><td>5.0%</td></tr></table>The data is derived from the usage survey conducted by an independent consultant.

Verifier´s action:
The usage survey results are reviewed and crosschecked with the date applied in the ER spreadsheet.
During the telephone interviews, it could be confirmed that the type of animal waste fed into the digester are generally cattle and swine.
The survey consultant is interviewed on the survey results.

Conclusion:
The parameter is monitored according to the Transition Annex, registered VPA-DD and applied methodology.

☒ In this context the following findings have been raised:
☒ CAR D-3
☐</td>
<td></td>
<td></td>
</tr>
<tr>
<td>22. SDG 13.2.1: $MS_{P,S,K}$</td>
<td></td>
<td>Description: Fraction of livestock category T's manure not fed into the bio-digester, in climate region k</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Measurement / Determination method
(VVS, §§ 363-367)
Describe how the monitoring parameter was measured / determined. Focus primarily on the original data level (ODL) but also describe the applied data aggregation trails (from ODL to data aggregation level zero (DAL0)).</td>
<td>/MR/
/US/
/VPADD/
/GSM/</td>
<td>Description:
The fraction of manure not treated in the biodigesters for respective animal category as follows:
<table><tr><th>Animal T</th><th>Average</th></tr><tr><td>Dairy cow</td><td>12.5%</td></tr></table></td>
<td>~~CAR D-3~~</td>
<td>OK</td>
</tr>
</table>

Check if relevant equipment has been exchanged and if in cases of failures / downtimes of standard equipment other measurement / determination methods have been used. Furthermore, verify the frequency of measurements as per the requirements. *Assess whether the measurement / determination method is in line with the registered monitoring plan of the PDD and the applied methodology.*	/TA/ /IM04/ /IM02/ /HH/	<table><tr><td>Other cattle</td><td>13.1%</td></tr><tr><td>Market swine</td><td>48.8%</td></tr><tr><td>Breeding swine</td><td>67.5%</td></tr><tr><td>Poultry</td><td>95.4%</td></tr><tr><td>Sheep</td><td>92.9%</td></tr><tr><td>Goat</td><td>95.0%</td></tr></table> The data is derived from the usage survey conducted by an independent consultant. *Verifier´s action:* The usage survey results are review and crosschecked with the date applied in the ER spreadsheet. During the telephone interviews, it could confirm animals waste of cow, other castles and pig are not fed into the digester. Other animals and poultry wastes are not fed. The survey consultant is interview on the results. *Conclusion:* The parameter is monitored according to the Transition Annex, registered VPA-DD and applied methodology. ☒ In this context the following findings have been raised: ☒ CAR D-3 ☐		
23. SDG 13.2.1: GWP_{CH4}		**Description: Global Warming Potential of methane**		
Measurement / Determination method (VVS, §§ 363-367) *Describe how the monitoring parameter was measured / determined. Focus primarily on the original data level (ODL) but also describe the applied data aggregation trails (from ODL to data aggregation level zero (DAL0)).* *Check if relevant equipment has been exchanged and if in cases of failures / downtimes of standard equipment other measurement / determination methods have been*	/MR/ /TA/ /ER /VPADD/ /IPCC/	*Description:* The GWP is the methane content applicable during the monitoring period is 25 for emissions generated as from 01/01/2013. *Verifier´s action:* The GWP data applied in the MR and ER spread-sheet were verified with 2006 IPCC for consistency *Conclusion:*	OK	OK

<table>
<tr><td>used. Furthermore, verify the frequency of measurements as per the requirements.
Assess whether the measurement / determination method is in line with the registered monitoring plan of the PDD and the applied methodology.</td><td></td><td>The parameter is monitored in accordance to the registered VPA-DD and applied methodology.
☐ In this context the following findings have been raised:
☐
☐</td><td></td><td></td></tr>
<tr><td>24. SDG 13.2.1: Bio</td><td></td><td>Description: Use of bio-slurry</td><td></td><td></td></tr>
<tr><td>Measurement / Determination method (VVS, §§ 363-367)
Describe how the monitoring parameter was measured / determined. Focus primarily on the original data level (ODL) but also describe the applied data aggregation trails (from ODL to data aggregation level zero (DAL0)).
Check if relevant equipment has been exchanged and if in cases of failures / downtimes of standard equipment other measurement / determination methods have been used. Furthermore, verify the frequency of measurements as per the requirements.
Assess whether the measurement / determination method is in line with the registered monitoring plan of the PDD and the applied methodology.</td><td>/MR/
/TA/
/US/
/ER/
/VPADD/
/GSM/
/IM01 – IM04/
/HH/</td><td>Description:
The bio-slurry used by households for farming and vegetables gardening activities.
<table><tr><td>How do you apply bio-slurry</td><td>%</td></tr><tr><td>Used as fertilizer</td><td>47</td></tr><tr><td>Used as animal feed</td><td>4</td></tr><tr><td>Bio-slurry is sold</td><td>1</td></tr><tr><td>Used as an insecticide/pesticide</td><td>2</td></tr><tr><td>Used as animal feed</td><td>4</td></tr><tr><td>Store it first</td><td>39</td></tr><tr><td>I don’t use it / discarded</td><td>3</td></tr></table>The data derived from the usage survey conducted by the 3rd party independent consultant.
The CME had calculated the emission from the use of bio-slurry per household per year.
The emissions will not be considered when less than 1% of baseline emissions.
Verifier´s action:
The survey result was reviewed to crosscheck on the percentage of households apply bio-slurry for farming activities.
From the telephone interviews of households 51.9% of the farmers informed that they apply bio-slurry for farming or gardening activities.
The data applied in the ER spreadsheet is verify that the project emissions calculation for bio-slurry and excluded in the ER calculations since it is less than 1% of baseline emissions</td><td>~~CAR D-3~~</td><td>OK</td></tr>
</table>

		Conclusion: The parameter is monitored according to the Transition Annex, registered VPA-DD and applied methodology				
		☒	In this context the following findings have been raised:			
			☒	CAR D-3		
			☐			

Appendix 6. Calibration dates and validity of measuring equipment

Table A-6: Periodic Verification Checklist – Calibration details

Monitoring equipment	Purpose	Serial number	Manufacturer	Capacity	Calibration date
Weigh Balance	KPT / PFT	CTR/PBS/21 CTR/PBS/18 CTR.PBS/05 CTR/PBC/22 CTR/PBS/20 CTR/PBS/06 CTR/PBS/19 CTR/PBS/04	Salter Brecknell	10kg	13/01/2020
		CTR/PBS/27 CTR/PBS/42 CTR/PBS/41 CTR/PBS/26 CTR/PBS/35 CTR/PBS/24 CTR/PBS/28 CTR/PVS/40	Wetteng	50kg	12/01/2020 13/01/2020 14/01/2020