

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) – Kenya VPA006 GS: 5801 (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	2.3	
Version number of the verification and certification report	1.0	
Completion date of the verification and certification report	11/09/2020	
Monitoring period number and duration of this monitoring period	CPI MP: 2 Duration: 01/03/2019 – 30/04/2020 (both dates inclusive)	
Number and version number of the monitoring report to which this report applies	Number: 1 Version: 1.2	
Coordinating/managing entity (CME)	HIVOS Foundation	
Host Parties	Host Parties of the PoA Uganda, Kenya, Tanzania	Is this a host Party to a VPA covered in this report? (yes/no) Kenya
Applied methodologies and standardized baselines	Technologies and Practices to Displace Decentralized Energy Consumption version 1.0 (11/04/2011)	
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	21,136 tCO ₂ e	
Certified amount of GHG emission reductions or GHG removals for this monitoring period for the included CPAs covered in this report	13,926 tCO ₂ e	

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

SECTION A. Executive summary

HIVOS Foundation has commissioned the TÜV NORD JI/CDM Certification Program to carry out the 2nd periodic verification of the Voluntary Project Activity:

“African Biogas Carbon Programme (ABC) – Kenya VPA006”

The VPA was registered with GS on 14/03/2019, registration GS 5801 with the 1st crediting period from 14/03/2017 – 13/03/2024 (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 01/03/2019 – 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	Kenya
Region:	Across Kenya
Latitude:	S 1°17'19"
Longitude:	E 36°47'0.999"

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

Type	Model	Lifespan
Fixed dome	Modified Kenbim Model	The average lifespan of a well-constructed fixed dome digester is estimated to be at least 25 years, but can easily reach more 35 years when quality materials are used during construction and O&M practices observed in its operation.
	AKUT	
	Camartec	
Plastic digester types	Flexi biodigesters	An average of 7-10 years, with a potential of max. of 15 years with good care and protection from UV with the greenhouse
	Kentainer	7-10 years, with a potential of 30 years with better care from UV and against rodents
	Takamoto	An average of 7-10 years, with a potential of 15 years

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

Table A-2: Digester capacities installed in this MP

From (≥) [m³]	To (<) [m³]	Quantity
2	4	14
4	6	304
6	8	523
8	10	1219
10	15	1,090
15	100	77
Total		3,227

Table A-2: Technical specification of the digester

Plant Specification ¹	Unit	4 m ³	6 m ³	8 m ³	10 m ³	12m ³
Plant Volume	Max daily feeding (manure+ water)	30 + 30	50 + 50	70 + 70	100 + 100	120+120
Maximum daily gas production	m ³	1.05	1.75	2.45	3.50	4.20
Digester Volume	m ³	2.36	3.74	5.30	7.27	9.44
Effective gas storage	m ³	0.69	0.9	1.35	1.94	2.37
V Buffer	m ³	0.49	0.60	0.85	1.17	1.43
Total Digester Volume	m ³ /day	3.53	5.24	7.5	10.37	13.24

The technical specification of the technologies are:

- Mixing ratio: 1:1 (manure and water)
- Thermal capacity is 2,21 KWth/m³ digester volume (as per VPA006-DD page 43 eligibility criteria 11)

Other digester sizes are built in much smaller quantities. The performance will be proportional to the 10 m³ digester. Thus, the 70 m³ digester for example, can be fed 700 kg manure daily (7x100), will produce 24,500 ltr (7x3,500) gas per day. The same applies to all other values

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 2nd 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

¹ Construction manual MKD digester (2016) page 3

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	El	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: see below				
No.	Activity performed remotely	Remote location	Date	Team member
1.	Opening meeting, review of MR, ER, DB, Survey reports, PFT, documents,	Kuala Lumpur	08/06/2020; 12/06/2020 to 15/06/2020	Cheong, Chun Yuen (Robert)
2.	Review of telephone interview of households and masons results		29/06/2020 to 30/06/2020	
3.	Review of interview results Skype with VPA implementer, surveyor and HIVOS representatives		07/07/2020	
4	Skype discussion with project consultant Submission of Preliminary Findings Report		08/07/2020	

Interviews /IM/

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

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No.	Interviewee			Date	Subject	Team member
	Last name	First name	Affiliation			
	Buysman	Eric	Carbon Consultant /IM02/		Telephone interviews	
	Wasonga	Michael	KBP / Quality Control Manager /IM03			
2.	Otodo	Natasha	HIVOS (ABPP) / Programme Officer /IM01/	07/07/2020	Telephone Interviews results, Grievance Tracker, Database, Masons & BECs, survey results	
	Buysman	Eric	Carbon Consultant /IM02/			
	Wasonga	Michael	KBP / Quality Control Manager /IM03			
	Wahome	Salome	KBP / Monitoring and Evaluation Officer /IM03/			
3	Otieno Ayieko	Jack	Eco Frontier / Director /IM04/		Survey A Survey B Sampling Plan PFT	
4	Buysman	Eric	Carbon Consultant /IM02/	08/07/2020	Final review of MR, ER, DB, Grievance, Survey and Reporting	

The verification team has 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 & Masons

Name of BCE or Mason	Name of Person Interview
Agnes Koech	Agnes Koech
Amiran Kenya Ltd	Simon Musali
Andcol Enterprises	Susan Wanjiru
Anthony Ndungu Kamau	Anthony Ndungu Kamau
Apollo Okinda	Apollo Okinda
Biotechno & Services	Joshua Justus
Christopher Njinju Ndungu	Christopher Njinju Ndungu
Francis Kamande Kangethe	Francis Kamande Kangethe

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

List of Households ^{/HH/}:

Name	Name	Name	Name
Muriithi, Martha Muriithi	Daniel Muriuki	Kositanya, Philip	Peter Njoroge Njunguna
Peter, Muriuki Njeru	Catherine, U Amdany	Lesonet, John	Mwacharo, Arnest Francis
Esther Wanjiku Kahindi	Kiambi, Hillary Karimi	Gichohi, Margret Muthoni	Wahome, Harrison Kimotho

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Margret, Kimenyi Muthoni	Kinguru, Mwangi Nelson	Koech, Joyce Chelangat	Ngatia, Charles Rigu
Kiarie, Joseph	Mutuku, Frederick Mutuku	Alfred Oseko Mokaya	Joel Kipkemboi Rotich
Prisca Serem	Geoffrey kariuki gachira, Geoffrey Kariuki	Charles, Korir	Johnson, Onger Masese
Kanyuguto, David Gitonga	Tabitha, Mtungi Peter	Mwangi, Stephene Kimemia	Isaack, Isaack, Kingori
Ndungu, Lenard Karudu	Mugo, Meshack Mwangi	Machungu, Sebastian Muriithi	Wainaina, Francis Kingaru
Kiongera, Hannah Muthoni	Cheptonui, Josphine	Kyonda, Martina Kynda	Ronoh, Benson
Josephat Mwaura Kamau	Gitau, John	Susan Wanjiru Mwariri	Kerich, John
Margret wangoi Kamau Sang, Anna Cheron	Figl, Rachael Mumbi George Cyrus Machria	Patrick, Rangi Rangi Korir, Joseph	Alex Etiang Charles Wachira ndiritu
Kaburu, Humphrey Njeru	Kamia, Lucy Njeri	Josphine Mulisya	Kerubo, Priscah
Gichungi, Joseph Kinyua	Muraguri, Jeniffer Nyaguthii	Rotich, Charles	Chomba, Nelson Maina
Muchogia, Lucy Wanjiru	Kahumbuthu, Alphazard Chambari	Kiraka, Joseph Memia	Herman, Catherine Nduta
Christopher Njeru Nyaga	Muthee, Ephraim Muthee	Karimi, Miriti Hellen	Kirera, Christopher Mworia
Maghaga, Josephat Kilai	Ezekiel, Esther Waithera	Limo, Henry K	Hellen, Kinegeni
Mwangi, Stephene Weru	Kihumba, Kanyongote Ndegwa	Lilian, Seurei	Stephen Kironji Waihi
Wambugu, Solomon Muthoga	Gatimu, Karimi Joseph	Cecilia Nyambura	Mburugu, Hannington Mbaabu
Nyaga, Thomas Njiru	Manea, Kusimba	Mbukia, Francis Kinyua	Martha, Kirui Cherugut
Jackson Njuguna Kinyanjui	Onwong'a, Ogembo Richard	Tallam Kiprono Johana	Loise Nyina Njoroge
Too, Teresa Chepkemboi	Bett, Pascalia	Euphurus Kariuki Kogi	Njoroge, Anthony
Kinuthia, Margaret Wambui	John Wandati Mbochi	Jacob Njuguna Mugo	Mutisya, Lisper Njoki
Macharia, John Ndungu	Joyce Chelangat Maritim	Cephas Githinji Mwaura	Barack, George Otwor Ojuok
Kirimi, Ginson	Judy Linau Nzamoza	Kurgat, Weldon	Karumi, Grace Wambui
Chege, Isabella Nyokabi	Isaiah Letting Kipkurgat	Njenga, Peter Kinyanjui	John Nyaga Ndumia
Cecilia Nabengare Wabere	Kapkusum, Henry N	Jane, Nyambura Kairu	Roselyne, Inyangala S
Mwathi, Daniel Kanyi	Gradys Nyambura Mwangi	Catherine, Munene Njeri	Ndungu, Samuel Gitimu
Stephen Kogi	Kerui, Julia	Eunice Wairimu Gateru	Wambogo, Joyce Waruguru
Gerald Muthui	Ileri, Stanley Adriano	Kanyora, Titus Gatheca	Irene, Omukata

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Chepkorir, Sarah	Kanata, Rosemary Kawiria	Mutea, Samuel Kirema	Vincent, Mutuku
Jacenter Wanjira Muriuki	Waituka, Beth Waithera	James Ngarimu Mungai	Maina, Frola Wanjiku
Mahema, Peter Mhana	Wachira, Stephen Mwangi	Ndege, Cyrus Nduru	Mbaya, Kirika Duncan
Gathithi Kamondo Zachary	Veronica, Chepngetich	Mawera, Lucy	Tonui, Jane

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

Addition Households from Survey B

Name	Name	Name	Name
Margret Macharia	Johnson Manzi Mbuvi	Cephas Githinji Mwaura	Ochieng Samuel
Damiano Muthaura M'amburi	Purity wanjiru Njeru	Francis Kithinji	Vitalis Nyambu Makale
Jecinta mukami	Kamia Lucy Njeri	Daniel mutai	Loice Nyiha njoroge
Joab samboroma	Ruth Mwaura njeri	Joseph Mburu	Hiram Gakuya
Moses munyi	Godfrey Maina Gachuri		

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 on-site inspection activity in Kenya.

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 center.

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 3,227 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 194 households from the database from different region, zone, county, sub-county, parish and village and different digester sizes for telephone interviews to obtain more information of the project implementation and monitoring of the SDG indicators. Out of the 194 selected, 136 households were reached.

In addition, the verification team has randomly selected 32 households from the survey B list to countercheck the results of which 18 households were reached.

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

The following 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 6.
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 fuel. Some of the households used LPG
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.
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 of bio-slurry,

Questions	Summary of feedback
What are the main concerns in constructing biodigester	Location far away from main access roads, lack of raw materials prices, not enough water, delay in payment by households
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 overflow bioslurry.

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	2	1	1
B: Project Implementation B.1: Description of implemented project B.2: Post-registration changes	2	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	0	1	0
D: Data and parameters 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	5	3	0
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	6	2	0

Verification Topics	No. of CAR	No. of CL	No. of FAR
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			
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	2	1	2
SUM	17	9	3

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	Via an in-depth review of the MR section A, was a carried out during desk review whether the project purposes, description, location, applied methodology and crediting period are crosscheck for consistency with the approved GS4GG Transition Annex, registered VPA-DD and registration details provided by CME. Purpose and general description of project Section A.1 describe the project purpose and description is crosscheck against the VPA-DD for consistency. Location of Project: The location of the project covers the entire of Kenya. The GPS coordinates listed is crosscheck with Google Earth for correctness. Reference of applied methodology The applied methodology is according to GS methodology since registration. Crediting period of project: The crediting period is a 7 years renewable from 14/03/2017 – 13/03/2024 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	<table border="1"> <tr> <td data-bbox="462 1023 526 1099">☐</td><td data-bbox="526 1023 1422 1099">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.</td></tr> <tr> <td data-bbox="462 1099 526 1176">☒</td><td data-bbox="526 1099 1422 1176">The following from the project description in the MR have been identified in the course of this verification</td></tr> <tr> <td data-bbox="462 1176 526 1238">☒</td><td data-bbox="526 1176 1422 1238">In this context the following CARs, CLs, FAR have been raised: CL A-1; CAR A-2; CAR A-3; FAR F-3</td></tr> </table>	☐	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, FAR have been raised: CL A-1; CAR A-2; CAR A-3; FAR F-3
☐	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, FAR have been raised: CL A-1; CAR A-2; CAR A-3; FAR F-3						
Conclusion	<table border="1"> <tr> <td data-bbox="462 1252 526 1328">☐</td><td data-bbox="526 1252 1422 1328">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.</td></tr> <tr> <td data-bbox="462 1328 526 1404">☒</td><td data-bbox="526 1328 1422 1404">The raised CARs / CLs have been addressed appropriately. For details please refer to Appendix 4.</td></tr> </table> This verification has been 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 conclude the VPA is described appropriately. FAR F-3 is raised for the verifying VVB to check in the next verification.	☐	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.		
☐	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.						

D.2.1. Project Implementation

Means of verification	The verification team conducted an in-depth reviewed 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 Kenya Biogas Programme (KBP) to disseminate domestic biogas in Kenya with the objective is to improve the livelihoods and quality of life of rural and per-urban farmers through utilizing of domestic biogas as cooking and lighting fuel.
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	The VPA implementer of this project is Kenya Biogas Programme, responsible for coordinating, facilitating and monitoring the programme and supporting the technical, financial and institutional architecture. The capacities of the domestic biogas systems ranging 2 m³ to 100 m³. The common capacity installed are 4, 6, 8, 10 and 12 m³. Table 1 provide a breakdown of the size of digester and number per size and crosscheck with the database. The technical specification is crosschecked 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.
	☐	The following deviations from the registered project design and or the project implementation description in the MR have been identified in the course of this verification: -
	☒	In this context the following CARs, CLs, FAR have been raised: CL B-1; CAR B-2;
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 conclude the implementation of the VPA is in accordance to VPA-DD and 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.
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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:	
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D.2.3. Description of monitoring system applied by the project

Means of verification	The verification team conducted a reviewed 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:			
	Title (of the SB)			
	Version			
	MP compliance			
☒	In this context the following CARs, CLs, FARs have been raised: CL 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.
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The following parameters are fixed at validation or at renewal of crediting period:

No.	SDG Indicator	Parameter	Value	Unit
1	13.2.1	$f_{NRB,y}$	89.48	%
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/t
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/t
8	13.2.1	VS_T	Dairy cows = 1.90 Other cattle = 1.50 Market & 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	$\eta_{biogas\ stove}$	99.4	Fraction
11	13.2.1	$MCF_{x,k}$	3.39	%
12	13.2.1	PL	10	%
13	13.2.1	$BB_{b1,bio}$	3.66	t/y
14	13.2.1	$BB_{b2,bio}$	7.48	t/y
15	13.2.1	$BB_{b3,bio}$	7.06	t/y
16	13.2.1	$EF_{awms,T}$	Dairy cows = 1 Other cattle = 1 Market swine = 1 Breeding swine = 1 Goats = 0.17 Sheep = 0.15 Poultry = 0.02	m ³ CH ₄ /head

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-6; CAR D-7; CAR D-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. 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). The following sources of information have been used in this context: • /MR/ • /TA/ • /ER/ • /DB/ • /GSM/ • /GS4GG/ • /US/ • /KPT/ • /L/ • /IM01/IM02/IM03/IM04/
Findings	☐	The MR and the ER calculation have considered the monitored parameters correctly, no deviations have been observed.
	☒	There are deviations from the parameters have been identified in the course of this verification:
	☒	In this context the following CARs, CLs, FARs have been raised: CL D-1; CL D-2; CL D-3; CAR D-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. For details please refer to Appendix 4.

	After appropriate corrections 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.
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D.2.3.3. Implementation of sampling plan

Means of verification	The verification team has 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 applies a multi-stage sampling approach in selection of the digesters in a proportionate representation of different regions and counties in the sample. The sampling is based on 4 age groups and randomly selected. Table 3 in the MR describes the age group periods, sample period and sample size for each group for survey A and B A total of 160 HHs for Survey B were reached and 130 HHs for Survey A were interviewed. According to the applied methodology the minimum sample is 100 for survey A and 30 per age group for survey B. In both cases more households were reached and therefore the requirement has been met. For PFT, according to applied methodology, the minimum will be 30HHs. 60 households were selected and divided over the age groups. 46 were reached. Therefore, exceed the minimum requirements. 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/ • /ER/ • /VPADD/ • /DB/ • /IM01/IM02/IM03/IM04/						
Findings	<table border="1"> <tr> <td>☐</td><td>The CME has not applied sampling approaches for the survey</td></tr> <tr> <td>☒</td><td>The CME has applied sampling approaches for the survey.</td></tr> <tr> <td>☒</td><td>In this context the following CARs, CLs, FARs have been raised:</td></tr> </table>	☐	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:
☐	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-2; CAR D-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. For details please refer to Appendix 4.
		After appropriate corrections, it could conclude 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 Transition Annex and registered VPA-DD. The equation applied to determine the each of the scenario as follows: $BE_{bCO_2,y} = (\sum_b BB_{b,fuel} * NCV_{fuel} * EF_{b,fuel}) + (BB_{b,bio} * NCV_{bio} * EF_{bbio} * f_{NRB})$ The inputs for the fuel usage data derived from the baseline survey. Baseline emission for this component is 5.492 tCO₂e/ly/hh. 2. The baseline emissions from the handling of animal waste is determined with IPCC Tier 2. The equation applied: $BE_{b,CH_4,y} = (V_{ST} * 365) * (B_{o,T} * 0.67 \text{ l/m}^3 * MCF_{x,k} * MST_{x,k} * GWP_{CH_4} * N_{T,h}) / 1000$
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	The inputs for the type of animals and average population of animals are from the usage survey. Baseline emissions for this component is 0.279 tCO₂e/ly/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-3; CAR E-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.
	With appropriate corrections, it could conclude 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 was reviewed for the project value and estimation of project situation for each SDG outcome. The table demonstrate 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	91.5%	
	3.9.1	Perceived improvement in health by the user (incidence of eye problems and respiratory illness)	95.4% report improvement	
	5	Female time savings	93.65% report having more time available, 4.76% same and 1.59% said they have less time available	
		Usage of saved time	Income generating including farming	64%

		Education	3%
		Leisure (chat, recreation, church resting)	27%
		Other	3%
7.1.2	Number of units installed	3.227	
	Number of man-days involved in the construction of biodigesters.	48,770	
8.3.1	Number of employees attending training programmes	92	

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:

$$PE_{p,CO_2,y} = \sum (BB_{p,fuel} * NCV_{fuel} * EF_{p,fuel}) + (BB_{p,bio} * NCV_{bio} * EF_{p,fuel} * f_{NRB})$$

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

Project emission for this situation is **1.143 tCO₂e/yy**.

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

The equation applied:

$$PE_{p1,CH_4,y} = GWP_{CH_4} * \sum (N_{T,h,y} * EF_{awms,T}) * PL_y + \sum (N_{T,h,y} * EF_{awms,T}) * (1 - \eta_{new\ stove}) * (1 - PL_y)$$

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 **0.021 tCO₂e/yy**.

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 tCO₂e/yy**.

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

The average total project emissions for this monitoring period for the three above components is therefore **1.164 tCO₂/yy**.

Leakage:

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 are 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/
Findings	☐ 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.
	☒ The verification team has identified mistakes in the project emissions calculation or the underlying calculation approaches.
	☒ In this context the following CARs, CLs, FARs have been raised: CAR E-5; CAR E-6;
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, the calculations of project GHG emissions and SDG outcome are in accordance with the registered VPA-DD, applied methodology and Transition Annex

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.									
	<table border="1"> <thead> <tr> <th>SDG</th><th>Indicator</th><th>Baseline</th><th>Project</th><th>Net difference</th></tr> </thead> <tbody> <tr> <td colspan="5"> </td></tr> </tbody> </table>	SDG	Indicator	Baseline	Project	Net difference				
SDG	Indicator	Baseline	Project	Net difference						

	2.4.1	Percentage of biogas users who use slurry as a fertilizer	0	91.5%		91.5%
	3.9.1	Perceived improvement in health by the user (incidence of eye problems and respiratory illness)	0	95.4%		95.4%
	5	Female time savings	0	93.65% report having more time available, 4.76% same and 1.59% said they have less time available		93.65% report having more time available, 4.76% same and 1.59% said they have less time available
		Usage of saved time	N/A	Income generating including farming	64%	See project levels
				Education	3%	
				Leisure (chat, recreation, church resting)	27%	
				Other	3%	
	7.1.2	Number of units installed	0	3,227		3,227
		Number of man-days involved in the construction of biodigesters.	0	48,770		48,770
	8.3.1	Number of employees attending training programmes	0	92		92
	SDG 13.2.1: The emissions reductions achieved for this monitoring period is calculated using below equation: $ER_y = U_y \times (BE_{y,h} - PE_{y,h}) \times N_{P,y}$ $= 86.74\% \times (5.772 - 1.164) \times 3,227$ $= \mathbf{13,926 \text{ tCO}_2\text{e (cumulative and round down to the integral)}}$ Note: BE and PE are average emissions The following sources of information have been used in this context: • /MR/ • /ER/ • /T/ • /US/ • /DB/ • /VPADD/					

	• /TA/	
Findings	☐	The determination of 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:
		CAR E-5; 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	%	91.5	
	3.9.1	Perceived improvement in health by the user (incidence of eye problems and respiratory illness)	%	95.4	
	5	Female time savings	%	93.65% report having more time available, 4.76% same and 1.59% said they have less time available	
		Usage of saved time	N/A	Income generating including farming	64%
				Education	3%
				Leisure (chat, recreation, church resting)	27%
				Other	5%
	7.1.2	Number of units installed	units	3,227	
Number of man-days involved in the construction of biodigesters.		Mason day	48,770		

	8.3.1	Number of employees attending training programmes	Masons	92
	13.2.1	Emission reductions	tCO ₂ e	13,926
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: 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. 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	91.5%	
	3.9.1	Perceived improvement in health by the user (incidence of eye problems and respiratory illness)	Not estimated	95.4%	
	5	Female time savings	Not estimated	93.65% report having more time available, 4.76% same and 1.59% said they have less time available	
		Usage of saved time	Not estimated	Income generating including farming	64%
				Education	3%

			Leisure (chat, recreation, church resting)	27%
			Other	5%
	7.1.2	Number of units installed	3,322	3,227 units
		Number of man-days involved in the construction of biodigesters.	Not estimated	48,770 mason-days
	8.3.1	Number of employees attending training programmes	Not estimated	92

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	Amount estimated ex ante
	(t CO ₂ e)	(t CO ₂ e)
01/03/2019 to 31/12/2019	9,654	14,242
01/01/2020 to 30/04/2020	4,273	6,894
Total	13,926*	21,136

*Ex-post is round down to the integral

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

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

- /MR/
- /ER/
- /VPADD/
- /TA/
- /DB/
- /US/
- /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: 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. 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 higher 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 number of digesters are 3,322 units as compared with ex-post of 3,227 units. The baseline emissions for fuel use is 5.492 tCO₂/hh as compared to ex-ante of 7.468 tCO₂/hh. Usage rate ex-ante was 100% as compared to ex-post of 87% Ex-ante AWMS is 0.382 tCO₂/hh/yr and ex-post is 0.279 tCO₂/hh/yr. Ex-ante PE is 0.028 tCO₂/hh/yr and ex-post is 0.021 tCO₂/hh/yr
	☒	In this context the following CARs, CLs, FARs have been raised: CL E-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. 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 lower 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 on the complaints and issues received by 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 and ongoing. FAR F-1 is raised for the verifying VVB to check in the next verification 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 19 cases are not in the boundary of this VPA. 51 cases are closed with 29 still ongoing. The VPA implementer was interviewed on the progress of resolving the 29 units. Section F.3 describe of any legal contest or dispute that has arisen with the project during the monitoring period with 2 cases the VPA implementer is reviewing. FAR F-2 is raised for the verifying VVB to check in the next verification. 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; CAR F-3; FAR F-1; FAR F-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 corrections, it could be concluded that stakeholders input and issues are addressed appropriately. The FARs 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 2nd periodic verification of “**African Biogas Carbon Programme (ABC) GS2747 – Kenya VPA006 GS5801**”, with regard 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 01/03/2019 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: **13,926 tCO₂e**

SECTION G. Certification statement

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

“African Biogas Carbon Programme (ABC) GS2724 – Kenya VPA006 GS 5801”

registered under

GS ID.: 5801

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

MP-No.: MP2

from: 01/03/2019

to: 30/04/2020

(including both days) as follows:

Emission reductions: **13,926 tCO₂e**

Puchong, 11/09/2020



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 ₂ eq	Carbon dioxide equivalent
ER	Emission Reduction
FAR	Forward Action Request
GHG	Greenhouse gas(es)
GS	Gold Standard
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



Statement of Competence
Appointment and authorization according to the procedures
of the TÜV NORD JICDM 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_301-14288-F20_2019-10-19_rv1.doc



Statement of Competence
Appointment and authorization according to the procedures
of the TÜV NORD JICDM 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_301-14288-F20_2019-10-19_rv1.doc

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	/KPI/	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		CME
9	CME	/VPADD/	Registered VPA-Design Document for VPA006: “African Biogas Carbon Programme (ABC) – Kenya – VPA06” version 2.3 dated 21/01/2019		CME
10	GS	/GSR/	GS VPA Inclusion Review dated 16/04/2019		Others
11	CME	/TA/	Transition Annex dated 12/07/2019		CME

			GS Review dated 23/07/2019		
12	CME	/VAL/	Validation Report for African Biogas Carbon Programme (ABC) – Kenya – VPA006” version 02 dated 18/02/2019		CME
13	CME	/VER/	Documents of previous verifications (Monitoring report, verification report, ER calculation sheet) MPI GS Issuance review, dated 07/11/2019		CME
14	CME	/MR/	Monitoring Report version 1.0 dated 24/05/2020 Monitoring Report version 1.1 dated 20/08/2020 Monitoring Report version 1.2 dated 04/09/2020		CME
15	CME	/ER/	SDG ER spreadsheet version 1.0 dated 01/06/2020 SDG ER spreadsheet version 1.1 dated 20/08/2020 SDG ER spreadsheet version 1.2 dated 04/09/2020		CME
16	CIRCODU	/US/	Usage & User Survey 2019 Inception Report dated 27/01/2020 Survey SDG Spreadsheet dated 01/06/2020 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 10/07/2020 Database and SDG8 version 1.2 dated 04/09/2020		CME
18	CME	/A/	Latest year 2020 agreements signed between households and VPA Implementer		CME
19	CME	/PFT/	Project fuel test for biomass and fossil fuels spreadsheet dated 07/06/2020		CME
20	CME	/TI/	Training Records for Mason & BCEs Training Report dated February 2020		CME
21	CME	/GT/	Grievance Tracker 2019 & 2020 dated 19/07/2020		CME
22	UNBS	/CI/	Weigh Balance Calibration Certificates issued by Kenya		Others

			Inspector of Weights and Measures dated 20/01/2020		
23	CME	/TD/	Technical Design of Digester		CME
24	CME	/REC/	Declaration of double counting dated 08/05/2018		
25	GS	/LI/	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		/gpl/	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:	08/07/2020
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:	18/08/2020
1. The unit is now added to make it clear					
2. As above					
Documentation provided by CME					
☒ Changes in the MR		Section(s): cover page		New version No.:1.1	
☐ Changes in XLS		Worksheet(s):		New version No.:	
☐ Other:					
VVB assessment				Date:	19/08/2020
MR version 1.1, Cover page:					
1. Estimated amount of annual average certified SDG impact (as per approved PDD): The representation for SDG13 data is updated.					
2. Total amount of certified SDG impact (as per approved methodology) achieved in this monitoring period: The representation for SDG 8 & 13 data is updated.					
Conclusion <i>Tick the appropriate checkbox</i>		☐ Additional action should be taken (finding remains open) ☒ The finding is closed			

CL ID	B-1	Section no.	B.2.2	Date:	08/07/2020
Description of CL					
MR version 1.0, Section B.2.2: Clarification for the 175 units with GPS included are based on which period.					
CME response				Date:	18/08/2020

The paragraph is moved to section A.2 as that section is about the geography.

The VPA implementer has further updated GPS detail of the remaining units in this MP. At the end of MPII 3,227 units have GPS coordinates and 267 units do not have GPS coordinates. The units without GPS detail are excluded from the carbon database.

The VPA implementer is in process of collecting the GPS coordinates of the remaining 267 units, but progress is slow due to COVID-19 travel restrictions and distances involved. Only once GPS details are available those unit will be included in the carbon database.

The list with added units was shared with the VVB for inspection. The VPA implementer however could not ascertain how many units were added because of missing GPS coordinates. This is because there are more reasons for exclusion, i.e. incomplete date, inconsistent data, and these are all categorised as plants which need to be verified by the VPA implementer

Documentation provided by CME

☒ Changes in the MR	Section(s): A.2	New version No.:1.1
☐ Changes in XLS	Worksheet(s):	New version No.:
☒ Other: Copy of 14Aug2020 VPA06 MPII database_SDG8v1.1 SW NK_update.xlsx		

VVB assessment

Date: 19/08/2020

MR version 1.1, Section B.2.2: CME has moved the paragraph to section A.2. The DB is updated for those units without GPS with a balance of 267 units. These units were not included in the carbon calculations in lieu of GS requirements that units without GPS will be removed from database.

Due to COVID-19, movement is restricted to obtain GPS coordinates for these units. The VPA implementer will continue to verify these units and obtain GPS coordinates. The CME and VPA implementer were interviewed via skype on the timelines to approach.

In this aspect a FAR has been raised for the VVB to follow up in the next verification.

Conclusion

Tick the appropriate checkbox

- ☐ Additional action should be taken (finding remains open)
☒ The finding is closed

CL ID	C-1	Section no.	C	Date:	08/07/2020
Description of CL					
MR Version 1.0, Section C, Tasks and responsibilities in the monitoring system: Clarification on the phrase "and of VPA02 in Tanzania".					
CME response					Date: 18/08/2020
This is to demonstrate that the survey consultant has the skills and experience. This is also in a response of a GS issuance review comment in which we were asked to demonstrate the competence of Eco-frontier last year. With this we demonstrate that the survey consultant has both experience in Kenya and in Tanzania with biogas surveys and is therefore competent.					
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: 19/08/2020
MR Version 1.1, Section C, Tasks and responsibilities in the monitoring system: The explanation by CME is demonstrate the selected survey consultant has the experience in Tanzania who conducted the survey for MP2.					
Conclusion <i>Tick the appropriate checkbox</i>		☐ Additional action should be taken (finding remains open) ☒ The finding is closed			

CL ID	D-1	Section no.	D.2	Date:	08/07/2020
Description of CL					

Monitoring Report version 1.0, Section D.2:

1. Parameter GS-3 Soil condition: Clarification what does MD represents in VPA06 MPII_survey_SDG_ER, sheet Survey A in column DN
2. Parameter Percentage of women that report time-savings attributed to the installation of a biodigester:
 - a. Clarification what does MD represent in VPA06 MPII_survey_SDG_ER, sheet Survey A in column EC
 - b. It is unclear for the total number of respondents is 63 instead of 130?
3. Parameter BB_{b4,fuel}: Clarification request on the value is N/A and why baseline scenario is not yet established

CME response**Date:** 18/08/2020

1. MD means missing data or not applicable. Column DN is about the crops on which bio-slurry is applied. In cases of MD, the household either did not use bio-slurry on the crops, or not yet, or used it for other purposes
2. a.. MD stands for missing data – in not all cases the female respondent was present, in those cases MD is mentioned. In all those cases the same question was only asked to the male respondent (see column EH)
 - b. 63 represents the total number of female hh members that were present and able to answer those questions. As in some households no female member was present, the total number of females interviewed is smaller than the number of households visited
3. A sentence is added on this in the table: This BFT fossil fuel is not executed during this MP due to budget limitations and low carbon income

Documentation provided by CME

☒ Changes in the MR	Section(s): d2	New version No.:1.1
☐ Changes in XLS	Worksheet(s):	New version No.:
☐ Other:		

VVB assessment**Date:** 19/08/2020

Monitoring Report version 1.0, Section D.2:

1. Parameter GS-3 Soil condition: MD represents missing data as explain by CME above.
2. Parameter Percentage of women that report time-savings attributed to the installation of a biodigester:
 - a. MD represents missing data where the female respondent is not present during the survey.
 - b. CME explain the total number of respondents of 63 are those present and able to answer the survey questions. 130 is the total number selected for the survey.
3. Parameter BB_{b4,fuel}: Clarification request on the value is N/A and why baseline scenario is not yet established

Conclusion

Tick the appropriate checkbox

- ☐ Additional action should be taken (finding remains open)
- ☒ The finding is closed

CL ID	D-2	Section no.	D.3	Date:	08/07/2020
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Description of CL

MR version 1.0, Section D.3, PFT, Execution:

1. Clarification request on the period of execution. According to VPA006 MPII PFT raw data, the date in the excel sheet is Feb and March 2020.
2. Clarification request for dates in VPA006 MPII PFT raw data excel sheet for several cells the dates are in December and June 2020.

CME response**Date:** 18/08/2020

1. The household visits took place in February and March – this is now made clear in the text
2. This was due to incorrect data formatting, instead of DD/MM/YYYY, it was recorded as MM/DD/YYYY. Thus, those cases in February were presented as the 2nd of December 2020 instead of 12/02/2020. This is now addressed

Documentation provided by CME		
☒ Changes in the MR	Section(s): D3	New version No.:1.1
☒ Changes in XLS	Worksheet(s): VPA006 MPII PFT raw data_date corrections v1.1	New version No.:
☐ Other:		
VVB assessment		Date: 19/08/2020
MR version 1.1, Section D.3, PFT, Execution:		
1. The survey period is updated and consistent with the PFT excel sheet in February and March 2020. 2. The CME has explained the dates in VPA006 MPII PFT raw data excel sheet for several cells with date in December and June 2020 is due to the format in the excel sheet. Correction has been made accordingly.		
Conclusion <i>Tick the appropriate checkbox</i>	☐ Additional action should be taken (finding remains open) ☒ The finding is closed	

CL ID	D-3	Section no.	D.3	Date:	08/07/2020
Description of CL					
MR version 1.0, Section D.3, Sampling Method PFT: Clarification request for "The sampling frame consisting of 2,769 VPA06 biogas plants"					
CME response					Date: 18/08/2020
- At time of survey implementation, the sampling frame contained 2,769 units up to 31/07/2019 out of which 2,430 had GPS coordinates (see table 2 in the Inception report of the survey consultant). That file was shared with the VVB - The VVB requested where that figure can be found. That number can be found in file 17Aug20 VPA06 MPII survey SDG ER spreadsheet v1.1, sheet SDG13 cell D12 (which has the same corresponding date 31/07/2019). The number in that cell however is not the same, it is 2,964 instead of 2,769 - That number is 195 units more than the sample frame of 2,769 plans - Why is there a difference? - A skype call was held with the VVB and the VPA implementer. In that call the difference was explained. In summary: difference is caused by the fact that sometimes the data supplied is not correct and need to be verified by the program. As this could be a lengthy process it was at time of survey sampling not sure if the process could be completed before the end of MPII. Therefore, it was decided to remove those units from the sampling frame as precaution. - Note: Units without GPS coordinates however were not excluded from the sampling as the program was confident that the GPS data would be available. As discussed with the VVB, in all cases the sampled plants have GPS coordinates in the final MPII database, including those that did not have GPS coordinates at time of the sampling. - Out of 60 PFT samples, 50 households were reached and 46 valid PFT interviews were obtained. This is above the minimum sampling requirement of 30 as specified in TPDDTEC Annex 4. A sentence on this is added to the MR section D.3					
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: Inception Report					
VVB assessment					Date: 19/08/2020

MR version 1.1, Section D.3, Sampling Method PFT: CME explain "The sampling frame is 2,769 units as at 31/07/2019 at the time of survey implementation whether units with or without GPS reported in table 2 of the inception report issued by the survey consultant. This is confirmed via skype interview with the survey consultant.

The number of units are cross check with the spreadsheet respective cell as at 31/07/2019 is 2,964 which higher than the sampling frame of 2,769. The difference of 195 units are removed from the sampling frame due data are incorrect. Thus, the sampling frame is reduce to 2,769 as precaution.

The number of samples drawn for PFT is 60 units out of which 50 were reached with 46 PFT results obtained. Therefore, the sample size exceeds the applied methodology requirements.

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

CL ID	E-1	Section no.	E.6	Date:	08/07/2020	
Description of CL						
MR version 1.0, Section E.6:						
1. Clarification request for which SDGs 2, 5, 7 and 8 have impact to the ex-ante values. 2. Clarification request on why emissions for baseline fuel use applied for comparison with ex-ante value and does not include baseline for manure handling.						
CME response					Date:	18/08/2020
1. For SDG 2.4.1 and 8.3.1, and SDG 5 are no ex-ante value available. Of 7.1.2 there is, and this is now added in section E.6 2. The VPA ex-ante AWMS are just 0.382 tCO ₂ /hh/year and ex-post in this MP 0.279 tCO ₂ /hh/year, PE values in both cases are just 0.028 tCO ₂ /hh/year ex-ante and 0.021 tCO ₂ /hh/year. These emission sources are minor compared to fuel use and therefore do not explain the difference in ERs.						
Documentation provided by CME						
☒ 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:	19/08/2020
MR version 1.0, Section E.6:						
1. CME explain SDGs 2, 5 and 8 have no ex-ante values for comparison. SDG 7 with indicator 7.1.2 monitors the number of units commissioned that will have impact to the ERs and added in MR. 2. CME explain above the emissions for baseline fuel use of ex-ante value compared to ex-post is relative low therefore will not make a difference in the ERs.						
Conclusion <i>Tick the appropriate checkbox</i>		☐ Additional action should be taken (finding remains open) ☒ The finding is closed				

CL ID	E-2	Section no.	SDG ER excel sheet	Date:	08/07/2020	
Description of CL						
VPA06 MP11 survey SDGER, SDG13 sheet: Clarification request for the source of the data in cell C59.						
CME response					Date:	18/08/2020
The source is VPA06-DD table 2, this is now made clear. A small calculation error was discovered and the number of ex-ante units is as a result changed						
Documentation provided by CME						
☐ Changes in the MR		Section(s):		New version No.:		
☒ Changes in XLS		Worksheet(s):SDG13		New version No.:1.1		
☐ Other:						
VVB assessment					Date:	19/08/2020
VPA06 MP11 survey SDGER version 1.1, SDG13 sheet: The source of the data in cell C59 derived from VPA-DD version 2.3 table 2 and calculated based on the vintage period.						
Conclusion <i>Tick the appropriate checkbox</i>		☐ Additional action should be taken (finding remains open) ☒ The finding is closed				

CL ID	F-1	Section no.	F.1	Date:	08/07/2020	
Description of CL						
MR version 1.0 Section F.1:						
1. Refer grievance tracker March to Dec 2019: There are 17 non-functional units reported. Are these units considered as non-operational and not accounted for ERs? 2. Refer grievance tracker Jan to Apr 2020: There are 62 ongoing cases. Are these considered as non-operational and not accounted for ERs? 3. Refer grievance tracker Jan – Apr 2020: Item 81, Name of farmer: Paul Njenga, he has decided to abandon and do not want repairs done. This case is considered closed. Clarification request if this unit removed from the database and not include in the ERs calculation. 4. Refer grievance tracker Jan – Apr 2020: Item 37, Name of farmer: Joseph Karimi, the plant is abandoned. Clarification request is this unit removed from the database and not include in the ERs calculation						
CME response					Date:	18/08/2020
1. The grievance mechanism represents a non-selected list of households which is not representative for the country. Survey B however employed representative method in which all households were sampled, including the households recorded in the grievance sheets, and based on that the usage rate is calculated. The units in the grievance list that are not functional, are covered by the result of survey B. Units will be removed however if they are considered permanently abandoned 2. Idem as above 3. ##81 can be considered permanently out of operation, however that plant was removed already from the database on which this MR is based by the VPA implementer 4. ##37 is repaired but the famer has no feedstock. Once the farmer has animals, the plant will be use again. Other units discussed during the audit call 18, 20 and 47 were also investigated. #18 is being handled, 20 follow up was delayed by the program and is now being fast-tracked and 47 is now fully functional						
Documentation provided by CME						
☒	Changes in the MR	Section(s): many	New version No.:1.1			
☒	Changes in XLS	Worksheet(s): database and ER file	New version No.:1.1			
☒	Other: additional investigation into 18,20,47 and 37	#81 evidence removal (KE-KAJ-1904-27863) (email file)				
VVB assessment					Date:	19/08/2020
MR version 1.1 Section F.1:						
1. CME explained the 17 non-functional units reported in grievance tracker Mar to Dec 2019 are not selected households for the survey and need not be removed since considered as non-operational unless are abandoned. 2. Refer CME explanation as above item 1. 3. Item 81, Name of farmer: Paul Njenga, is removed from database as explained. This is crosscheck for correctness and not included in ER calculation. 4. CME explain item 37, Name of farmer: Joseph Karimi, the plant has no feedstock and restart to use when available. The unit is not removed from DB. A FAR is raised to verify the unit is restart in the next monitoring period. Otherwise will be removed from DB.						
Conclusion <i>Tick the appropriate checkbox</i>		☐ Additional action should be taken (finding remains open) ☒ The finding is closed				

Table 5. CARs from this verification

CAR ID	A-2	Section no.	A.2	Date:	08/07/2020
Description of CAR					

MR version 1.0, Section A.2:

1. The geo-coordinate for E is incorrectly presented.
2. Section H is not traceable in the sentence below figure 2
3. GS review for issuance or MR1. The FAR raised to ensure GPS details of remaining biodigester units. However, this is not addressed on whether all units GPS are available.

CME response **Date:** 18/08/2020

1. A minor update, to the E coordinate, it is now matching as the map below indicates
2. The sentence is now removed, there is no section H in the GS template
3. There are still some plants that are excluded from VPA06 because GPS data was not available, 267 in total. These plants will be included once GPS data becomes available.

Documentation provided by CME

☒ Changes in MR	Section(s):A2	New version No.:1.1
☐ Changes in XLS	Worksheet(s):	New version No.:
☐ Other:		

VVB assessment **Date:** 19/08/2020

MR version 1.1, Section A.2:

1. The geo-coordinate for E is updated accordingly.
2. Section H is deleted since not applicable.
3. GS review for issuance or MR1. There are 267 units are without GPS coordinates as at the end of MPII and are excluded in database. These units will be added in DB when GPS are available. The DB was crosschecked these 267 units are not included.

Conclusion
Tick the appropriate checkbox

☐ Additional action should be taken (finding remains open)
☒ The finding is closed

CAR ID A-3 **Section no.** A.4 **Date:** 08/07/2020

Description of CAR

MR version 1.0, Section A.4: The dates for the crediting period did not indicate both dates are inclusive.

CME response **Date:** 18/08/2020

updated

Documentation provided by CME

☒ Changes in MR	Section(s):A.4	New version No.:1.1
☐ Changes in XLS	Worksheet(s):	New version No.:
☐ Other:		

VVB assessment **Date:** 19/08/2020

MR version 1.1, Section A.4: The dates for the crediting period now indicate both dates are inclusive.

Conclusion
Tick the appropriate checkbox

☐ Additional action should be taken (finding remains open)
☒ The finding is closed

CAR ID B-2 **Section no.** B.2.2 **Date:** 08/07/2020

Description of CAR

MR version 1.0, Section B.2.2: There is no corrections for this VPA. The FAR raised by GS on GPS should be reflected in section A.2, location of the project.

CME response **Date:** 18/08/2020

This is now moved to section A.2

Documentation provided by CME

☒ Changes in MR	Section(s):A.2	New version No.:1.1
☐ Changes in XLS	Worksheet(s):	New version No.:
☐ Other:		

VVB assessment **Date:** 19/08/2020

MR version 1.1, Section B.2.2: The FAR raised by GS on GPS is moved to section A.2, location of the project with additional justification.

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

CAR ID	B-3	Section no.	B.2.4	Date:	08/07/2020
Description of CAR					
MR version 1.0, Section B.2.4: The updated monitoring parameters shall be stated.					
CME response					Date:
This is now mentioned in section B.2.4, most parameters are not updated but just converted into SDG parameters					18/08/2020
Documentation provided by CME					
☒ Changes in MR		Section(s):B.2.4		New version No.:1.1	
☐ Changes in XLS		Worksheet(s):		New version No.:	
☐ Other:					
VVB assessment					Date:
MR version 1.1, Section B.2.4: The relevant SDG monitoring parameters are updated to reflect the change in from SD to SDG requirements.					19/08/2020
Conclusion <i>Tick the appropriate checkbox</i>		☐ Additional action should be taken (finding remains open) ☒ The finding is closed			

CAR ID	D-4	Section no.	D.1	Date:	08/07/2020
Description of CAR					
MR version 1.0, Section D.1, Parameter $f_{NRB,y}$: The value applied inconsistent with Transition Annex and registered VPA-DD					
CME response					Date:
That is correct, in the VPA-DD only an ex-ante value was provided. In MRI this value has been updated to a value that is valid for this CP					18/08/2020
Documentation provided by CME					
☐ Changes in MR		Section(s):		New version No.:	
☐ Changes in XLS		Worksheet(s):		New version No.:	
☐ Other:					
VVB assessment					Date:
MR version 1.1, Section D.1, Parameter $f_{NRB,y}$: The value applied is based on the updated during MPI applied for the crediting period.					19/08/2020
Conclusion <i>Tick the appropriate checkbox</i>		☐ Additional action should be taken (finding remains open) ☒ The finding is closed			

CAR ID	D-5	Section no.	D.1	Date:	08/07/2020
Description of CAR					
MR version 1.0, Section D.1, Parameter $BB_{b,bio}$:					
1. The table for this parameter is incorrect. 2. The parameter inconsistent with registered VPA-DD 3. The description inconsistent with registered VPA-DD					
CME response					Date:
1, 2, and 3 the values are consistent. Presumably the request is why 3 values are presented in 1 table, now this is changed to the table from the VPA-DD. It is a copy paste, and thus consistent					18/08/2020
Documentation provided by CME					
☒ Changes in MR		Section(s):D.1		New version No.:1.1	
☐ Changes in XLS		Worksheet(s):		New version No.:	
☐ Other:					
VVB assessment					Date:
MR version 1.1, Section D.1, Parameter $BB_{b,bio}$: The parameter is divided to 3 parameters and according to the registered VPA-DD as $BB_{b1,bio}$, $BB_{b2,bio}$ and $BB_{b3,bio}$. The data are consistent with registered VPA-DD					19/08/2020
Conclusion <i>Tick the appropriate checkbox</i>		☐ Additional action should be taken (finding remains open) ☒ The finding is closed			

CAR ID	D-6	Section no.	D.1	Date:	08/07/2020
Description of CAR					
MR version 1.0, Section D.1: Parameter $EF_{awms,T}$ is not listed.					
CME response					Date: 18/08/2020
This is now added					
Documentation provided by CME					
☒	Changes in MR	Section(s):D1		New version No.:1.1	
☐	Changes in XLS	Worksheet(s):		New version No.:	
☐	Other:				
VVB assessment					Date: 19/08/2020
MR version 1.1, Section D.1: Parameter $EF_{awms,T}$ is added.					
Conclusion <i>Tick the appropriate checkbox</i>		☐ Additional action should be taken (finding remains open) ☒ The finding is closed			

CAR ID	D-7	Section no.	D.2	Date:	08/07/2020
Description of CAR					
MR version 1.0, Section D.2:					
- Parameter GS-3 Soil condition: The value applied should be 91.5% based on the calculation. - Parameter GS-08 Access to affordable and clean energy services and $N_{p,y}$: According to the grievance tracker Jan to Apr 2020, item 37 and 81 both plants are abandoned These units shall be removed from the DB. The total number of units in the DB shall be corrected. - Parameter GS-12 Technology transfer and technological self-reliance: The name of the file refers as SDG07 VPA 06 MP III Mason and BCE Training which is incorrect. - Parameters $U_{p,y}$, $N_{p,y}$, $N_{op,y}$, $O_{p,y}$, $LE_{p,y}$, $BB_{b,fuel}$, $BB_{p,bio}$ and $BB_{p,fuel}$: The representation inconsistent with registered VPA-DD. - Parameter $N_{op1,y}$: The value shall be corrected with the deletion of 2 plants as per item 2 above. - Parameter $O_{p1,y}$: The value shall be corrected with the deletion of 2 plants as per item 2 above. - Parameter $BB_{b1,2,3,4}$ is not listed - Parameters $MS_{P,S,K}$ and $MS_{T,S,k}$: The description in value applied inconsistent with the Transition Annex					
CME response					Date: 18/08/2020
- Updated - As discussed in the CL F1 no removals were required. #37 was temporarily out of operation and therefore not excluded from the database. ##81 can be considered permanently out of operation, however that plant was removed already from the database used for this MR by the VPA implementer - The file itself has been changed to MP II instead of MP III, evidence is attached - Parameters $U_{p,y}$, $N_{p,y}$, $N_{op,y}$, $O_{p,y}$, $LE_{p,y}$, $BB_{b,fuel}$, $BB_{p,bio}$ and $BB_{p,fuel}$ are now consistent with the VPA-DD (p1 scenario instead of p) - No update required as per item 2 above - No update required as per item 2 above - Is now added - This is now updated and made consistent					
Documentation provided by CME					
☒	Changes in MR	Section(s):D.2		New version No.:1.1	
☐	Changes in XLS	Worksheet(s):		New version No.:	
☐	Other:				
VVB assessment					Date: 19/08/2020

MR version 1.1, Section D.2:

1. Parameter GS-3 Soil condition: The value applied corrected to 91.5%.
2. Parameter GS-08 Access to affordable and clean energy services and $N_{op,y}$: The CME explain plant # 37 is temporarily out of operation and maintain in DB whilst plant #81 is considered as out of operation and already removed from DB by VPA implementer for this MP.

The DB is further review that plant #81 is not found. A FAR has been raised under CL F-1 to crosscheck plant #37 is back in operation in the next verification. Otherwise will be removed from DB.
3. Parameter GS-12 Technology transfer and technological self-reliance: The name of the file corrected as SDG07 VPA 06 MPII Mason and BCE Training.
4. Parameters $U_{p1,y}$, $N_{p1,y}$, $N_{op1,y}$, $O_{p1,y}$, $LE_{p1,y}$, $BB_{b1,fuel}$, $BB_{p1,bio}$ and $BB_{p1,fuel}$ representation corrected and consistent with registered VPA-DD.
5. Parameter $N_{op1,y}$: The value need not to be corrected as per assessment in item 2 above.
6. Parameter $O_{p1,y}$: The value need not be corrected as per assessment in item 2 above.
7. Parameter $BB_{b1,2,3,4}$ is updated accordingly
8. Parameters $MS_{P,S,K}$ and $MS_{T,S,K}$: The description in value applied updated 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-8	Section no.	D.3	Date:	08/07/2020
Description of CAR					
MR version 1.0, Section D.3:					
1. Sampling Method: The referred document in footnote 6 does not reflect the current monitoring period. 2. Analysis: Refer VPA06 MPII_survey_SDG_ER sheets Analysis B cell D1 states # in operation. However, cells D2 to D5 the data are those units not in operation. The heading of the column is misleading.					
CME response					Date:
1. That reference is now updated to the correct year, 2019 instead of 2018, it is now footnote 7 not 6 2. The heading of D1 has been updated to units out of operation. The values in F10 and G10 are removed in order to avoid confusion					18/08/2020
Documentation provided by CME					
☒	Changes in MR	Section(s):D3		New version No.:1.1	
☒	Changes in XLS	Worksheet(s): analysis B		New version No.:1.1	
☐	Other:				
VVB assessment					Date:
MR version 1.1, Section D.3:					19/08/2020
1. Sampling Method: The referred document in footnote 6, now footnote 7 refers to the current monitoring period. 2. Analysis: Refer VPA06 MPII_survey_SDG_ER sheets Analysis B the heading in cell D1 corrected as # out of operation. In addition values in F10 and G10 deleted to avoid confusion is appropriate.					
Conclusion					
Tick the appropriate checkbox		☐ Additional action should be taken (finding remains open) ☒ The finding is closed			

CAR ID	E-3	Section no.	E.1	Date:	08/07/2020
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:
The baseline situation is now included					18/08/2020
Documentation provided by CME					

☒ Changes in MR	Section(s): E1	New version No.:1.1
☐ Changes in XLS	Worksheet(s):	New version No.:
☐ Other:		
VVB assessment		Date: 19/08/2020
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 corrected.		
Conclusion <i>Tick the appropriate checkbox</i>	☐ Additional action should be taken (finding remains open) ☒ The finding is closed	

CAR ID	E-4	Section no.	E.1	Date:	08/07/2020
Description of CAR					
MR version 1.0, Section E.1, The equation no. for Baseline emissions from fuel use and Accounting for baseline emissions from manure handling inconsistent with Transition Annex.					
CME response					Date: 18/08/2020
The number in the MR is internal numbering and no references nor is it anywhere mentioned as such. However, to avoid complications all numbering has been removed.					
Documentation provided CME					
☒ Changes in MR	Section(s): many		New version No.:1.1		
☐ Changes in XLS	Worksheet(s):		New version No.:		
☐ Other:					
VVB assessment					Date: 19/08/2020
MR version 1.0, Section E.1, The equation no. for Baseline emissions from fuel use and Accounting for baseline emissions from manure handling deleted to avoid confusion since it is internal numbering.					
Conclusion <i>Tick the appropriate checkbox</i>	☐ Additional action should be taken (finding remains open) ☒ The finding is closed				

CAR ID	E-5	Section no.	E.2, E.3, E.4 & E.5	Date:	08/07/2020
Description of CAR					
MR version 1.0, Section E.2, E.3, E.4 and E.5:					
1. SDG 2.4.1: The 92% shall be corrected with correction of parameter GS-3 Soil condition. 2. SDG 5: Female time savings inconsistent with parameter Time savings					
CME response					Date: 18/08/2020
1. Changed to 91.5% 2. Some additional information has been added such as the % same time, % less time. Please refer to the MR with the tracked changes					
Documentation provided by CME					
☒ Changes in MR	Section(s): E.2, E.3, E.4 & E.5		New version No.:1.1		
☐ Changes in XLS	Worksheet(s):		New version No.:		
☐ Other:					
VVB assessment					Date: 19/08/2020
MR version 1.1, Section E.2, E.3, E.4 and E.5:					
1. SDG 2.4.1: The data corrected to 91.5% with correction of parameter GS-3 Soil condition. 2. SDG 5: The information updated and consistent with time savings.					
Conclusion <i>Tick the appropriate checkbox</i>	☐ Additional action should be taken (finding remains open) ☒ The finding is closed				

CAR ID	E-6	Section no.	E.2	Date:	08/07/2020
Description of CAR					
MR version 1.0, Section E.2, Project Emissions, Source 2: The equation no. inconsistent with Transition Annex.					

CME response		Date:	18/08/2020
Equation numbering has been removed as per CAR E-4			
Documentation provided by CME			
☒ Changes in MR	Section(s): multiple	New version No.:1.1	
☐ Changes in XLS	Worksheet(s):	New version No.:	
☐ Other:			
VVB assessment		Date:	19/08/2020
MR version 1.1, Section E.2, Project Emissions, Source 2: The equation no. removed to avoid misrepresentation.			
Conclusion <i>Tick the appropriate checkbox</i>		☐ Additional action should be taken (finding remains open) ☒ The finding is closed	

CAR ID	E-7	Section no.	E.3	Date:	08/07/2020	
Description of CAR						
MR version 1.0, Section E.3, SDG 13.2.1 Net benefit: The equation applied in table Total emission reductions per household on the VPA level of VPA06 MPII survey_SDG_ER sheet SDG is inconsistent with the ER equation.						
CME response					Date:	18/08/2020
This is now corrected						
Documentation provided by CME						
☐ Changes in MR	Section(s):		New version No.:			
☒ Changes in XLS	Worksheet(s):SDG13		New version No.:1.1			
☐ Other:						
VVB assessment					Date:	19/08/2020
MR version 1.1, Section E.3, SDG 13.2.1 Net benefit: The equation applied in table Total emission reductions per household on the VPA level of VPA06 MPII survey_SDG_ER sheet SDG corrected and consistent with the ER equation.						
Conclusion <i>Tick the appropriate checkbox</i>		☐ Additional action should be taken (finding remains open) ☒ The finding is closed				

CAR ID	E-8	Section no.	SDG ER excel sheet	Date:	08/07/2020	
Description of CAR						
VPA06 MPII survey SDG_ER:						
1. Analysis B sheet: Cell E10 to be corrected as number in operation. 2. PE sheet: Reference for cells F54 and F55 is not traceable. 3. SDG13 sheet: Cell A59 refers to MPIII which is incorrect						
CME response					Date:	18/08/2020
1. Cell E10 has been removed as it was not instrumental to the calculations and to avoid confusion 2. Updated with the correct reference 3. Updated to MPII						
Documentation provided by CME						
☐ Changes in the MR	Section(s):		New version No.:			
☒ Changes in XLS	Worksheet(s): SDG ER excel sheet		New version No.:1.1			
☐ Other:						
VVB assessment					Date:	19/08/2020
VPA06 MPII survey SDG_ER:						
1. Analysis B sheet: Cell E10 deleted since not relevant to calculation. 2. PE sheet: Reference for cells F54 and F55 corrected and traceable. 3. SDG13 sheet: Cell A59 corrected to MPII that refer to this MP/						
Conclusion <i>Tick the appropriate checkbox</i>		☐ Additional action should be taken (finding remains open) ☒ The finding is closed				

CAR ID	F-2	Section no.	F.2	Date:	08/07/2020
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: 18/08/2020
This list is now made available and F2 is updated					
Documentation provided by CME					
☒	Changes in MR	Section(s):F2		New version No.:1.1	
☐	Changes in XLS	Worksheet(s):		New version No.:	
☒	Other: 12jul20 VPA06 MPI Grievance follow up in MPII				
VVB assessment					Date: 19/08/2020
MR version 1.1, Section F.2:					
The section is updated with a table describing the closed cases brought forward from last MP and balance of cases are on-going and following up by VPA implementer.					
Conclusion <i>Tick the appropriate checkbox</i>		☐ Additional action should be taken (finding remains open) ☒ The finding is closed			

CAR ID	F-3	Section no.	F.3	Date:	08/07/2020
Description of CAR					
MR version 1.0, Section F.3:					
This section request for details of any legal contest or dispute that has arisen with the project during the monitoring period. The details are not reported.					
Project participant response					Date: 18/08/2020
The MR mentions the 2 disputes and the nature of the dispute, and these are referenced clearly. Some additional text is added on the exact nature of the dispute					
Documentation provided by CME					
☒	Changes in MR	Section(s):F3		New version No.:1.1	
☐	Changes in XLS	Worksheet(s):		New version No.:	
☐	Other:				
VVB assessment					Date: 19/08/2020
MR version 1.1, Section F.3:					
The information of the 2 cases 18 and 20 as per grievance tracker arises during the monitoring period are reported.					
A FAR is raise to monitor these 2 cases are resolved before the next verification					
Conclusion <i>Tick the appropriate checkbox</i>		☐ Additional action should be taken (finding remains open) ☒ The finding is closed			

Table 6. FARs from this verification

FAR ID	F-1	Section No.	F.1	Date:	19/08/2020
Description of FAR					
MR version 1.1 Section F.1:					
Refer CL F-1 item 4 and CAR D-7: This FAR raised is to verify plant #37 under the name of Joseph Karimi is in operation prior to the next monitoring period. Otherwise will be remove from DB.					
The verifying VVB will review the status.					
CME response					Date:
Documentation provided by CME					
☐	Changes in MR	Section(s):		New version No.:	
☐	Changes in XLS	Worksheet(s):		New version No.	
☐	Other:				

VVB assessment	Date:

FAR ID	F-2	Section No.	F.3	Date:	19/08/2020
Description of FAR					
MR version 1.1 Section F.3:					
Refer CAR F-3, this FAR is raised to monitor the 2 cases 18 and 20 as per grievance tracker as stated in the MR will be resolved prior to the next verification.					
The verifying VVB will review the status.					
CME response					Date:
Documentation provided by CME					
☐	Changes in MR	Section(s):		New version No.:	
☐	Changes in XLS	Worksheet(s):		New version No.	
☐	Other:				
VVB assessment					Date:

FAR ID	F-3	Section No.	A.2	Date:	19/08/2020
Description of FAR					
MR version 1.1 Section A.2:					
Refer CL B-1: This FAR raised is to verify the 267 units GPS are obtain prior to include back into the database by the verifying VVB in the next verification.					
CME response					Date:
Documentation provided by CME					
☐	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/	Description:	CL D-1 CAR D-7	OK
	/ER/	The number of households that used bio-slurry for farming activities during this MPII reported is 91.5%.		
	/US/	The data derived from the Usage Survey conducted by a 3 rd party.		
	/VPADD/	Verifier's action:		
	/TA/	The usage survey results were review and crosschecked.		
	/HH/	During the telephone interviews of households, the percentage of households applies bio-slurry for farming and vegetable gardening is approx. 91.9%.		
		Conclusion:		
		The monitoring of the indicator is according to the VPA-DD and Transition Annex.		
		☒ In this context the following findings have been raised:		
		☒ CL D-1		
		☒ CAR D-7		
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/	Description:	OK	OK
	/US/	The chosen parameter monitors users report a perceived improvement in health through reduced smoke inhalation derived from the usage survey conducted by a 3 rd party.		
	/VPADD/			

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(ODL) but also describe the applied data aggregation trails (from ODL to data aggregation level zero (DALO)). 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.	/TA/ /HH/	The situation as at 30/04/2020 as below: <table border="1"> <tr> <td>Perceived health improvement</td> <td>95%</td> </tr> <tr> <td>No changed</td> <td>5%</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: <table border="1"> <tr> <td>☐</td> <td></td> </tr> <tr> <td>☐</td> <td></td> </tr> </table>	Perceived health improvement	95%	No changed	5%	Deterioration in health	0%	☐		☐			
Perceived health improvement	95%													
No changed	5%													
Deterioration in health	0%													
☐														
☐														
3. SDG 5: Achieve gender equality and empower all women and girls		Description: Time savings												
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 (DALO)). 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/ /US/ /TA/ /HH/ /ER/	Description: The chosen parameter monitors time-savings of households attributed to the installation of a biodigester. <table border="1"> <tr> <td>Yes, more time available than before having biogas</td> <td>93.65%</td> </tr> <tr> <td>No, just the same as before (between before and after having Biogas)</td> <td>4.76%</td> </tr> <tr> <td>Yes, less time available than before having biogas</td> <td>1.59%</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.	Yes, more time available than before having biogas	93.65%	No, just the same as before (between before and after having Biogas)	4.76%	Yes, less time available than before having biogas	1.59%	CLD-1	OK				
Yes, more time available than before having biogas	93.65%													
No, just the same as before (between before and after having Biogas)	4.76%													
Yes, less time available than before having biogas	1.59%													

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<i>Assess whether the measurement / determination method is in line with the registered monitoring plan of the VPADD and the applied methodology.</i>		During telephone interviews of households 79% responded they have more time available using biogas. <i>Conclusion:</i> The monitoring of the indicator is according to the Transition Annex. <table border="1"> <tr> <td>☒</td> <td>In this context the following findings have been raised:</td> </tr> <tr> <td>☒</td> <td>CL D-1</td> </tr> <tr> <td>☐</td> <td></td> </tr> </table>	☒	In this context the following findings have been raised:	☒	CL D-1	☐											
☒	In this context the following findings have been raised:																	
☒	CL D-1																	
☐																		
4. SDG 5: Achieve gender equality and empower all women and girls		Description: Usage of saved time																
Measurement / Determination method (VVS, §§ 363-367) <i>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.</i>	/MR/ /US/ /ER/ /TA/ /HH/	<i>Description:</i> The chosen parameter monitors usage of saved time. <table border="1"> <tr> <td>Income generating including farming</td> <td>64%</td> </tr> <tr> <td>Education</td> <td>3%</td> </tr> <tr> <td>Leisure (chat, recreation, church resting)</td> <td>27%</td> </tr> <tr> <td>Other</td> <td>5%</td> </tr> </table> The data derived from Usage Survey conducted by a 3rd party. <i>Verifier's action:</i> The survey results are review and crosscheck. During the telephone interviews of households most of them informed the saved time is generally for gardening and farming. <i>Conclusion:</i> The monitoring of the indicator is according to the Transition Annex. <table border="1"> <tr> <td>☐</td> <td>In this context the following findings have been raised:</td> </tr> <tr> <td>☐</td> <td></td> </tr> <tr> <td>☐</td> <td></td> </tr> </table>	Income generating including farming	64%	Education	3%	Leisure (chat, recreation, church resting)	27%	Other	5%	☐	In this context the following findings have been raised:	☐		☐		OK	OK
Income generating including farming	64%																	
Education	3%																	
Leisure (chat, recreation, church resting)	27%																	
Other	5%																	
☐	In this context the following findings have been raised:																	
☐																		
☐																		

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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) <i>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.</i>	/ MR / / DB / / VPADD / / TA / / IM01 / / IM02 / / IM03 /	Description: The number of bio-digesters implemented as at 30/04/2020 is 3.227 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. 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-7 ☐	CAR D-7	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) <i>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.</i>	/ MR / / T / / GSP / / VPADD / / IM03 /	Description: The data is derived from the annual training records of the VPA implementer, Kenya Biogas Programme (KBP) provided to the masons and biogas enterprise staff. During this monitoring period, the reported data is 92 masons & biogas enterprises personnel. Verifier's action: The training records and results are verified and through interview of the VPA implementer Conclusion:	CAR D-7	OK

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<i>Assess whether the measurement / determination method is in line with the registered monitoring plan of the VPADD and the applied methodology.</i>		The monitoring of the indicator is according to the Transition Annex and VPA-DD. <table border="1"> <tr> <td data-bbox="1043 236 1104 292">☒</td> <td data-bbox="1104 236 1839 292">In this context the following findings have been raised:</td> </tr> <tr> <td data-bbox="1043 292 1104 355">☒</td> <td data-bbox="1104 292 1839 355">CAR D-7</td> </tr> <tr> <td data-bbox="1043 355 1104 419">☐</td> <td data-bbox="1104 355 1839 419"></td> </tr> </table>	☒	In this context the following findings have been raised:	☒	CAR D-7	☐			
☒	In this context the following findings have been raised:									
☒	CAR D-7									
☐										
7. SDG 8.5: GS-10 Technology transfer and technological self-reliance		Description: Man days								
Measurement / Determination method (VVS, §§ 363-367) <i>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.</i>	/MR/ /DB/ /ER/ /TA/ /VPADD/ /IM02/ /IM03/	<i>Description:</i> The parameter monitors 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 48,770 man-days. <i>Verifier's action:</i> Sheet SDG8 of DB was review to crosscheck the 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. <i>Conclusion:</i> The monitoring of the indicator is according to the Transition Annex, and registered VPA-DD. <table border="1"> <tr> <td data-bbox="1043 1161 1104 1217">☐</td> <td data-bbox="1104 1161 1839 1217">In this context the following findings have been raised:</td> </tr> <tr> <td data-bbox="1043 1217 1104 1281">☐</td> <td data-bbox="1104 1217 1839 1281"></td> </tr> <tr> <td data-bbox="1043 1281 1104 1345">☐</td> <td data-bbox="1104 1281 1839 1345"></td> </tr> </table>	☐	In this context the following findings have been raised:	☐		☐		OK	OK
☐	In this context the following findings have been raised:									
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Checklist Item (incl. guidance for the verification team)	Reference	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/	<i>Description:</i> The cumulative usage rate of bio-digesters for the monitoring period is 86.74%. The data is consolidated from the usage survey results conducted by the 3rd party consultant. The data is applied to calculate the emission reductions. <i>Verifier's action:</i> The usage survey report is verified on the cumulative results. The data applied for ER calculations is crosscheck against the survey report for consistency. CME and VPA implementer are interviewed. <i>Conclusion:</i> The parameter is monitored in accordance with the Transition Annex, registered VPA-DD and applied methodology. <table border="1"> <tr> <td>☒</td> <td>In this context the following findings have been raised:</td> </tr> <tr> <td>☒</td> <td>CAR D-7</td> </tr> <tr> <td>☐</td> <td></td> </tr> </table>	☒	In this context the following findings have been raised:	☒	CAR D-7	☐		CAR D-7	OK
☒	In this context the following findings have been raised:									
☒	CAR D-7									
☐										
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 (VVS, §§ 363-367)	/MR/ /TA/	<i>Description:</i> The cumulative number of project technology days during the monitoring period is 2,650.	CAR D-7	OK						

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<i>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.</i>	/US/ /ER/ /VPADD/ /GSM/ /IM01-IM03/	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. <table border="1" data-bbox="1108 686 1848 874"> <tr> <td>☒</td> <td>In this context the following findings have been raised:</td> </tr> <tr> <td>☒</td> <td>CAR D-7</td> </tr> <tr> <td>☐</td> <td></td> </tr> </table>	☒	In this context the following findings have been raised:	☒	CAR D-7	☐			
☒	In this context the following findings have been raised:									
☒	CAR D-7									
☐										
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) <i>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.</i>	/MR/ /TA/ /DB/ /ER/ /VPADD/ /GSM/ /IM01-IM03/	Description: The number of units installed as of 30/04/2020 is 3,227. 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. Conclusion:	CAR D-7	OK						

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<i>Assess whether the measurement / determination method is in line with the registered monitoring plan of the PDD and the applied methodology.</i>		The parameter is monitored in accordance to the Transition Annex, registered VPADD and applied methodology. <table border="1"> <tr> <td data-bbox="1052 231 1108 295">☒</td> <td data-bbox="1108 231 1836 295">In this context the following findings have been raised:</td> </tr> <tr> <td data-bbox="1052 295 1108 359">☒</td> <td data-bbox="1108 295 1836 359">CAR D-7</td> </tr> <tr> <td data-bbox="1052 359 1108 422">☐</td> <td data-bbox="1108 359 1836 422"></td> </tr> </table>	☒	In this context the following findings have been raised:	☒	CAR D-7	☐			
☒	In this context the following findings have been raised:									
☒	CAR D-7									
☐										
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) <i>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.</i>	/MR/ /US/ /TA/ /ER/ /VPADD/ /GSM/ /IM01/ /IM03/ /HH/ /HH/	<i>Description:</i> 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 354.96 days. <i>Verifier's action:</i> 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. <i>Conclusion:</i> The parameter is monitored according to the Transition Annex, registered VPADD and applied methodology. <table border="1"> <tr> <td data-bbox="1052 1149 1108 1212">☒</td> <td data-bbox="1108 1149 1836 1212">In this context the following findings have been raised:</td> </tr> <tr> <td data-bbox="1052 1212 1108 1276">☒</td> <td data-bbox="1108 1212 1836 1276">CAR D-7</td> </tr> <tr> <td data-bbox="1052 1276 1108 1332">☐</td> <td data-bbox="1108 1276 1836 1332"></td> </tr> </table>	☒	In this context the following findings have been raised:	☒	CAR D-7	☐		CAR D-7	OK
☒	In this context the following findings have been raised:									
☒	CAR D-7									
☐										
12. SDG 13.2.1: LE_{p1,y}		Description: Leakage in project scenario p1 during year y								

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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 considered 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. <table border="1"> <tr> <td>☒</td><td>In this context the following findings have been raised:</td></tr> <tr> <td>☒</td><td>CAR D-7</td></tr> <tr> <td>☐</td><td></td></tr> </table>	☒	In this context the following findings have been raised:	☒	CAR D-7	☐		CAR D-7	OK
☒	In this context the following findings have been raised:									
☒	CAR D-7									
☐										
13. SDG 13.2.1: N_{T,h}		Description: Number of animals of livestock category T in premise h								

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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/ /US/ /TA/ /VPADD/ /GSM/ /IM04/ /IM02/	Description: 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 border="1" style="width: 100%; border-collapse: collapse; margin: 10px 0;"> <thead> <tr> <th style="text-align: left;">Animal T</th> <th style="text-align: right;">Average</th> </tr> </thead> <tbody> <tr> <td>Dairy cows</td> <td style="text-align: right;">4.05</td> </tr> <tr> <td>Other cattle</td> <td style="text-align: right;">0.70</td> </tr> <tr> <td>Market swine</td> <td style="text-align: right;">0.09</td> </tr> <tr> <td>Breeding swine</td> <td style="text-align: right;">0.03</td> </tr> <tr> <td>Poultry</td> <td style="text-align: right;">21.59</td> </tr> <tr> <td>Sheep</td> <td style="text-align: right;">1.82</td> </tr> <tr> <td>Goat</td> <td style="text-align: right;">1.18</td> </tr> </tbody> </table> Verifier's action: The results from the usage survey data has been 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: <table border="1" style="width: 100%; border-collapse: collapse; margin-top: 5px;"> <tr> <td style="width: 30px; text-align: center;">☐</td> <td></td> </tr> <tr> <td style="text-align: center;">☐</td> <td></td> </tr> </table>	Animal T	Average	Dairy cows	4.05	Other cattle	0.70	Market swine	0.09	Breeding swine	0.03	Poultry	21.59	Sheep	1.82	Goat	1.18	☐		☐		OK	OK
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14. SDG 13.2.1: BB_b ratio		Description: Baseline scenario ratios																						
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/ /US/ /TA/ /VPADD/ /IM01/	Description: The baseline scenarios are the type of fuel used prior to biogas. <table border="1" style="width: 100%; border-collapse: collapse; margin: 10px 0;"> <thead> <tr> <th style="text-align: left;">Baseline scenario</th> <th style="text-align: center;">#</th> <th style="text-align: center;">%</th> </tr> </thead> <tbody> <tr> <td>B1: Firewood used to meet (more than 50%) of my cooking needs</td> <td style="text-align: center;">76</td> <td style="text-align: center;">58.9</td> </tr> <tr> <td>B2: Charcoal used to meet (more than 50%) of my cooking needs</td> <td style="text-align: center;">23</td> <td style="text-align: center;">17.8</td> </tr> <tr> <td>B3: Firewood & charcoal used to</td> <td style="text-align: center;">3</td> <td style="text-align: center;">2.3</td> </tr> </tbody> </table>	Baseline scenario	#	%	B1: Firewood used to meet (more than 50%) of my cooking needs	76	58.9	B2: Charcoal used to meet (more than 50%) of my cooking needs	23	17.8	B3: Firewood & charcoal used to	3	2.3	OK	OK								
Baseline scenario	#	%																						
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B2: Charcoal used to meet (more than 50%) of my cooking needs	23	17.8																						
B3: Firewood & charcoal used to	3	2.3																						

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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/	<table border="1"> <tr> <td>meet (more than 50%) of my cooking</td> <td></td> <td></td> </tr> <tr> <td>B4: Other fuels</td> <td>27</td> <td>20.9</td> </tr> <tr> <td>I don't remember</td> <td>1</td> <td>N/A</td> </tr> </table> The data derived from the usage survey conducted by 3rd party. <i>Verifier's action:</i> 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. <i>Conclusion:</i> The parameter is monitored in accordance with the Transition Annex, registered VPADD and applied methodology <table border="1"> <tr> <td>☐</td> <td>In this context the following findings have been raised:</td> </tr> <tr> <td>☐</td> <td></td> </tr> <tr> <td>☐</td> <td></td> </tr> </table>	meet (more than 50%) of my cooking			B4: Other fuels	27	20.9	I don't remember	1	N/A	☐	In this context the following findings have been raised:	☐		☐			
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I don't remember	1	N/A																	
☐	In this context the following findings have been raised:																		
☐																			
☐																			
15. BB_{b4,fuel}		Description: Amount of fossil fuels used in baseline scenario b4																	
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/ /ER/ /VPADD/ /IM01/ /IM04/ /LHH/	<i>Description:</i> The amount of fossil fuel use in the baseline scenario b4. VPA implementer did not conduct the baseline scenario for fossil fuel. <i>Verifier's action:</i> Since the baseline scenario for fossil fuel use was not conducted the emissions is not accounted in the ER calculation. Therefore, is conservative. The data in the ER is crosscheck and no input data for this parameter.	CLD-1	OK															

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<i>Assess whether the measurement / determination method is in line with the registered monitoring plan of the PDD and the applied methodology.</i>		During the telephone interview, it could be confirmed LPG is one of fuel used prior to the bio-digester is installed. <i>Conclusion:</i> The parameter is monitored in accordance with the registered VPA-DD and applied methodology <table border="1"> <tr> <td>☒</td> <td>In this context the following findings have been raised:</td> </tr> <tr> <td>☒</td> <td>CL D-1</td> </tr> <tr> <td>☐</td> <td></td> </tr> </table>	☒	In this context the following findings have been raised:	☒	CL D-1	☐			
☒	In this context the following findings have been raised:									
☒	CL D-1									
☐										
16. BB_{b1,2,3,4}		Description: Amount of fossil fuel used in the baseline scenarios b1, b2, b3 and b4								
Measurement / Determination method (VVS, §§ 363-367) <i>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.</i>	/MR/ /ER/ /VPADD/ /IM01/ /IM04/ /LHH/	<i>Description:</i> The amount of fossil fuel use in the baseline scenario. VPA implementer did not conduct the baseline scenario for fossil fuel. <i>Verifier's action:</i> Since the baseline scenario for fossil fuel use was not conducted the emissions is not accounted in the ER calculation. Therefore, is conservative. The data in the ER is crosschecked and no input data for this parameter. During the telephone interview, it could be confirmed LPG is one of fuel used prior to the bio-digester is installed. <i>Conclusion:</i> The parameter is monitored in accordance with the registered VPA-DD and applied methodology <table border="1"> <tr> <td>☒</td> <td>In this context the following findings have been raised:</td> </tr> <tr> <td>☒</td> <td>CAR D-7</td> </tr> <tr> <td>☐</td> <td></td> </tr> </table>	☒	In this context the following findings have been raised:	☒	CAR D-7	☐		CAR D-7	OK
☒	In this context the following findings have been raised:									
☒	CAR D-7									
☐										

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17. SDG 13.2.1: BB_{p1, bio}		Description: Amount of woody biomass used in the 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 / / 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 0.72t/y The biomass consumed in the project scenario is firewood and charcoal. Verifier's action: The reported value is crosscheck 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. <table border="1" data-bbox="1055 927 1850 1110"> <tr> <td data-bbox="1055 927 1106 986">☒</td> <td data-bbox="1106 927 1850 986">In this context the following findings have been raised:</td> </tr> <tr> <td data-bbox="1055 986 1106 1045">☒</td> <td data-bbox="1106 986 1850 1045">CAR D-7</td> </tr> <tr> <td data-bbox="1055 1045 1106 1110">☐</td> <td data-bbox="1106 1045 1850 1110"></td> </tr> </table>	☒	In this context the following findings have been raised:	☒	CAR D-7	☐		CAR D-7	OK
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☒	CAR D-7									
☐										
18. SDG 13.2.1: BB_{p1, fuel}		Description: Amount of fossil fuels used in the project scenario p								
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)).	/ MR / / ER / TA / / GSM / / PFT / / VPADD /	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 is 0.02 t/y.	CAR D-7	OK						

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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.	//IM02/ //IM04/ /HH/	<i>Verifier's action:</i> The PFT survey results verified.. 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. <i>Conclusion:</i> The parameter is monitored in accordance with the Transition Annex, registered VPA-DD and applied methodology. <table border="1"> <tr> <td>☒</td> <td>In this context the following findings have been raised:</td> </tr> <tr> <td>☒</td> <td>CAR D-7</td> </tr> <tr> <td>☐</td> <td></td> </tr> </table>	☒	In this context the following findings have been raised:	☒	CAR D-7	☐													
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☒	CAR D-7																			
☐																				
19. SDG 13.2.1: MS_{P,S,k}		Description: Fraction of livestock category T's manure not treated in bio-digester, in climate region k																		
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.	/IMR/ /US/ /ER/ /VPADD/ /GSM/ /IM04/ /IM02/ /HH/	<i>Description:</i> The fraction of manure fed in the biodigesters for respective animal category as follows: <table border="1"> <thead> <tr> <th>Animal T</th> <th>Average</th> </tr> </thead> <tbody> <tr> <td>Dairy cow</td> <td>7.50%</td> </tr> <tr> <td>Other cattle</td> <td>10.00%</td> </tr> <tr> <td>Market swine</td> <td>66.67%</td> </tr> <tr> <td>Breeding swine</td> <td>100.00%</td> </tr> <tr> <td>Poultry</td> <td>98.81%</td> </tr> <tr> <td>Sheep</td> <td>100.0%</td> </tr> <tr> <td>Goat</td> <td>100.0%</td> </tr> </tbody> </table> The data is derived from the usage survey conducted by an independent consultant. <i>Verifier's action:</i> The usage survey results are reviewed and crosschecked with the data applied in the ER spreadsheet.	Animal T	Average	Dairy cow	7.50%	Other cattle	10.00%	Market swine	66.67%	Breeding swine	100.00%	Poultry	98.81%	Sheep	100.0%	Goat	100.0%	CAR D-7	OK
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		During the telephone interviews, it could confirm the type of animal waste fed into the digester are generally cattle and swine. The survey consultant is interviewed on the survey results. <i>Conclusion:</i> The parameter is monitored according to the Transition Annex, registered VPA-DD and applied methodology. <table border="1"> <tr> <td>☒</td><td>In this context the following findings have been raised:</td></tr> <tr> <td>☒</td><td>CAR D-7</td></tr> <tr> <td>☐</td><td></td></tr> </table>	☒	In this context the following findings have been raised:	☒	CAR D-7	☐													
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20. SDG 13.2.1: MS_{T,S,K}		Description: Fraction of livestock category T's manure fed into the bio-digester, in climate region k																		
Measurement / Determination method (VVS, §§ 363-367) <i>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.</i>	/MR/ /US/ /VPADD/ /GSM/ /TA/ /IM04/ /IM02/ /HH/	<i>Description:</i> The fraction of manure not treated in the biodigesters for respective animal category as follows: <table border="1"> <thead> <tr> <th>Animal T</th><th>Average</th></tr> </thead> <tbody> <tr> <td>Dairy cow</td><td>92.50%</td></tr> <tr> <td>Other cattle</td><td>90.00%</td></tr> <tr> <td>Market swine</td><td>33.33%</td></tr> <tr> <td>Breeding swine</td><td>0.00%</td></tr> <tr> <td>Poultry</td><td>1.19%</td></tr> <tr> <td>Sheep</td><td>0.00%</td></tr> <tr> <td>Goat</td><td>0.00%</td></tr> </tbody> </table> The data is derive from the usage survey conducted by an independent consultant. <i>Verifier's action:</i> 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 pigs and poultry are fed into the digester. Other animals wastes are not fed. The survey consultant is interview on the results.	Animal T	Average	Dairy cow	92.50%	Other cattle	90.00%	Market swine	33.33%	Breeding swine	0.00%	Poultry	1.19%	Sheep	0.00%	Goat	0.00%	CAR D-7	OK
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☐												
21. 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 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/ /TA/ /ER /VPADD/ /IPCC/	<i>Description:</i> The GWP is the methane content applicable during the monitoring period is 25 for emissions generated as from 01/01/2013. <i>Verifier's action:</i> The GWP data applied in the MR and ER spread-sheet were verified with 2006 IPCC for consistency <i>Conclusion:</i> The parameter is monitored in accordance to the registered VPA-DD and applied methodology. <table border="1"> <tr> <td>☐</td><td>In this context the following findings have been raised:</td></tr> <tr> <td>☐</td><td></td></tr> <tr> <td>☐</td><td></td></tr> </table>	☐	In this context the following findings have been raised:	☐		☐		OK	OK		
☐	In this context the following findings have been raised:											
☐												
☐												
22. SDG 13.2.1: Bio		Description: Use of bio-slurry										
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/ /US/ /ER/ /VPADD/ /GSM/	<i>Description:</i> The bio-slurry used by households for farming and vegetables gardening activities. <table border="1"> <thead> <tr> <th>How do you apply bio-slurry</th><th>%</th></tr> </thead> <tbody> <tr> <td>Applied directly in liquid form to crops</td><td>65</td></tr> <tr> <td>Dried then applied to crops</td><td>32</td></tr> <tr> <td>Composting first then applied to crops</td><td>6</td></tr> </tbody> </table>	How do you apply bio-slurry	%	Applied directly in liquid form to crops	65	Dried then applied to crops	32	Composting first then applied to crops	6	OK	OK
How do you apply bio-slurry	%											
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<i>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.</i>	/IM01 – IM04/ /HH/	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="padding: 2px 5px;">Collected in slurry tank then applied progressively</td> <td style="width: 10%; text-align: center; padding: 2px 5px;">14</td> </tr> <tr> <td style="padding: 2px 5px;">I don't use bio-slurry</td> <td style="width: 10%; text-align: center; padding: 2px 5px;">8</td> </tr> </table>	Collected in slurry tank then applied progressively	14	I don't use bio-slurry	8	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 total emissions. <i>Verifier's action:</i> The survey result was reviewed to crosscheck on the percentage of households apply bio-slurry for farming activities. From the telephone interviews of households 76.5% informed they apply bio-slurry for farming or gardening activities. The data applied in the ER spreadsheet is verified that the project emissions calculation for bio-slurry and excluded in the ER calculations since it is less than 1% of total emissions <i>Conclusion:</i> The parameter is monitored according to the Transition Annex, registered VPA-DD and applied methodology <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 5%; text-align: center; padding: 2px 5px;">☐</td> <td style="padding: 2px 5px;">In this context the following findings have been raised:</td> </tr> <tr> <td style="text-align: center; padding: 2px 5px;">☐</td> <td style="padding: 2px 5px;"></td> </tr> <tr> <td style="text-align: center; padding: 2px 5px;">☐</td> <td style="padding: 2px 5px;"></td> </tr> </table>	☐	In this context the following findings have been raised:	☐		☐	
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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	01/2020 to 10/2020	El / Crane	300kg	20/01/2020