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

(Version 02.0)

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

BASIC INFORMATION	
Title and GS reference number of the project activity	National Biodigester Programme, Cambodia GS751
Number and duration of the next crediting period	Crediting Period: 3 Duration 01/01/2019 to 31/12/2025 (Including both days)
Version number of the validation report for RCP	Version: 1.1 Project No.: MY-GSRCP 18/15 – 18/066
Completion date of the validation report for RCP	01/02/2019
Version number of PDD to which this report applies	2.0
Project participants	National Biodigester Programme (NBP)
Host Party	Cambodia
Applied methodologies and standardized baselines	GS Methodology: Technologies and Practices to Displace Decentralized Thermal Energy Consumption, Version 3.1
Mandatory sectoral scopes linked to the applied methodologies	1
Conditional sectoral scopes linked to the applied methodologies	-
Estimated amount of annual average GHG emission reductions or GHG removals by sinks in the next crediting period	**78,699 tCO_2e**
Name of the GS-VVB	TÜV NORD CERT GmbH
Name, position and signature of the approver of the validation report for RCP	Rainer Winter Final Approval

SECTION A. Executive summary

National Biodigester Programme (NBP) has commissioned the TÜV NORD JI/CDM Certification Program to carry out validation of the request for renewal of crediting period (RCP) for the project:

"National Biodigester Programme, Cambodia (GS751)"

with regard to the relevant requirements for GS project activities.

The project was register on 24/05/2011 under Gold Standard Version 2.1. The GS registration for the project is GS751. The start date of the project was 13/03/2006 with a renewal crediting period of 3 x 7 years.

The 1st crediting period ends on 31/12/2011

The 2nd crediting period starts on 01/01/2012 and ends 31/12/2018

The 3rd crediting period is 7 years from 01/01/2019 to 31/12/2025 in line with GS4GG transition guidelines.

The objective of this re-validation is the review by an independent entity whether the project is still compliant with the applicable sections of:

- Principles outlined in the CDM Validation and Verification Standard for project activities (version 1.0);
- Gold Standard for the Global Goals Principles and Requirements, version 1.1
- GS Methodology: Technologies and Practices to Displace Decentralized Thermal Energy Consumption, Version 3.1 and

As per the requirements of chapter 3.4.11 of the Gold Standard for the Global Goals Principles and Requirements Gold Standard Procedures for the Design Certification Renewal, this re-validation is based on

- the registered 2nd crediting period GSPDD,
- the registered 2nd crediting period GS Passport,
- the GS validation report for 2nd crediting period,
- the updated GS4GG PDD,
- the updated emission reduction calculation spread sheet
- the periodic verification reports and Monitoring Reports of 2nd crediting period including the claimed emission reductions for the project,
- further supporting documents made available to the validator as well as
- information collected through performing on-site interviews.

The details of the project locations are in table A-1 below:

Table A-1: Project Locations

Description	Project Location
Host Country	Cambodia
Region:	16 active out of 20[1] provinces in Cambodia
Project location address:	16 / 20 provinces in Cambodia during crediting period
Latitude:	

[1] During the MP II of crediting period II, there were 19 provinces, there figure now is 20 since Kampong Cham now is divided into 2 provinces, namely Kampong Cham and Tbong Kmum.

Longitude:	#	Province	Latitude (xx° xx' xx » N)	Longitude (xx° xx' xx" E)
	1	Kampong Cham	11° 59' 00" N	105° 27' 00" E
	2	Kandal	11° 78' 30" N	104° 81' 70" E
	3	Svay Reang	11° 05' 00" N	105° 48' 00" E
	4	Takeo	10° 59' 00" N	104° 47' 00" E
	5	Kampong Speu	11° 27' 00" N	104° 30' 00" E
	6	Kampong Chhnang	12° 00' 00" N	104° 30' 00" E
	7	Kampot	10° 36' 00" N	104° 10' 00" E
	8	Kampong Som	10°38′00" N	103°30′00" E
	9	Kep	10°29′00" N	104°18′00" E
	10	Prey Veng	11° 29' 00" N	105° 19' 00" E
	11	Pursat	12°32′00" N	103°55′00" E
	12	Battambang	13°06′00" N	103°12′00" E
	13	Kampong Thom	12°42′00" N	104°53′00" E
	14	Siem Reap	13°21′44″ N	103°51′35″E
	15	Tbong khmum	11°54′34″N	105°38′49″E
	16	Phnom Penh	11°33'43'' N	104°53'18'' E

Table A-2: Technical data of the biodigesters

Plant size (m^3)	2	3	4	6	8	10	15
Dung requirements (kg/day)	10-20	20-30	20-40	40-60	60-80	80-100	100-150
Estimated biogas production (m^3/day)	0.4-0.8	0.2-1.2	0.8-1.6	1.6-2.4	2.4-3.2	3.2-4.0	4.0-6.0
Estimated firewood savings (kg/day)	2-4	6-8	4-8	8-12	12-16	16-20	20-30

SECTION B. Validation team, technical reviewer and approver

B.1. Validation team member

No.	Role	Type of resource	Last name	First name	Affiliation (e.g. name of central or other office of DOE or outsourced entity)	Involvement in			
						Desk review	On-site inspection	Interview(s)	Validation findings
1.	TL/TE	EI	Cheong	Chun Yuen (Robert)	TUV NORD Malaysia	☒	☒	☒	☒

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

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

SECTION C. Means of validation

C.1. Desk review

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

- the registered 2nd crediting period GS-PDD,
- the registered 2nd crediting period GS Passport,
- the GS validation report for 2nd crediting period,
- the updated GS4GG PDD,
- the updated emission reduction calculation spread sheet
- the periodic verification reports and Monitoring Reports of 2nd crediting period including the claimed emission reductions for the project,

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

C.2. On-site inspection

Duration of on-site inspection: 17/10/2018 to 19/10/2018				
No.	**Activity performed on-site**	**Site location**	**Date**	**Team member**
1.	On-site inspection Interview with Biogas Construction Agency, District Representative, Technical, Biogas Users at village level	Takeo and Kampong Speu	17/10/2018 & 18/10/2018	Cheong, Chun Yuen (Robert)
2	Review of PDD, ER, LSC, Baseline, Database check, Discussion of field visits, Reporting and closing meeting	Phnom Penh	19/10/2018	

C.3. Interviews

List of Interview persons:

Reference	MoI[1]		Name	Organisation / Function
/IM01/	V	☒ Mr. ☐ Ms	Him Sambath	NBP / Technical Manager
		☐ Mr. ☒ Ms	Lam Sao Leng	NBP / Project Coordinator
/IM02/	V	☒ Mr. ☐ Ms	Eric Buysman	Carbon Consultant
	T	☒ Mr. ☐ Ms	Patrick Kooijman	Survey Consultant
/IM03/	V	☒ Mr. ☐ Ms	Mup Vanna	BCA Takeo
	V	☒ Mr. ☐ Ms	Kheang Vanthy	Supervisor Takeo
	V	☒ Mr.	Toun Sameth	Technician Takeo District

Reference	MoI[1]		Name	Organisation / Function
		☐ Ms		
	V	☒ Mr. ☐ Ms	Vit Samon	Technician Takeo District
	V	☒ Mr. ☐ Ms	Eon Ra	BCA Kampong Speu
	V	☒ Mr. ☐ Ms	La Vanath	BCA Kampong Speu

List of households visited: /LHH/

No.	MoI[1]	Biodigester Number	Household Name	Location (Province, District, Commune Village)
1	V	0501090684	Teng Ra	Kampong Spue, Basedth, Pheari Mean Chey, Thmei
2	V	0501100767	Men Leak	Kampong Spue, Basedth, Pheari Mean Chey, Thmei
3	V	0501100818	Yim Ban	Kampong Spue, Basedth, Pheari Mean Chey, Thmei
4	V	0501162742	Ouch Thun	Kampong Spue, Basedth, Pheari Mean Chey, Thmei
5	V	0501162829	Uy Seng	Kampong Spue, Basedth, Pheari Mean Chey, Thmei
6	V	0501162795	Sok Chan	Kampong Spue, Basedth, Pheari Mean Chey, Thmei
7	V	0501162790	Nou Pov	Kampong Spue, Basedth, Pheari Mean Chey, Thmei
8	V	0501162743	Ouch Sak	Kampong Spue, Basedth, Pheari Mean Chey, Thmei
9	V	0501162804	Meng Hun	Kampong Spue, Basedth, Pheari Mean Chey, Thmei
10	V	0503070028	Nhim Hey	Kampong Spue, Kong Pisei, Sdok, Thmei
11	V	0503080285	Pen Ngon	Kampong Spue, Kong Pisei, Sdok, Thmei
12	V	0503162732	Phang Meas	Kampong Spue, Kong Pisei, Sdok, Thmei
13	V	0503162733	Toek Phat	Kampong Spue, Kong Pisei, Sdok, Thmei
14	V	0503162833	Mom Ngam	Kampong Spue, Kong Pisei, Sdok, Thmei

No.	MoI[1]	Biodigester Number	Household Name	Location (Province, District, Commune Village)
15	V	0503162760	Nub Ngun	Kampong Spue, Kong Pisei, Sdok, Thmei
16	V	0503162763	Tat Thea	Kampong Spue, Kong Pisei, Sdok, Thmei
17	V	0503162759	Yoem Yem	Kampong Spue, Kong Pisei, Sdok, Thmei
18	V	0503162668	Nhay Kem	Kampong Spue, Kong Pisei, Sdok, Thmei
19	V	0503162707	Sim Channa	Kampong Spue, Kong Pisei, Sdok, Thmei
20	V	0503162762	Nhoem Seng	Kampong Spue, Kong Pisei, Sdok, Thmei
21	V	0503162741	Nhoem Voeurn	Kampong Spue, Kong Pisei, Sdok, Thmei
22	V	0503162678	Mom Kim	Kampong Spue, Kong Pisei, Sdok, Thmei
23	V	0503162680	Sut Phal	Kampong Spue, Kong Pisei, Sdok, Thmei
24	V	0503162723	Nub Net	Kampong Spue, Kong Pisei, Sdok, Thmei
25	V	0503162677	Chea Phan	Kampong Spue, Kong Pisei, Sdok, Thmei
26	V	0503162711	Nhem Kuoy	Kampong Spue, Kong Pisei, Sdok, Thmei
27	V	0503162761	Dam Roeurn	Kampong Spue, Kong Pisei, Sdok, Thmei
28	V	0503162709	Keov Bet	Kampong Spue, Kong Pisei, Sdok, Thmei
29	V	0503162735	Khoem Khorn	Kampong Spue, Kong Pisei, Sdok, Thmei
30	V	0503162734	Dam Lang	Kampong Spue, Kong Pisei, Sdok, Thmei
31	V	0503162769	Dum Roem	Kampong Spue, Kong Pisei, Sdok, Thmei
32	V	0503162770	Nhoem Siem	Kampong Spue, Kong Pisei, Sdok, Thmei
33	V	0503162740	Huo Chan	Kampong Spue, Kong Pisei, Sdok, Thmei
34	V	0503162667	Saom Theara	Kampong Spue, Kong Pisei, Sdok, Thmei
35	V	0503162679	Hieng Soiy	Kampong Spue, Kong Pisei, Sdok, Thmei
36	V	2107091331	Toun Sameth	Takeo, Samraong, Trea, Trea Leu
37	V	2107102155	Sok Sol	Takeo, Samraong, Trea, Trea Leu
38	V	2107112280	Sao Heak	Takeo, Samraong, Trea, Trea Leu
39	V	2107112669	Koem Kum	Takeo, Samraong, Trea, Trea Leu

No.	MoI[1]	Biodigester Number	Household Name	Location (Province, District, Commune Village)
40	V	2107112476	Nau Suon	Takeo, Samraong, Trea, Trea Leu
41	V	2107112477	Koch Song	Takeo, Samraong, Trea, Trea Leu
42	V	2107112621	Sau Hoeurn	Takeo, Samraong, Trea, Trea Leu
43	V	2107112281	Sim Kung	Takeo, Samraong, Trea, Trea Leu
44	V	2107112332	Sao Thavuth	Takeo, Samraong, Trea, Trea Leu
45	V	2107112285	Sao Horn	Takeo, Samraong, Trea, Trea Leu
46	V	2107123281	Som Liv	Takeo, Samraong, Trea, Trea Leu
47	V	2107123282	Huy Phin	Takeo, Samraong, Trea, Trea Leu
48	V	2107123396	Phork Seng	Takeo, Samraong, Trea, Trea Leu
49	V	2107133635	Chheng Rottha	Takeo, Samraong, Trea, Trea Leu
50	V	2107143805	Sao Som Bor	Takeo, Samraong, Trea, Trea Leu
51	V	2107143891	Phan Mom	Takeo, Samraong, Trea, Trea Leu
52	V	2107143795	Art Hat	Takeo, Samraong, Trea, Trea Leu
53	V	2107143806	Choun Kheng	Takeo, Samraong, Trea, Trea Leu
54	V	2107143809	Mork Morn	Takeo, Samraong, Trea, Trea Leu
55	V	2107143796	Srey Vanny	Takeo, Samraong, Trea, Trea Leu
56	V	2107154298	So Suy	Takeo, Samraong, Trea, Trea Leu
57	V	2107154438	Khat Thorn	Takeo, Samraong, Trea, Trea Leu
58	V	2107154297	Tun SokLaor	Takeo, Samraong, Trea, Trea Leu
59	V	2107154439	Leng Ly	Takeo, Samraong, Trea, Trea Leu
60	V	2107154417	Chom Sophan	Takeo, Samraong, Trea, Trea Leu
61	V	2107154340	Morm Sarin	Takeo, Samraong, Trea, Trea Leu
62	V	2107154178	Orch Sror	Takeo, Samraong, Trea, Trea Leu
63	V	2107154445	Pen Srey	Takeo, Samraong, Trea, Trea Leu
64	V	2107154446	Chan Ra	Takeo, Samraong, Trea, Trea Leu

No.	MoI[1]	Biodigester Number	Household Name	Location (Province, District, Commune Village)
65	V	2107174819	Horng Savuth	Takeo, Samraong, Trea, Trea Leu

List of baseline households interviewed by telephone calls:/LHH/

No.	MoI[1]	Household Name	Location (Province, District, Commune Village)
1	T	Chula Khim	Kampong Chhnang, Rolea Bier, Svay Chrum, Sat Lang
2	T	Sok rat	Kampot, Chhuk Neareay, Khnach, Romeas
3	T	Yi they	Kampot, Chhuk Neareay, Khnach, Romeas
4	T	Tep saron	Kampot, Chhuk Neareay, Khnach, Romeas
5	T	San Sarim	Kampot, Chhuk Neareay, Khnach, Romeas
6	T	Som Rin	Kampot, Chhuk Neareay, Khnach, Romeas
7	T	Seag kanur	Kampot, Banteay Meas, Tuk Meas Khang Kaeut, Srae Kan Chen
8	T	I ngeat	Kampot, Banteay Meas, Tuk Meas Khang Kaeut, Srae Kan Chen
9	T	Chen krem	Kampot, Banteay Meas, Tuk Meas Khang Kaeut, Srae Kan Chen
10	T	Mig pheg	Kampot, Banteay Meas, Tuk Meas Khang Kaeut, Srae Kan Chen
11	T	Dang Yun	Kampong Chhnang, Rolea Bier, Cheung Kreav, Trapeang Popel
12	T	Plong Ret	Kampong Chhnang, Rolea Bier, Cheung Kreav, Trapeang Popel
13	T	Hat Yeong	Kampong Chhnang, Rolea Bier, Cheung Kreav, Trapeang Popel
14	T	Neang Yun	Kampong Chhnang, Rolea Bier, Cheung Kreav, Trapeang Popel
15	T	Sor Sytha	Kampong Chhnang, Rolea Bier, Cheung Kreav, Trapeang Popel
16	T	Toch Sem	Svay Rieng, Svay Chrum, Ta Suos, Ta Pa
17	T	Neang Sari	Svay Rieng, Svay Chrum, Ta Suos, Ta Pa
18	T	Neang Lot	Svay Rieng, Svay Chrum, Ta Suos, Ta Pa
19	T	Ouk Sorn	Svay Rieng, Svay Chrum, Ta Suos, Svay K'aer
20	T	Chhun Sinath	Svay Rieng, Svay Chrum, Ta Suos, Svay K'aer
21	T	Meach kea	Prey Veng, Preah Sdach, Rumchek, Prey Phnha
22	T	Chhit Meth	Prey Veng, Preah Sdach, Rumchek, Prey Phnha

No.	MoI[1]	Household Name	Location (Province, District, Commune Village)
23	T	Run Kreoun	Prey Veng, Preah Sdach, Rumchek, Prey Phnha
24	T	Chea Sokun	Prey Veng, Preah Sdach, Rumchek, Prey Phnha
25	T	Hour Som oun	Prey Veng, Preah Sdach, Rumchek, Prey Phnha

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

Validation topics	No. of CAR	No. of CL	No. of FAR
Description of project activity (A): - Technical project description - Technologies and / or measures - Scale of the project - Project Participants - Public Funding / ODA	3	0	0
Application of selected approved baseline and monitoring methodology (B) - Application of Methodology - Baseline identification - Project Boundary	1	0	0
Additionality (C)	1	0	0
GHG Emission reductions (D) - Baseline emissions - Project emissions - Leakage - Emission reductions	1	1	0
Monitoring Plan (E) - Ex-ante Parameters - Monitoring Parameters - Sampling Plan	5	2	0
Crediting Period (F) - Start Date of PA - Operation Lifetime of PA - Type of CP - Start Date of CP - Duration of CP	1	0	0
Safeguarding principles assessment (G)	0	0	0
Stakeholder Consultation Process (H) - Local Stakeholder Consultation - Stakeholder Feedback Round - Comments	0	0	0
SUM	**12**	**3**	**0**

SECTION D. Validation findings

D.1. Description of Project Activity

Means of validation

A draft revised PDD was submitted to the validation team by the project participant.

Technical Project Description:

The technical project description of project involves the installation and operation of domestic biodigesters at individual households and use of biogas produced in biogas stoves for cooking purpose replacing firewood, charcoal and LPG fossil fuel used in the baseline scenarios.

Technology Measures:

The technology implemented under the project is biodigesters to treat animal waste anaerobically to generate biogas for use as cooking fuel. The capacity of the bio-digesters ranges from 2 m^3 to 15 m^3 with possibility up to 50 m^3

There are two types of biogas systems introduced in the PA.

- Farmer's Friend digester.
- A scaled down version of this model S1.

The technology implemented under the project activity of bio-digesters with fixed dome type installed underground to treat animal waste anaerobically to generate biogas for use as cooking fuel.

The key parameters as table below:

Plant size (m^3)	**2**	**4**	**6**	**8**	**10**	**12**	**15**
Manure requirements (kg/day)	15-20	20-30	20-40	40-60	60-80	80-100	100-150
Estimated biogas production (m^3/day)	0.6-0.8	0.8-1.2	0.8-1.6	1.6-2.4	2.4-3.2	3.2-4.0	4.0-6.0
Estimated firewood savings (kg/day)	3-4	4-6	4-8	8-12	12-16	16-20	20-30

Scale of PA:

The scale of the PA remains a large scale in 3rd CP with the 50m^3 large plant could produce 37.43 kW_{th} which is lower than the threshold of 150kW_{th}.

Project Participants:

The project developer is described in cover page and Appendix 1 of revised PDD.

Public Funding / ODA:

The PA continues to receive a mix of funding sources including VER income, HIVOS, CCC-Hansoll, CCCA, PIN-ZCDA, PLS, S-RET/PADEE.

The funds received may be used to support promotional activities, subsidies to the farmers, repair and maintenance work for the biodigesters that have already been install. The carbon credits generated by this PA shall not be transfer, directly or indirectly, to meet the GHG reduction requirements of any of these public funders.

GS Eligibility and Additionality:

The validation team has reviewed table 3, Section B.2 of updated PDD, the criteria demonstrated in the revised PDD are the same as the registered PDD with some editorial updates and reflect the actual situation of 1st CP. It could be conclude the eligibility are plausible and applicable.

Additionality is not required to be re-assessed for the PA during project design renewal according to GS email confirmation dated 23/11/2018.

However, according to GS4GG principle and requirements paragraph 3.5.2.3, the PA had to demonstrate in section A.7 of PDD the **Ongoing Financial Need** by providing the relative proportion of carbon finance in overall financing.

The PA is a transition project renewing their crediting period under GS4GG follow the crediting period renewal guidelines as defined under GS4GG notably the requirements to demonstrate Ongoing Financial Needs (OFN) and review baseline, if applicable

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

	• /PDD2/ • /PDD1/ • GS4GG/	
Findings	☐	The respective requirements have widely been complied
	☒	The respective requirements have widely been complied with; however; the following issues needed to be addressed in this context:
		CAR A-1, CAR A-2, CAR A-3, CAR C-1
Conclusion	☐	No CARs / CLs have been raised in this context. No correction was required in the context. The project is in line with the respective requirements.
	☒	The raised CARs / CLs have been addressed appropriately. The PP has carried out the requested corrections. All respective findings could be closed out. For details please refer to Appendix 4.
	In line with the requirements of the applied methodology all sections have been basically migrated from the registered PDD with some editorial and updated to reflect the updated methodology applied. It has further been checked whether the information included in the updated PDD sections and appendices that were not part of the registered PDD are correct. With editorial corrections and updated information, the validation team could confirm the PDD is updated accordingly to meet all the requirements of the GS4GG and the PDD template version 1.1.	

D.2. Project Baseline, Methodology and Project Boundary

Means of validation	By means of comparison of the updated PDD with (i) the applied GS4GG methodology (ii) all applicable GS requirements **Application of Methodology:** The validation team has checked whether the updated PDD is in compliance with the requirements of the applied methodology. The PA applies a valid version of GS Methodology “Technologies and Practices to Displace Decentralized Thermal Energy Consumption version 3.1”, available at the Gold Standard website /gs/. The applied methodology is applicable to programs of activities introducing technologies and/or practices that reduce or displace greenhouse gas (GHG) emissions from the thermal energy consumption of households that includes the bio digesters. All applicability conditions, applicability criteria and justification of the methodology is met and elaborate in section B.2 of the updated PDD. There are no changes except some editorial corrections and updates to reflect the updates in the applied methodology version. **Baseline Identification:** The baseline scenario consists of 3 components as described in section B.4 of revised PDD are: i. Consumption of non-renewable biomass for cooking. Usage of firewood and charcoal as a source of thermal energy for cooking purposes. The usage of NRB (including charcoal) contributes to deforestation and forest degradation that results in emission of GHGs. The applicable methodology states that the baseline scenario is, in the absence of the project activity, the use of NRB meeting similar thermal energy demands. ii. Consumption of fossil fuel for cooking. Usage on fossil fuels generally LPG as a source of thermal energy. The combustion of fossil fuels for cooking results in emission of GHGs. The applicable methodology states that the baseline scenario is, in the absence of the project activity, the use of fossil fuels meeting similar thermal energy demands.

<table>
<tr><td></td><td colspan="2">

iii. Methane emissions from manure handling.

In the absence of the project activity, the organic manure from the animals is left to decay anaerobically within the project boundary and methane is emitted to the atmosphere. The amount of methane that is emitted under this scenario is contingent upon the baseline manure management practice which include storing of manure in anaerobic lagoons, deep pits, liquid storage, deep bedding, or other practices as outlined in ‘2006 IPCC Guidelines for National Greenhouse Gas Inventories. The applicable methodology establishes that baseline emissions are calculated by using the amount of the waste that would decay anaerobically in the absence of the project activity, with the most recent IPCC Tier 1 or 2 approaches.

Thus, the project baseline scenario is the CO_2 and CH_4 that are released into the atmosphere through burning of biomass and fossil fuels for cooking purpose that contribute to CO_2 emissions, whilst manure handling practices contributes to CH_4 emissions from the anaerobic decomposition.

The baseline scenario could be confirmed during the onsite and telephone interviews and visits to the householders.

In the project scenario, CH_4 is emitted from the physical leakage of the bio digesters and bio slurry. The CO_2 emissions are from the continued usage of biomass (firewood & charcoal) and fossil fuel (LPG). All the emission sources and GHGs are within the boundary of the PA described in table 4 of revised PDD.

Further details of the baseline study is demonstrated in Appendix 3 of revised PDD.

Project Boundary:

The project boundary is the defined 16 provinces of the Cambodia as described in Section A.4.2 of revised PDD. There will be no change for 3rd CP.

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

- /PDD2/
- /PDD1/
- /GS4GG/
- /LHH/

</td></tr>
<tr><td rowspan="3">Findings</td><td>☐</td><td>The updated DD is completely in accordance with the approved methodology applicable for the GS project</td></tr>
<tr><td rowspan="2">☒</td><td>In this context the following CARs, CLs, FARs have been raised:</td></tr>
<tr><td>CAR B-1</td></tr>
<tr><td rowspan="3">Conclusion</td><td>☐</td><td>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>☒</td><td>The raised CARs / CLs have been addressed appropriately. The PP has carried out the requested corrections. All respective findings could be closed out. For details please refer to Appendix 4.</td></tr>
<tr><td colspan="2">It could be confirmed that all applicable references in the updated PDDhas been correctly identified and in accordance with the applicable requirements ofGS4GG Principle and rrequirements.

After appropriate corrections, the validation team can confirm that all applicability conditions of the updated methodology have been met.</td></tr>
</table>

D.3. Estimated GHG emission reductions or net anthropogenic GHG removals

<table>
<tr><td>Means of validatio n</td><td>

For validation of the estimated GHG emission reductions the client has provided the validation team with the following documentation:

- Updated PDD/PDD2/
- ER spreadsheet/ER/.

Further, the validation team has downloaded from GS website the applicable version methodology/GS/GSM/.

</td></tr>
</table>

	1) Baseline emissions: Section B.6.4 of revised PDD demonstrates the baseline emissions for the fuel and animal waste manure system.	

a. Thermal energy demand (BE_{th}) for the 3 baseline fuels namely LPG, Firewood and Charcoal as follows:

$BE_{b,y} = B_{b,y} * ((f_{NRB,y} * EF_{b,fuel,CO2}) + EF_{b,fuel,nonCO2}) * NCV_{b,fuel}$

Fuel i	Baseline emissions from CO_2 (tCO_2e/yr)	Baseline emission from CH_4 (tCO_2e/yr)	Baseline emission from N_2O (tCO_2e/yr)	$BE_{thermal,y,hh}$ ($tCO_2e/y/hh$)
LPG	0.015	0.00	0.000	0.015
Firewood	0.015	0.01	0.001	0.021
Charcoal in wood equivalent	1.465	0.52	0.057	2.042
Total	**1.4949**	**0.5252**	**0.0577**	**2.0778**

b. AWMS: The emissions from the 3 main type of animals as follows:

$$BE_{awms,h} = GWP_{CH4} * \sum_T \left(EF_{awms(T)} * N_{(T),h} \right)$$

Animal T/hh	Average population N_T/hh	EF_T ($kgCH_4/yr$)	GWP_{CH4}	$BE_{awms,y/hh}$ ($tCO_2e/y/hh$)
Cow	3.550	5.952	25	0.528
Pig	1.879	14.928	25	0.701
Buffalo	0.389	14.266	25	0.139
Total				**1.368**

The estimated total baseline emissions for the 7 years is approx. 602,607 tCO_2e.

Project Emissions:

a. Thermal energy use

$PE_{p,y} = B_{p,y} * ((f_{NRB,y} * EF_{p,fuel,CO2}) + EF_{p,fuel,nonCO2}) * NCV_{p,fuel}$

Fuel i	Emissions from CO_2 (tCO_2e/yr)	Emission from CH_4 (tCO_2e/yr)	Emission from N_2O (tCO_2e/yr)	$PE_{thermal,y,hh}$ ($tCO_2e/y/hh$)
LPG	0.012	0.000	0.000	0.012
Firewood	0.014	0.004	0.001	0.019
Charcoal in wood equivalent	0.098	0.035	0.004	0.136
Total	**0.124**	**0.039**	**0.005**	**0.166**

b. Physical leakage emission from biodigester and stove

$$PE_{awms,h,y} = GWP_{CH4} * \sum (N_{(T),h,y} \cdot EFawms_T) \cdot PL_y + \sum (N_{(T),h,y} \cdot EFawms_T) \cdot (1 - \eta_{biogastove})(1 - PL_y) \quad (17)$$

Leakage emission	kgCH4/hh/year	tCO^2/hh/year
From biodigesters	5.149	0.129
From stove	0.028	0.001
Total	**5.177**	**0.129**

Therefore, the estimated total project emissions for the 7 years is approx. 51,712 tCO_2e.

Emissions Reductions: As demonstrate in section B.6.5, the estimated ER for the 7 years is approx. 602,607 tCO_2e with an annual average of 78,699 tCO_2e.

Findings	☐	The calculation of ERs is done as per the applied methodology. The calculation in the Excel spreadsheet and the corresponding calculation tables in the PDD have been checked and no mistakes have been identified. The estimation of emission reductions for the 3rd crediting period is deemed plausible and conservative.

	☒	The respective requirements have widely been complied with; however; the following issues needed to be addressed in this context: CAR E-6
Conclusion	☐	No CARs / CLs have been raised in this context. No correction was required in the context. The project is in line with the respective requirements.
	☒	The raised CARs / CLs have been addressed appropriately. The PP has carried out the requested corrections. All respective findings could be closed out. For details please refer to Appendix 4.
	All changes due to the upgraded methodology and the re-assessment of the baseline have been considered appropriately and in line with the revised methodology. The calculation in the Excel spreadsheet and the corresponding calculation tables in the PDD have been checked and both are in line. With the corrections and value applied, the estimation of emission reductions for the 3rd crediting period is deemed plausible and conservative.	

D.4. Monitoring plan

Means of validation	The validation team has checked the monitoring plan of the updated PDD against the applied methodology. Further, changes due to editorial updates have been checked. In detail all parameters, ex-ante values and applicable formulae have been checked to determine the required changes for the next crediting period. Based on the conducted site-visit and interviews with related personnel the validation team has assessed the feasibility of the required changes.	
Findings	☒	**Ex-Ante Parameters:** The ex-ante parameters are compared with the original registered PDD and updated to be compliance with GS4GG requirements as described in Section B.6.3 of revised PDD. **Ex-Post Parameters:** The ex-post monitored parameters as described in section B.7.1 of revised PDD and there are no changes with the exception of the inclusion of SDG requirements. The validation team has duly assessed all the required changes due to the upgraded methodological requirements. The validation team has concluded that - all necessary changes have been appropriately reflected in the updated PDD, - the monitoring plan in the updated PDD is in compliance with the applied monitoring methodology, - the monitoring arrangements described in the updated PDD can be implemented and are feasible within the PA.
	☒	The respective requirements have widely been complied with; however; the following issues needed to be addressed in this context: CL D-1, CAR D-2, CL E-1 CL E-2, CAR E-3, CAR E-4,CAR E-7
Conclusion	☐	No CARs / CLs have been raised in this context. No correction was required in the context. The project is in line with the respective requirements.
	☒	The raised CARs / CLs have been addressed appropriately. The PP has carried out the requested corrections. All respective findings could be closed out. For details please refer to Appendix 4.
	The Monitoring plan is in line with the requirements of the methodology version 3.1. The project participant has applied a sampling plan same as the registered PDD. After relevant corrections made, all necessary changes have been appropriately reflected in the monitoring plan in the updated PDD is in compliance with the applied	

	monitoring methodology, and the monitoring arrangements described could be implemented and are feasible within the PA.

D.5. Crediting period

Means of validation	According to the GS4GG Principles and Requirements v 1.1, §3.4.11.2 To maintain Gold Standard Certified Project status beyond five years, a Project must undergo Project Certification Renewal. This process shall begin (defined by the submission of a Renewal opinion by a GS-VVB for Renewal Review to Gold Standard) no later than the 5th anniversary of the Start of Project Crediting period. Note that Gold Standard Renewal of Design Certification may complete after the 5th anniversary. In this case, the Renewal date shall be the 5th anniversary. Projects with a 7 year renewable crediting cycle with less than 24 months remaining on current cycle shall transition at next Renewal of crediting period Transition projects renewing their crediting period under GS4GG shall maintain their existing crediting cycle and maximum crediting periods upon transition to GS4GG By checking the GS project registry the work plan was uploaded for the project and the site visit completed on 19/10/2018, it is confirmed that the formal application of renewal of the crediting period is submitted to Gold Standard prior to the end of the previous crediting period of 31/12/2018. Hence the start date of the renewed crediting period is defined as the first day after the end date of the previous crediting period, i.e. 01/01/2019.	
Findings	☒	As the respective requirements are met, the project´s 3rd crediting period may start immediately after the expiration of the 2nd CP, given that all other applicable criteria are met. It is further confirmed that the start date (01/01/2019) and the length of the crediting period (7 years) are in compliance with the Gold Standard Procedures.
	☒	The respective requirements have widely been complied with; however; the following issues needed to be addressed in this context:
		CAR F-1
Conclusion	☐	No CARs / CLs have been raised in this context. No correction was required in the context. The project is in line with the respective requirements.
	☒	The raised CARs / CLs have been addressed appropriately. The PP has carried out the requested corrections. All respective findings could be closed out. For details please refer to Appendix 4.
	After correction, it is thus confirmed that the start date and the length of the 3rd crediting period (7 years) is compliance with the GS4GG.	

D.6. Project participants

Means of validation	The validation team has checked the revised PDD against the registered PDD to check whether the names of the PP in the PDD. The PP is consistent with that in the previous PDD / previous GS-Passport	
Findings	☒	The names of the project participants as listed in the revised PDD (sections A.4. and appendix 1 are consistent with those listed on the dedicated GS project website/gs/ and registered PDD.
	☐	The respective requirements have widely been complied with; however; the following issues needed to be addressed in this context:
Conclusion	☒	No CARs / CLs have been raised in this context. No correction was required in the context. The project is in line with the respective requirements.
	☐	The raised CARs / CLs have been addressed appropriately. The PP has carried out the requested corrections. All respective findings could be closed out. For details please refer to Appendix 4.

	There is no change to the project participant.

D.7. Local stakeholder consultation process and its outcome

Means of validation	According to GS4GG Stakeholder Consultation & Engagement Procedures, Requirements and Guidelines version 1.1 Project participant is required to conduct Stakeholder Consultation process shall comprise of a minimum two rounds of consultation. The first round of Stakeholder Consultation shall include a physical meeting. Where necessary, other means shall also be used to reach out to stakeholders who may not be physically present. The second consultation is the Stakeholder Feedback Round. This covers all issues raised in the 1st round of consultation meeting and how due account was taken of all stakeholders' comments and suggestions. It may also include a physical meeting although this is not mandatoryIn this aspect, the PP has conduct the stakeholders consultation and adopted GS4GG stakeholder consultation report.	
Findings	☒	The respective requirements have widely been complied with
	☐	The respective requirements have widely been complied with; however; the following issues needed to be addressed in this context:
Conclusion	☒	No CARs / CLs have been raised in this context. No correction was required in the context. The project is in line with the respective requirements.
	☐	The raised CARs / CLs have been addressed appropriately. The PP has carried out the requested corrections. All respective findings could be closed out. For details please refer to Appendix 4.
	Stakeholder consultation is conducted in accordance to GS4GG requirements. The stakeholder consultation report is base on GS4GG stakeholder consultation report template version 1.	

D.8. Sustainable Development Goals

Means of validation	Sustainable development goals are describe in Section B.6.4 and monitor ex-post in section B.7.1 of revised PDD. The PP has selected 3 SDGs for the 3rd CP as follows: SDG2: Proportion of agricultural area under productive and sustainable agriculture that monitor the households that reply on bio-slurry as sustainable organic fertilizer. The expected number of households benefit from the PA is approx. 48,315 SDG7: Proportion of population with primary reliance on clean fuels and technology The expected number of family members benefit from this PA is approx. 117,838 SDG13: Emissions reductions. The details of the calculation is describe in section B.6.4 of revised PDD. The estimated ER for the PA over the 7 years is approx. **550,895 tCO_2e** with an annual average of **78,699 tCO_2e**. These 3 parameters are ex-post monitored.	
Findings	☒	The sustainability indicators are in compliance with the registered VPA-DD and registered GS Passport.
	☒	The respective requirements have widely been complied with; however; the following issues needed to be addressed in this context:
		CAR E-5
Conclusion	☐	No CARs / CLs have been raised in this context. No correction was required in the context. The project is in line with the respective requirements.
	☒	The raised CARs / CLs have been addressed appropriately. The PP has carried out the requested corrections. All respective findings could be closed out. For details please refer to Appendix 4.

	After correction, it could be concluded that the revised sustainability indicators that will be implemented during the 3rd CP are appropriate and accordance to GS4GG.

SECTION E. Internal quality control

Before the submission of the final VAL DCR report a technical review of the whole validation procedure was carried out. The technical reviewers are competent GHG auditors being appointed for the scope this project falls under. The technical reviewers are not considered to be part of the validation team and thus not involved in the decision making process up to the technical review.

As a result of the technical review process the validation opinion and the topic specific assessments as prepared by the validation team leader may have been confirmed or revised. Furthermore reporting improvements might have been achieved.

After the successful technical review an overall (esp. procedural) assessment of the complete validation has been carried out by a senior assessor located in the accredited premises of TÜV NORD.

After this step the submission for requesting the renewal of crediting period is conducted.

SECTION F. Validation opinion

National Biodigester Programme, Cambodia has commissioned the TÜV NORD JI/CDM Certification Program to carry out validation of the request for renewal of crediting period (RCP) for the project:

"National Biodigester Programme, Cambodia GS751"

for the purpose of the third design certification renewal (DCR). The validation is base on the relevant GS4GG requirements.

The Gold Standard documentation and supporting documents are review against the criteria as set out in the Gold Standard Principles and Requirements, respective Annexes and CDM documents, as applicable. The subsequent background investigation, follow-up interviews and review of comments by parties and stakeholders have provided TÜV NORD JI/CDM Certification Program with sufficient evidence to validate the fulfilment of the stated criteria applicable for DCR.

In detail the conclusions can be summarized as follows:

- The current baseline of the project is in line with the national and/or sectoral policies and circumstances at the time of requesting renewal of crediting period.
- The project meets all requirements of procedures set by the Gold Standard Procedures for the Renewal of a Crediting Period.
- The monitoring plan of GHG parameters is transparent and adequate and in line with the applicable GS methodology. (TPDDTEC version 3.1)
- The updated monitoring plan of SDG parameters is transparent and adequate.
- The calculation of the project emission reductions is carried out in a transparent and conservative manner, so that the calculated verified emission reductions of **629,594 tCO_2e** are most likely to be achieved within the third renewable crediting period of 7 years.

The conclusions of this report show, that the project, as it was describe in the project documentation, is in line with all criteria applicable for the renewal of the crediting period.

Puchong, 01/02/2019

Cheong, Chun Yuen (Robert)
TÜV NORD JI/CDM Certification Program
Validation Team Leader

Appendix 1. Abbreviations

BAU	Business as usual
CA	Corrective Action / Clarification Action
CAR	Corrective Action Request
CDM	Clean Development Mechanism
CER	Certified Emission Reduction
CL	Clarification Request
CO2	Carbon dioxide
CO2e	Carbon dioxide equivalent
CP	Certification Program // Crediting Period
DCR	Design Certification Renewal
DNA	Designated National Authority
DPI	Department of Planning and Investment
EB	CDM Executive Board
ER	Emission Reductions
ETS	Emission Trading Scheme
FAR	Forward Action Request
GHG	Greenhouse gas(es)
GS4GG	Gold Standard for the Global Goals
GSR	Gold Standard Requirements
GST	Gold Standard Toolkit
IPCC	Intergovernmental Panel on Climate Change
LOA	Letter of Approval
MoC	Modalities of Communication
MP	Monitoring Period
MR	Monitoring Report
OB	Observation
PCP	CDM Project Cycle Procedure
PDD	Project Design Document
PP	Project Participant
PRC	Post-registration changes
PS	CDM Project Standard
QC/QA	Quality control/Quality assurance
RCP	Renewal of Crediting Period
SDGs	Sustainable Development Goals
UNFCCC	United Nations Framework Convention on Climate Change
VER	Verified Emission Reductions
VVS	CDM Validation and Verification Standard

Appendix 2. Competence of team members and technical reviewers

TÜV NORD Certification

Statement of Competence

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

Mr. 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_S01-VA060-F20_2018-10-19_rev7.doc S01-VA060-F20 rev3 / 2012-10-25

TÜV NORD Certification

Statement of Competence

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

Mr. 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_S01-VA060-F20_2018-03-19_rev9.doc S01-VA060-F20 rev3 / 2012-10-25

TÜV NORD Certification

Statement of Competence

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

Mr. Rainer Winter

SCHEME	STATUS	VALID UNTIL
CDM	Senior Assessor (Validation, Verification) Technical Reviewer	2019-07-01
JI	Senior Assessor Technical Reviewer	2019-07-01
VCS / ISO 14064-2	Senior Assessor Technical Reviewer	2019-07-01

Authorization status for technical areas within sectoral scopes:

CODE	TECHNICAL AREA
1.1	Thermal Energy Generation
1.2	Renewables
4.1	Cement and lime production
4.2	Paper
5.1	Chemical Industry
5.2	Caprolactam, nitric and adipic acid
8.1	Mining/mineral production
9.1	Aluminium and magnesium production
9.2	Iron, steel and Ferro-alloy production
11.1	Emissions of fluorinated gases
11.2	Refrigerant gas production
12.1	Chemical industry
13.1	Solid waste and wastewater

003 - Rev. 10, Date: 2016-07-01

003_S01-VA060-F20_2016-07-01_rev10.doc S01-VA060-F20 rev3 / 2012-10-25

Documents reviewed or referenced

Documents provided by the project participant(s)

Reference	Document
Validation Report	
/PDD2/	Project Design Document version 1.1 dated 2018-10-08 Project Design Document version 1.2 dated 2018-10-18 Project Design Document version 1.4 dated 2018-11-21 Project Design Documents version 1.5 dated 2018-11-30 Project Design Document version 2.0 dated 2019-01-28
ER Spreadsheet	
/ER/	ER spreadsheet version dated 2018-10-10 ER spreadsheet version dated 2018-10-19 ER Spreadsheet version dated 2018-11-21 ER spreadsheet version dated 2018-12-02 ER spreadsheet version dated 2019-01-29
Survey	
/S1/	Baseline Survey undated Carbon Baseline Survey 2018 Inception Report NBP_ATEC_DRAFT_REVISE_5 _ KoboToolbox
Agreement	
/A1/	Sample agreement with households for year 2018 Sample agreement (translated)
Local Stakeholders Consultation	
/LSC/	Stakeholder Consultation Report version 1.1 dated 2018-08-10 Stakeholder Consultation Report version 1.2 dated 2018-10-19
Others	
/O1/	Biogas Household Air Quality dated 2015-10-30
/O2/	Cambodia Socio-Economic Survey 2016 dated October 2017
/O3/	Census of Agriculture in Cambodia 2013 dated December 2015
/O4/	Gender Equality and Women Empowerment dated December 2014
/O5/	Gender Mainstreaming Policy and Strategic Framework in Agriculture 2016-2020 dated October 2015
/O6/	NBP Market Survey 2015 v6.0

Background investigation and assessment documents

Reference	Document
/CPM/	TÜV NORD JI / CDM CP Manual (incl. CP procedures and forms)
/GS4GG/	Gold Standard for Global Goals version 1.0 dated July 2017
/GSGWP/	The Application of Global Warming Potentials for Gold Standard Project Activities
/GSM/	Technologies and practices to displace decentralized thermal energy consumption, version 3.1 (TPDDTEC)
/GSS/	Guidelines for Sampling and Surveys for CDM Project Activities and Programme Of Activities, EB 69, Annex 5
/KP/	Kyoto Protocol (1997)
/MA/	Decision 3/CMP. 1 (Marrakesh – Accords)
/PDD1/	Registered CPI Project Design Document for project: "National Biodigester Programme" version 17.1, dated 2011-07-20 Registered CPII Project Design Document for project: "National Biodigester Programme" version 1.9, dated 2013-01-06
/VAL/	Validation Report for registered and CPII renewal period for National Biodigester Programme
/VER/	Documents of previous verification (Monitoring report, verification report, ER calculation sheet)
/VVS/	CDM Validation and Verification Standard (Version 01.0)
/GS4GG/	GS4GG-Principles & Requirements-v1.1 GS4GG-Transition-Requirements-v1.1 GS4GG-Renewable-Energy-Activity-Requirements-v1.1 GS4GG-Gender-Policy-v1.0 GS4GG-Gender-Equality-Requirements-Guidelines-v1.1 GS4GG-Safeguarding-Principles-Requirements-v1.1 GS4GG-Stakeholder-Consultation-Requirements-Guidelines-v1.1

Websites used

Reference	Link	Organisation
/gs/	http://www.goldstandard.org/	CDM Gold Standard
/unfccc/	http://cdm.unfccc.int	UNFCCC
/ipcc/	www.ipcc-nggip.iges.or.jp	IPCC publications
/ss/	http://www.raosoft.com/samplesize.html	Sampling Size

Appendix 3. Clarification requests, corrective action requests and forward action requests

Table 1. CL from this validation

CL ID	**D-1**	**Section no.**	**B.6.2**	**Date:**	**19/10/2018**
Description of CL					
PDD version 1.1, section B.6.2: Clarification requested for MPI refers to which crediting period BFT to be carry out.					
Project participant response				**Date:**	24/10/2018
It refers to CPIII					
Documentation provided by project participant					
☒ Changes in the PDD		Section(s): B.6.2		New version No.: 1.2	
☐ Changes in MR		Section(s):		New version No.:	
☐ Changes in ER		Worksheet(s):		New version No.:	
☐ Other:					
DOE assessment				**Date:**	24/10/2018
PDD version 1.2, section B.6.2: The PDD is updated on the MPI that refers to CPIII crediting period for the BFT conducted.					
Conclusion *Tick the appropriate checkbox*	☐ Additional action should be taken (finding remains open) ☒ The finding is closed				

CL ID	**E-1**	**Section no.**	**B.6.3**	**Date:**	**19/10/2018**
Description of CL					
PDD version 1.1, Section B.6.3: 1. Parameters $B_{b1,wood}$ and $B_{b2,charcoal}$: Clarification requested on the value applied is based on which monitoring period for CPII. 2. Parameter $B_{b3,fuel}$: Clarification requested on value applied is based on which CPII MP baseline survey					
Project participant response				**Date:**	24/10/2018
1. It is based on MPVI CPII 2. It is based on CPIII baseline survey and fixed for CPIII					
Documentation provided by project participant					
☒ Changes in the PDD		Section(s): B6.3		New version No.: 1.2	
☐ Changes in MR		Section(s):		New version No.:	
☐ Changes in ER		Worksheet(s):		New version No.:	
☐ Other:					
DOE assessment				**Date:**	24/10/2018
PDD version 1.2, Section B.6.3: 1. Parameters $B_{b1,wood}$ and $B_{b2,charcoal}$: The value applied is based on MPVI of CPII and is cross-checked for correctness. 2. Parameter $B_{b3,fuel}$: The value applied is based on CPIII baseline survey results that will be fixed for CPIII.					
Conclusion *Tick the appropriate checkbox*	☐ Additional action should be taken (finding remains open) ☒ The finding is closed				

CL ID	**E-2**	**Section no.**	**B.7.1**	**Date:**	**19/10/2018**
Description of CL					
PDD version 1.1, Section B.7.1: 1. Clarification requited on the values applied for parameters Bdaily,y, HSy, %BSy and PL, . 2. Clarification requested on ex-ante value applied for LPG on CPII baseline survey.					
Project participant response				**Date:**	24/10/2018

1. Updated to the correct reference 2. Ex-ante value is from MPVI CPII			
Documentation provided by project participant			
☒ Changes in the PDD	Section(s): B7.1	New version No.: 1.2	
☐ Changes in MR	Section(s):	New version No.:	
☐ Changes in ER	Worksheet(s):	New version No.:	
☐ Other:			
DOE assessment		**Date:**	24/10/2018
PDD version 1.2, Section B.7.1: 1. The values applied for parameters Bdaily,y, HSy and, %BSy are corrected and made reference to MPVI CPII data whilst PL applied is fixed 10% or calculated at the time of monitoring. 2. The ex-ante value applied for LPG is corrected and made reference to MPVI CPII baseline survey.			
Conclusion *Tick the appropriate checkbox*	☐ Additional action should be taken (finding remains open) ☒ The finding is closed		

Table 2. CAR from this validation

CAR ID	**A-1**	**Section no.**	**Cover page**	**Date:**	**19/10/2018**
Description of CAR					
PDD version 1.1, Cover page: 1. SDG Impact: Correction for SDG 2 that should read as End. 2. The estimated amount of SDG Impact Certified is inconsistent with the data in ER spreadsheet, SDG performance tab					
Project participant response				**Date:**	24/10/2018
1. Addressed in revised version 2. Updated and made consistent – annual CPIII averages are applied for all impacts in order to maintain consistency					
Documentation provided by project participant					
☒ Changes in the PDD		Section(s): cover page	New version No.: 1.2		
☐ Changes in MR		Section(s):	New version No.:		
☐ Changes in ER		Worksheet(s):	New version No.:		
☐ Other:					
DOE assessment				**Date:**	24/10/2018
PDD version 1.2, Cover page: 1. SDG Impact: Correction made for SDG 2 to read as End. 2. The estimated amount of SDG Impact Certified is corrected and consistent with the data in ER spreadsheet, SDG performance tab					
Conclusion *Tick the appropriate checkbox*	☐ Additional action should be taken (finding remains open) ☒ The finding is closed				

CAR ID	**A-2**	**Section no.**	**A.4.2**	**Date:**	**19/10/2018**
Description of CAR					
PDD version 1.1, Section A.4.2, table 1. The Geo coordinates for Phnom Penh District is inconsistent with the coordinates stated in CPII MRVI.					
Project participant response				**Date:**	
Updated accordingly					
Documentation provided by project participant					
☒ Changes in the PDD		Section(s): A4.2	New version No.: 1.2		
☐ Changes in MR		Section(s):	New version No.:		
☐ Changes in ER		Worksheet(s):	New version No.:		
☐ Other:					
DOE assessment				**Date:**	

PDD version 1.2, Section A.4.2, table 1. The Geo coordinates for Phnom Penh District is corrected and consistent with the coordinates stated in CPII MRVI.

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

CAR ID	**A-3**	**Section no.**	**A.8**	**Date:**	**19/10/2018**
Description of CAR					
PDD version 1.1, Section A.8: The link for footnote 5 is not accessible.					
Project participant response				**Date:**	24/10/2018
The link is not available anymore – an offline copy is shared to the DOE as part of the reply package					
Documentation provided by project participant					
☒ Changes in the PDD		Section(s): A.8		New version No.: 1.2	
☐ Changes in MR		Section(s):		New version No.:	
☐ Changes in ER		Worksheet(s):		New version No.:	
☐ Other:					
DOE assessment				**Date:**	24/10/2018
PDD version 1.2, Section A.8: The link for footnote 5 is no longer accessible. The referred document is provided.					
Conclusion *Tick the appropriate checkbox*	☒ Additional action should be taken (finding remains open) ☐ The finding is closed				

CAR ID	**B-1**	**Section no.**	**B.4**	**Date:**	**19/10/2018**
Description of CAR					
PDD version 1.1 Section B.4: The baseline scenario for typical baseline fuel consumption pattern in a population that is targeted for adoption of the project technology is not defined clearly.					
Project participant response				**Date:**	24/10/2018
Updated with clear definition of baseline fuel scenario					
Documentation provided by project participant					
☒ Changes in the PDD		Section(s): B.4		New version No.: 1.2	
☐ Changes in MR		Section(s):		New version No.:	
☐ Changes in ER		Worksheet(s):		New version No.:	
☐ Other:					
DOE assessment				**Date:**	24/10/2018
PDD version 1.2 Section B.4: The baseline scenario for typical baseline fuel consumption pattern in a population that is targeted for adoption of the project technology is updated and made reference to section B.6.2 that are wood, charcoal and LPG.					
Conclusion *Tick the appropriate checkbox*	☐ Additional action should be taken (finding remains open) ☒ The finding is closed				

CAR ID	**C-1**	**Section no.**	**B.5**	**Date:**	**19/10/2018**
Description of CAR					
PDD version 1.1, Section B.5: 1. The CDM tool 21 applied: Demonstration of additionality of small-scale project activities paragraph 11c is no longer applicable. 2. Item b: As demonstrated in section B.2 item 2 in the table 2 the individual capacity of a biodigester is at maximum 37.43 kW which is much smaller than 5% of 45 MW. According to the TOOL21: Demonstration of additionality of small-scale project activities version 12.0, the maximum is 15MW.					
Project participant response				**Date:**	24/10/2018
The GS was contacted on this issue. GS confirmed that demonstration of additionality is not required during CP renewal. The PDD has been updated accordingly to reflect this. The email evidence has been forwarded to the DOE..					
Documentation provided by project participant					
☒ Changes in the PDD		Section(s): B.5		New version No.: 1.2	

☐ Changes in MR	Section(s):	New version No.:
☐ Changes in ER	Worksheet(s):	New version No.:
☐ Other:		

DOE assessment	**Date:**	24/10/2018

PDD version 1.2 Section B.5:

According to GS email confirmation, additionality need not to be address during renewal of CP. The ongoing financial needs to be demonstrated. This is updated in revised PDD and deemed appropriate.

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

CAR ID	**E-3**	**Section no.**	**B..6.3**	**Date:**	**19/10/2018**

Description of CAR

PDD version 1.1, Section B.6.3, Parameter $VS_{(T)}$: The version of the referred methodology and equation shall be be corrected.

Project participant response	**Date:**	24/10/2018

Updated accordingly

Documentation provided by project participant

☒ Changes in the PDD	Section(s): B.6.3	New version No.: 1.2
☐ Changes in MR	Section(s):	New version No.:
☐ Changes in XLS	Worksheet(s):	New version No.:
☐ Other:		

DOE assessment	**Date:**	24/10/2018

PDD version 1.2, Section B .6.3, Parameter $VS_{(T)}$: The version of the referred methodology and equation is corrected.

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

CAR ID	E-4	**Section no.**	B.6.3	**Date:**	19/10/2018

Description of CAR

PDD version 1.1, Section B.6.3, Parameter $EF_{awms,T,}$:

1. The source of data shall be updated.
2. The value applied is inconsistent with the ER database spreadsheet, ER-AWMS tab.

Project participant response	**Date:**	24/10/2018

1. Updated
2. Values are also updated accordingly and made consistent

Documentation provided by project participant

☒ Changes in the PDD	Section(s): B.6.3	New version No.: 1.2
☐ Changes in MR	Section(s):	New version No.:
☐ Changes in XLS	Worksheet(s):	New version No.:
☐ Other:		

DOE assessment	**Date:**	24/10/2018

PDD version 1.2, Section B.6.3, Parameter $EF_{awms,T,}$:

1. The source of data is updated and made reference to the ER database sheet ER_AWSM tab
2. The value applied is corrected and consistent with the ER database spreadsheet, ER-AWMS tab.

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

CAR ID	**E-5**	**Section no.**	**B.6.4**	**Date:**	**19/10/2018**

Description of CAR

PDD version 1.1, Section B.6.4, SDG2 and SDG7: The reference year is incorrect

Project participant response	**Date:**	24/10/2018

Updated to 2017 value and digester number of that year

Documentation provided by project participant

☒	Changes in the PDD	Section(s): B.6.4	New version No.: 1.2
☐	Changes in MR	Section(s):	New version No.:
☒	Changes in XLS	Worksheet(s): SDG performance	New version No.: 19 oct
☐	Other:		

DOE assessment	**Date:**	24/10/2018
PDD version 1.2, Section B.6.4, SDG2 and SDG7: The reference year is corrected to 2017		

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

CAR ID	**E-6**	**Section no.**	**B.6.4**	**Date:**	**19/10/2018**

Description of CAR

PDD version 1.1 Section B.6.4, SDG13 Emissions Reduction:

1. Determination of Baseline Emissions for AWMS, Table 9 data are inconsistent with ER database spreadsheet, MS-AWMS tab row 12 to 14
2. Total Baseline Emissions, Table 10 data are inconsistent with ER database spreadsheet, ER-AWMS tab row 15 to 18
3. Continued use of baselines fuels in the project scenario, table 16, NCV_i value is not stated
4. Tables 9 and 10, other cattle should be consistent with ER database spreadsheet as “cattle”.
5. Table 2: Emission factor for the defined livestock category T of the project situation: The value for Volatile Solids (VS) and Maximum Methane potential (Bo_T) for pig are inconsistent with ER-AwMS tab cells D25 to D27 and cell E26.
6. Table 20: Physical leakage emission from biodigester: The data are inconsistent with data at ER-AWMS tab cells G38 to G41 and I38 to I41.
7. The value stated in the sentence the physical leakage emissions and the emissions from incomplete combustion are 7.275 + 0.039= 7.314 $kgCH_4$/household/year equivalent to 0.183 tCO_2/household/year. Are inconsistent with cells D44 and E46 of ER-AWMS tab.

Project participant response	**Date:**	24/10/2018

1. updated and made consistent, see table 9
2. updated and made consistent, see table 10
3. NCV is now included, see table 12 (table numbering changed)
4. other cattle and cattle is replaced with cow, see table 9 and 10
5. updated and made consistent, see table 14 (table numbering changed)
6. updated and made consistent, see table 15 (table numbering changed)
7. The calculation is now updated to reflect the ER _AMWS tab values, see sentence under table 15 (table numbering changed)

Documentation provided by project participant

☒	Changes in the PDD	Section(s): B.6.4	New version No.: 1.2
☐	Changes in MR	Section(s):	New version No.:
☐	Changes in XLS	Worksheet(s):	New version No.:
☐	Other:		

DOE assessment	**Date:**	24/10/2018

PDD version 1.2 Section B.6.4, SDG13 Emissions Reduction:

1. Determination of Baseline Emissions for AWMS, Table 9 data are corrected and consistent with ER database spreadsheet, MS-AWMS tab row 12 to 14
2. Total Baseline Emissions, Table 10 data are corrected and consistent with ER database spreadsheet, ER-AWMS tab row 15 to 18
3. Continued use of baselines fuels in the project scenario, table 12 (table no. changed), NCV_i value is updated
4. Tables 9 and 10, other cattle is corrected to read as cow and consistent with ER database spreadsheet as "cow".
5. Table 3: Emission factor for the defined livestock category T of the project situation: The value for Volatile Solids (VS) and Maximum Methane potential (Bo_T) for pig are corrected and consistent with ER-AwMS tab cells D25 to D27 and cell E26.
6. Table 15 (previously table 20): Physical leakage emission from biodigester: The data are corrected and consistent with data at ER-AWMS tab cells G38 to G41 and I38 to I41.
7. The value stated in the sentence the physical leakage emissions and the emissions from incomplete combustion is updated as 5.177 $kgCH_4$/household/year equivalent to 0.129 tCO_2/household/year and consistent with cells D44 and E46 of ER-AWMS tab.

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

CAR ID	E-7	Section no.	B.7.1	Date:	19/10/2018

Description of CAR

PDD version 1.1, Section B.7.1:

1. Parameter $MS_{(T)}$: The reference section B.6.1 is incorrect
2. Parameter W(site): The referred equation, methodology version and section to be corrected

Project participant response — **Date:** 24/10/2018

1. Updated to section B.6.2
2. Updated to correct reference, AMS-D v21 and equation 3 in that methodology. Some small text edits were also made

Documentation provided by project participant

☒ Changes in the PDD	Section(s): B.7.1	New version No.: 1.2
☐ Changes in MR	Section(s):	New version No.:
☐ Changes in XLS	Worksheet(s):	New version No.:
☐ Other:		

DOE assessment — **Date:** 24/10/2018

PDD version 1.2, Section B.7.1:

1. Parameter $MS_{(T)}$: The reference section is correct to B.6.2.
2. Parameter W(site): The referred equation, methodology version and section is corrected

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

CAR ID	F-1	Section no.	C	Date:	19/10/2018

Description of CAR

PDD version 1.1, Section C: The format of the date shall be according to GS requirements of dd/mm/yyyy.

Project participant response — **Date:** 24/10/2018

1. Updated to GS format

Documentation provided by project participant

☒ Changes in the PDD	Section(s): C	New version No.: 1.2
☐ Changes in MR	Section(s):	New version No.:
☐ Changes in XLS	Worksheet(s):	New version No.:
☐ Other:		

DOE assessment	Date:	24/10/2018
PDD version 1.1, Section C: The format of the date is update in accordance to GS requirements of dd/mm/yyyy.		
Conclusion *Tick the appropriate checkbox*	☐ Additional action should be taken (finding remains open) ☒ The finding is closed	

CAR ID	D-2	Section no.	ER spreadsheet	Date:	19/10/2018
Description of CAR					
ER database spreadsheet: ER-Fuel tab: Cell H9 and H10, the MP is not stated.					
Project participant response				**Date:**	24/10/2018
1. Updated					
Documentation provided by project participant					
☐ Changes in the DD			Section(s):	New version No.	
☐ Changes in MR			Section(s):	New version No.:	
☒ Changes in XLS			Worksheet(s): ER-Fuel	New version No.: 19oct	
☐ Other:					
DOE assessment				**Date:**	24/10/2018
Revised ER database spreadsheet, ER-Fuel tab: Cell H9 and H10, the MP is update to read as MPVI. The data is cross-check and is correct.					
Conclusion *Tick the appropriate checkbox*	☐ Additional action should be taken (finding remains open) ☒ The finding is closed				

Table 3. FAR from this validation

FAR ID	N/A	Section no.		Date: DD/MM/YYYY
Description of FAR				
Project participant response				**Date:** DD/MM/YYYY
Documentation provided by project participant				
☐ Changes in the PDD		Section(s):	New version No.:	
☐ Changes in MR		Section(s):	New version No.:	
☐ Changes in XLS		Worksheet(s):	New version No.:	
☐ Other:				
DOE assessment				**Date:** DD/MM/YYYY
Conclusion *Tick the appropriate checkbox*	☐ Additional action should be taken (finding remains open) ☐ The finding is closed			