GOLD STANDARD VERIFICATION REPORT

MYCLIMATE

KOLAR BIOGAS PROJECT

Monitoring Period: 01/04/2012 to 31/12/2013
(incl. both days)

Report No: 8000429974 – 14/009

Date: 2016-04-06

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Verification Report:	***Report No.***	***Rev. No.***	***Date of issue:***	***Date of this rev.***
	8000429974 – 14/009	1.1	2015-09-29	2016-04-06
Project:	*Title:*		*UNFCCC Registration date:*	*Gold Standard Registration date:*
	Kolar Biogas Project		2011-11-24	2013-10-18
Project Participant(s):	***Host party:***		***Other involved parties:***	
	M/s SKG Sangha		Foundation myclimate – The Climate Protection Partnership	
Applied methodology/ies:	***Title:***		***No.:***	***Scope:***[1]
	Thermal energy production with or without electricity *Methane recovery in agricultural activities at household/small farm level* *Switch from Non-Renewable Biomass for Thermal Applications by the User*		AMS-I.C. ver. 18 AMS-III.R. AMS-I.E. ver. 3	1 / 1.1 1 / 1.2 13 / 13.2
Monitoring:	***Monitoring period (MP):***		***No. of days:***	***MP No.***
	01/04/2012 to 31/12/2013 - both days included		730	1
Carbon Monitoring report:	***Title:***		***Draft version:***	***Final version:***
	Kolar Biogas Project		25/06/2014	18/11/2015
Sustainability Monitoring Report:	***Title:***		***Draft version:***	***Final version:***
	Kolar Biogas Project		01/09/2015	17/12/2015
Verification team / Technical Review and Final Approval	***Verification Team:***		***Technical review:***	***Final approval:***
	Stefan Winter (TL) Amarnath Mohinder (TM) Indrapal Parmar (TM)		Christina Stöhr	Rainer Winter
Emission reductions: [t CO_{2e}]	***Verified amount***		***As per draft MR:***	
	25,294		25,673	
Summary of Verification Opinion:	Foundation myclimate – The Climate Protection Partnership has commissioned the TÜV NORD JI/CDM Certification Program to carry out the 1st periodic GS verification of the project: "Kolar Biogas Project", with regard to the relevant Gold Standard (GS) requirements for CDM project activities. As a result of this periodic verification, the verifier confirms that: • all operations of the project are implemented and installed as planned and described in the validated project design document and GS additional annexes to the PDD. • the monitoring reports are in accordance with the relevant GS requirements. • the monitoring plans as set out in the validated PDD and the validated additional annexes to the PDD has been followed. • the project contributes to sustainability development • the monitoring system is in place and functional. The project has generated GHG emission reductions.			

[1] As per CDM Accreditation Standard ver. 6

	As the result of the periodic GS verification, the verifier confirms that the GHG emission reductions are calculated without material misstatements in a conservative and appropriate manner. TÜV NORD JI/CDM CP herewith confirms that the project has achieved emission reductions, which could be labelled Gold Standard in the above mentioned reporting period as follows: Emission reductions during year 2012 5,623 **t CO_{2e}** Emission reductions during year 2013 19,671 **t CO_{2e}** **Total Emission reductions: 25,294 t CO_{2e}**	
Document information:	*Filename:*	*Num. of pages:*
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Abbreviations:

CL	**Corrective Action / Clarification Action**
CAR	**Corrective Action Request**
CDM	**Clean Development Mechanism**
CER	**Certified Emission Reduction**
CO_2	**Carbon dioxide**
CO_{2eq}	**Carbon dioxide equivalent**
CR	**Clarification Request**
ER	**Emission Reduction**
FAR	**Forward Action Request**
GHG	**Greenhouse gas(es)**
GS	**Gold Standard**
MP	**Monitoring Plan**
MR	**Monitoring Report**
PDD	**Project Design Document**
PP	**Project Participant**
QA/QC	**Quality Assurance / Quality Control**
S/N	**Serial number**
UNFCCC	**United Nations Framework Convention on Climate Change**
VVS	**Validation and Verification Standard**
XLS	**Emission Reduction Calculation Spread Sheet**

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1. INTRODUCTION

Foundation myclimate – The Climate Protection Partnership has commissioned the TÜV NORD JI/CDM Certification Program (CP) to carry out the Gold Standard (GS) verification of the project

"Kolar Biogas Project"

with regard to the relevant requirements for Gold Standard CDM project activities. The 'Kolar Biogas project' is a registered CDM project since 24/11/2011 (project number 4058)[2]. On 30/01/2014 it was registered as a Gold Standard CDM project. The verification covers the monitoring period 01/04/2012 to 31/12/2013. The 1st periodic GS monitoring period is identical with the 1st monitoring period under CDM, which is also conducted by TÜV NORD JI/CDM CP. The GS verification is to be seen in conjunction with the results of the 1st periodic CDM verification.

GHG data was verified in detailed manner applying the set of requirements, audit practices and principles as required under the Validation and Verification Standard/VVS/ of the UNFCCC.

This report summarizes the findings and conclusions of this Gold Standard verification of the above mentioned GS registered CDM project activity.

1.1. Objective

The objective of the verification is the review and ex-post determination by an independent entity of the GHG emission reductions and the contribution to sustainable development. It includes the verification of the:

- Implementation and operation of the project activity as given in the PDD,
- compliance of the actual monitoring systems and procedures with the provisions of the monitoring plan as a part of registered PDD, the GS monitoring matrix and the applied approved monitoring methodology;
- data given in the monitoring reports by checking the monitoring records, the emissions reduction calculation and supporting evidence
- accuracy of the monitoring equipment
- quality of evidence
- significance of reporting risks and risks of material misstatements.

1.2. Scope

The verification of this GS registered CDM project is based on the validated project design document/PDD/, the validated additional annexes to the PDD for retroactive GS registration/PDD A/ the CDM monitoring report/MR-CDM/, the sustainability monitoring report/MRsm/, the registered GS validation report /VAL-GS/, supporting documents made available to the verifier and information collected through performing interviews and

[2] https://cdm.unfccc.int/Projects/DB/SGS-UKL1287587238.03/view

during the on-site assessment. Furthermore publicly available information was considered as far as available and required.

The verification is carried out on the basis of the following requirements, applicable for this project activity:

- Article 12 of the Kyoto Protocol /KP/,
- guidelines for the implementation of Article 12 of the Kyoto Protocol as presented in the Marrakech Accords under decision 17/CP.7 /MA/, and subsequent decisions made by the Executive Board and COP/MOP,
- Gold Standard Version 2.0 /GS/
- the simplified modalities and procedures for small scale CDM project activities of annex II to decision 21/CP.8/SMP/
- other relevant rules, including the host country legislation,
- CDM Validation and Verification Standard /VVS/
- monitoring plan as given in the registered PDD /PDD/
- Gold Standard Monitoring matrix as given in the registered additional annexes to the PDD for GS registration /PDD A/
- Approved CDM Methodology AMS I.C ver.18: Thermal energy for the user with or without electricity /AMS/
- Approved CDM Methodology AMS I.E ver.5: Switch from Non-Renewable Biomass for Thermal Applications by the User /AMS/
- Approved CDM Methodology AMS III.R ver.1: Methane recovery in agricultural activities at household/small farm level /AMS/

2. GHG PROJECT DESCRIPTION

2.1 Project Characteristics

Essential data of the project is presented in the following Table 2-1.

Table 2-1: Project Characteristics

Item	Data		
Project title	Kolar Biogas Project		
Project size	☐ Large Scale ☒ Small Scale		
Project Scope *(according to UNFCCC sectoral scope numbers for CDM)*	☒	1	Energy Industries (renewable- /non-renewable sources)
	☐	2	Energy distribution
	☐	3	Energy demand
	☐	4	Manufacturing industries
	☐	5	Chemical industry
	☐	6	Construction
	☐	7	Transport
	☐	8	Mining/Mineral production
	☐	9	Metal production
	☐	10	Fugitive emissions from fuels (solid, oil and gas)
	☐	11	Fugitive emissions from production and consumption of halocarbons and hexafluoride
	☐	12	Solvents use
	☒	13	Waste handling and disposal
	☐	14	Afforestation and Reforestation
	☐	15	Agriculture
Applied Methodology	AMS.I.C - “Thermal energy for the user with or without electricity” ver. 18; AMS.I.E - “Switch from Non-Renewable Biomass for Thermal Applications by the User” ver.5; AMS.III.R - “Methane recovery in agricultural activities at household/small farm level” ver. 1		
Technical Area(s)	1.1 Thermal energy generation 1.2 Renewables 13.2 Manure		
CDM registration No.	4058		
GS registration No.	GS ID 670		
Crediting period	☐ Renewable Crediting Period (7 y) ☒ Fixed Crediting Period (10 y)		

2.2 Project Verification History

Essential events since the registration of the project are presented in the following Table 2-2.

Table 2-2: Project verification history

#	Item	Time	Status
1	Date of registration	24/11/2011	-

#	Item	Time	Status
2	Start of crediting period	01/04/2012	-
3	Date of GS registration	18/10/2013	-
4	1st Monitoring period (CDM)	01/04/2012 to 31/12/2013	Issued 11/03/2016
5	Post registration changes (PRC-4058-001) as following:		Approved on 01/10/2015
	Corrections	01/04/2012 to 31/03/2022	
	Permanent changes to MP	2012-04-01 to 31/03/2022	
	temporary deviation from the monitoring	01/04/2012 to 31/12/2013	
	Design changes to the project activity	2012-04-01 to 31/03/2022	
6	GS Request for approval of design changes	03/12/2015	Approved March 2016

2.3 Involved Parties and Project Participants

The following parties to the Kyoto Protocol and project participants are involved in this project activity (Table 2-3).

Table 2-3: Project Parties and project participants

Characteristic	Party	Project Participant
Non-Annex 1	India	SKG Sangha
Annex 1	Switzerland	Foundation myclimate – The Climate Protection Partnership

2.4 Project Location

The details of the project location are given in table 1-3:

Table 2-4: Project Location

No.	**Project Location**
Host Country	India
Region:	Rural areas of Kolar District (Srinivaspur, Kolar, Mulbagal, Malur, and Bangarapet Taluks)
Project location address:	Karnataka State
Latitude of Kolar District	North: 77° 49' 26" and 78° 33' 13"
Longitude of Kolar District	East:12° 44' 45" and 13° 26' 28"

The geographical coordinates of the taluk centres are given below:

Centre	**Latitude º N**	**Longitude, º E**
Kolar Taluk	13º08´12.04´´	78º08´20.44´´

Bangarapet Taluk	12º59´04.97´´	78º10´42.40´´

Malur Taluk	12º59´20.71´´	77º55´42.12´´
Mulbagal Taluk	13º09´39.22´´	78º23´19.11´´
Srinivaspur Taluk	13º20´19.13´´	78º12´38.15´´

2.5 Technical Project Description

The proposed project activity is a community based project activity which will provide biogas units to households in rural areas of Kolar District in Karnataka State in India. The project targets 10,000 households in five Taluks in Kolar District Karnataka State in India namely Srinivaspur, Kolar, Mulbagal, Malur and Bangarapet. The biogas unit will be of either 2 m^3 or 3 m^3 capacity depending on the number and type of cattle owned by the household and the number of people in the household. At least two cattle will be required for a household to be eligible for a 2m^3 biogas unit and at least 3 cattle will be required for a household to be eligible for a 3m^3 biogas unit. As per implementation schedule, 3,000 units of 3 m^3 capacity and 7,000 units of 2 m^3 capacity will be installed under this project activity. Currently until the end of this monitoring period 4080 biogas digesters are installed. SKG Sangha, an Indian non-governmental organisation (NGO), will implement this project activity. The project activity will reduce the amount of fuel wood and kerosene used for cooking and heating water and will replace inefficient traditional cooking stoves with cleaner biogas stoves. The project activity will also reduce methane emissions from cattle manure and will contribute to the sustainable development of the rural households involved in this project activity.

Technical data of the project activity:

As per registered project design document (PDD) of the project in each household, a family-size biodigester together with a biogas-based cooking stove unit are installed. The biogas units are constructed of bricks, sand, cement, pipes, pipe fittings, metal clips, wire and gas burners. Each bioreactor will be a mesophylic fixed dome. The capacity of the biodigesters will be either 2m^3 or 3m^3 of biogas per day. The biogas unit size for a particular household will be chosen based on the number and type of cattle owned by the household and the number of people in the household. SKG Sangha will build the systems with the help of people from the households. Cattle dung and wastewater will be fed into the biodigester daily. Cattle dung and kitchen wastewater will be added to a mixing tank above ground which has an inlet pipe to a digester chamber which is below ground. The dung and wastewater slurry remains in the chamber for approximately 40 days and breaks down anaerobically producing biogas. This biogas builds up above the slurry and remains in the chamber until it is released through the gas outlet pipe at the top of the dome when the gas burner in the household is turned on (the pipe at the top of the biodigester leads to the cooking stove in the household). The biodigester also produces slurry which is pushed into the outlet tank and displacement chamber as the biogas builds up in the digester and finally exits through the slurry discharge hole. The technology has been tested and is widely used in India.

3 METHODOLOGY AND VERIFICATION SEQUENCE

3.1 Verification Steps

The verification consisted of the following steps:

- Appointment of team members and technical reviewers
- A desk review of the carbon monitoring report including the claimed emission reductions and the sustainability monitoring report submitted by the client and additional supporting documents
- Verification planning
- On-Site assessment
- Background investigation and follow-up interviews with personnel of the project proponent and its contractors
- Draft verification reporting
- Resolution of corrective actions (if any)
- Final verification reporting
- Technical review
- Final approval of the verification.

The sequence of the verification is given in the table 3.1 below:

Table 3.1: Verification sequence

Topic	Time
Assignment of verification	09/12/2013
On-site visit	22/07/2014 to 24/07/2014
Draft reporting finalised	28/09/2015
Final reporting finalised	17/12/2015
Technical review finalised	17/12/2015
Review of the Final Report	18/12/2015
Update of report due to GS review	06/04/2016

3.2 Contract review

To assure that

- the project falls within the scopes for which accreditation is held,
- the necessary competences to carry out the verification can be provided,
- Impartiality issues are clear and in line with the CDM and GS accreditation requirements

a contract review was carried out before the contract was signed.

3.3 Appointment of team members and technical reviewers

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

The list of involved personnel, the tasks assigned and the qualification status are summarized in the table (3-2) below.

Table 3-2: Involved Personnel

	Name	Company	Function [1)]	Qualification Status [2)]	Scheme competence [3)]	Technical competence [4)]	Verification competence [5)]	Host country Competence	On-site visit
☒ Mr. ☐ Ms.	Stefan Winter	TN CERT	TL	SA	☒	1.1, 1.2, 13.2	☒	☐	☒
☒ Mr. ☐ Ms.	Mohinder Amarnath	TN India	TM	LA	☒	1.2	☒	☒	☒
☒ Mr. ☐ Ms.	Indrapal Parmar	TN India	TM	A	☒	1.2	☒	☒	☐
☒ Mr. ☐ Ms.	Walter Ulrich	TN CERT	TR	LA	☒	1.1, 1.2, 13.2	☒	☐	-
☒ Mr. ☐ Ms.	Rainer Winter	TN Cert	FA[B)]	SA	☒	1.1, 1.2	☒	☐	-

1) TL: Team Leader; TM: Team Member, TR: Technical review; OT: Observer-Team, OR: Observer-TR; FA: Final approval

2) GHG Auditor Status: A: Assessor; LA: Lead Assessor; SA: Senior Assessor; T: Trainee; TE: Technical Expert

3) GHG auditor status (at least Assessor)

4) As per S01-MU03 or S01-VA070-A2 (such as 1.1, 1.2, …)

5) In case of verification projects

A) Team Member: GHG auditor (at least Assessor status), Technical Expert (incl. Host Country Expert or Verification Expert), not ETE

B) No team member

3.4 Verification Planning

In order to ensure a complete, transparent and timely execution of the verification task the team leader has planned the complete sequence of events necessary to arrive at a substantiated final verification opinion.

Various tools have been established in order to ensure an effective verification planning.

Project specific periodic GS verification checklist

In order to ensure transparency and consideration of all relevant assessment criteria, a project specific GS verification protocol is developed. The protocol shows, in a transparent manner, criteria and requirements, means and results of the verification. The verification protocol serves the following purposes:

- It organises, details and clarifies the requirements a GS CDM project is expected to meet for verification
- It ensures a transparent verification process where the verifying DOE documents how a particular requirement has been proved and the result of the verification.

The basic structure of this project specific verification protocol for the GS verification is described in table 3-3.

Table 3-3: Structure of the project specific GS periodic verification checklist

Table A-1: Periodic verification checklist				
Checklist Item	***Reference***	***Verification Team Comments***	***Draft Conclusion***	***Final Conclusion***
The checklist items in Table A-1 are linked to the various require-ments the monitoring of the project should meet. The checklist is organised in various sections as per the requirements of the topic and the individual project activity. It further includes guidance for the verification team.	*Gives reference to the information source on which the assessment is based on.*	*The section is used to elaborate and discuss the checklist item in detail. It includes the assessment of the verification team and how the assessment was carried out. The reporting requirements of the VVM and GS shall be covered in this section.*	*Assessment based on evidence provided if the criterion is fulfilled (OK), or a CAR, CL or FAR (see below) is raised. The assessment refers to the draft verify-cation stage.*	*In case of a corrective action or a clarification the final assessment at the final verification stage is given.*

The GS verification checklist (verification protocol) is the backbone of the complete verification starting from the desk review until final assessment. Detailed assessments and findings are discussed within this checklist and not necessarily repeated in the main text of this report.

The completed verification protocol is enclosed in the annex (table A-1) to this report.

3.5 Desk 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 last revision of the carbon and sustainability /MRsm/ monitoring report, including the claimed emission reductions for the project /MR-CDM/,
- the registered version of the PDD and attached documents, including the monitoring plan /PDD/,

- the additional annexes to the PDD for retroactive GS registration including the GS monitoring matrix /VAL-GS/
- the registered GS validation report /VAL-GS/,
- the emission reduction calculation spreadsheet (if applicable)

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

3.6 On-site assessment

As most essential part of the verification exercise it is indispensable to carry out an inspection on site in order to verify that the project is implemented in accordance with the applicable criteria. Furthermore the on-site assessment is necessary to check the monitoring data with respect to accuracy to ensure the calculation of emission reductions. Changes to the key sustainable development indicators and the achievement and implementation of mitigation / compensation measures are other integral parts of the on-site assessment.

Keeping in mind the principles of materiality and quality of evidence, typical activities on-site include but are not limited to:

- The on-site assessment included an investigation of whether all relevant equipment is installed and works as anticipated.
- The operating staff was interviewed and observed in order to check the risks of inappropriate operation and data collection procedures.
- Information processes for generating, aggregating and reporting the selected monitored parameters were reviewed.
- The duly calibration of all metering equipment was checked.
- The operator has provided evidence that all metering equipment was duly calibrated.
- The monitoring processes, routines and documentations were audited to check their proper application.
- The monitoring data were checked completely.
- The data aggregation trails were checked via spot sample down to the level of the meter recordings.

Before and during the on-site visit the verification team performed interviews with the project participants to confirm selected information and to resolve issues identified in the document review.

Representatives of SKG Sangha, including the operational staff of the PP and local stakeholders/households were interviewed. The main topics of the interviews are summarised in Table 3-4.

Table 3-4 Interviewed persons and interview topics

Interviewed Persons / Entities	Interview topics
1. Projects & Operations Personnel 2. Household members	- General aspects of the project - Technical equipment and operation - Changes since last verification - Monitoring and measurement equipment - Calibration procedures - Quality management system - Involved personnel and responsibilities - Training and practice of the operational personnel - Implementation of the monitoring plan - Monitoring data management - Data uncertainty and residual risks - GHG emission reduction calculation - Procedural aspects of the verification - Maintenance - Environmental aspects - Sustainability indicators

3.7 Draft verification reporting

On the basis of the desk review, the on-site visit, follow-up interviews and further background investigation the verification protocol is completed. This protocol along with a general project and procedural description of the verification and a detailed list of the verification findings from the draft verification report. This report is sent to the client for resolution of raised CARs, CLs and FARs.

3.8 Resolution of CARs, CLs and FARs

Nonconformities raised during the verification can either be seen as a non-fulfilment of criteria ensuring the proper implementation of a project or where a risk to deliver high quality emission reductions is identified.

Corrective Action Requests (CARs) are issued, if:

- Non-conformities with the monitoring plan or methodology are found in monitoring and reporting, or if the evidence provided to prove conformity is insufficient;
- Mistakes have been made in applying assumptions, data or calculations of emission reductions which will impair the estimate of emission reductions;
- Issues identified in a FAR during validation or previous verifications requiring actions by the project participants to be verified during verification have not been resolved.

The verification team uses the term Clarification Request (CL), which is be issued if:

- information is insufficient or not clear enough to determine whether the applicable GS requirements have been met.

Forward Action Requests (FAR) indicate essential risks for further periodic verifications. Forward Action Requests are issued, if:

- the monitoring and reporting require attention and / or adjustment for the next verification period.

For a detailed list of all CARs, CLs and FARs raised in the course of the verification pl. Refer to chapter 4.

3.9 Final reporting

Upon successful closure of all raised CARs and CLs the final verification report including a positive validation opinion can be issued. In case not all essential issues could finally be resolved, a final report including a negative validation opinion is issued.

The final report summarizes the final assessments w.r.t. all applicable criteria.

3.10 Technical review

Before submission of the final verification report a technical review of the whole verification procedure is carried out. The technical reviewer is a competent GHG auditor being appointed for the scope this project falls under. The technical reviewer is not considered 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 be confirmed or revised. Furthermore reporting improvements might be achieved.

3.11 Final approval

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

After this step the verification team will submit the verification report including the verification opinion to the client via Email and to Gold Standard via the GS registry.

4 VERIFICATION FINDINGS

In the following paragraphs the findings from the desk review of the CDM monitoring report[/MR-CDM/], the sustainability report[/MRsm/], the PDD[/PDD/] and other supporting documents, as well as from the on-site assessment and the interviews are summarised.

The summary of CAR, CL and FAR issued are shown in Table 4-1:

Table 4-1: Summary of CAR, CL and FAR

	No. of CAR	No. of CL	No. of FAR
A – Description of project activity	0	0	0
B – Implementation of project activity	0	0	0
C – Description of monitoring system	1	3	0
D – Data and parameters	1	0	0
E - Calculation of Emission Reductions	1	0	0
SUM	**3**	**3**	**0**

The following tables include all raised CARs, CLs and FARs and the assessments of the same by the verification team. For an in depth evaluation of all verification items it should be referred to the verification protocols (see Annex).

For findings due to the CDM part of the project activity please refer to the related CDM verification report.
Findings w.r.t. the sustainability (GS) monitoring report are as following:

Finding	1		
Classification	☒ CAR	☐ CL	☐ FAR
Description of finding *Describe the finding in unambiguous style; address the context (e.g. section)*	The link provided does not refer to the related GS project webpage. DOE found the project documentation via: https://products.markit.com/br-reg/public/project.jsp?project_id=103000000002257		
Corrective Action #1 *This section shall be filled by the PP. It shall address the cor-*	The link has been corrected in the MR.		

Finding	1		
rective action taken in details. In case the MR is changed as part of the CA, the PP is requested to indicate the revised sections as well as the new version No.	☒ Changes in MR	Section(s):	New version No.: 2
	☐ Changes in XLS	Worksheet(s):	New version No.:
DOE Assessment #1 *The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.*	Ok. The link has been corrected. Finding closed.		
Conclusion *Tick the appropriate checkbox*	☐ To be checked during the next periodic verification ☐ Additional action should be taken (finding remains open) ☒ The finding is closed		

Finding	2		
Classification	☐ CAR	☒ CL	☐ FAR
Description of finding *Describe the finding in unambiguous style; address the context (e.g. section)*	As per project webpage the GS project ID is as following: Kolar Biogas Project(ID: 103000000002257) Please clarify the stated project ID GS 670.		
Corrective Action #1 *This section shall be filled by the PP. It shall address the corrective action taken in details. In case the MR is changed as part of the CA, the PP is requested to indicate the revised sections as well as the new version No.*	I checked this with GS. The Correct Project ID is GS670. You can only see the GS ID when you are logged into the markit. The GS ID is not public. The ID number which you can see on the public view (ID: 103000000002257), is only the markit ID.		
	☐ Changes in MR	Section(s):	New version No.:
	☐ Changes in XLS	Worksheet(s):	New version No.:
DOE Assessment #1 *The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.*	OK. DOE checked the market database and confirms that the ID number is 670. Finding closed.		
Conclusion *Tick the appropriate checkbox*	☐ To be checked during the next periodic verification ☐ Additional action should be taken (finding remains open) ☒ The finding is closed		

Finding	3		
Classification	☒ CAR	☐ CL	☐ FAR
Description of finding *Describe the finding in unambiguous style; address the context (e.g. section)*	• The GS MR refers to the latest PDD esp w.r.t. the related parameters. As a PRC with prior approval has been submitted which is still not approved clarification is requested whether the statement is still correct after approval of the CDM PRC. • The GS MR shall also specified the related GS Passport version and date		

Finding	3		
Corrective Action #1 *This section shall be filled by the PP. It shall address the corrective action taken in details. In case the MR is changed as part of the CA, the PP is requested to indicate the revised sections as well as the new version No.*	The GS MR has been updated according to the latest registered PDD. GS Passport version number and date have been included in GS MR.		
	☒ Changes in MR	Section(s): D.2	New version No.: 2
	☐ Changes in XLS	Worksheet(s):	New version No.:
DOE Assessment #1 *The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.*	Ok. The MR has been updated accordingly. Not ok. The latest GS Passport is provided with version 4 dated 03/12/2015. This is not consistent with the MR which refers to ver 3 dated 20/08/2013 in chapter "status of GS project". Pls clarify.		
Corrective Action #2	MR has been corrected.		
DOE Assessment #2	Ok. MR ver 3 now refers to passport version 4 dated 03/12/2015. Finding closed.		
Conclusion *Tick the appropriate checkbox*	☐ To be checked during the next periodic verification ☐ Additional action should be taken (finding remains open) ☒ The finding is closed		

Finding	4		
Classification	☒ CAR	☐ CL	☐ FAR
Description of finding *Describe the finding in unambiguous style; address the context (e.g. section)*	• The GS MR does not state any version number of date. • The MR also omits the date of GS registration, the GS version and crediting period, and whether it is a regular or retro-active project activity. Revisions requested.		
Corrective Action #1 *This section shall be filled by the PP. It shall address the corrective action taken in details. In case the MR is changed as part of the CA, the PP is requested to indicate the revised sections as well as the new version No.*	Version number and date have been included on page 1 und the GS MR. Date of GS registration, GS version, crediting period, type of crediting period and type of project activity have been included in GS MR.		
	☒ Changes in MR	Section(s):	New version No.: 2
	☐ Changes in XLS	Worksheet(s):	New version No.:
DOE Assessment #1 *The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.*	Not Ok. Version number and date are now provided however are not correct as per GS review. Ok. GS registration, GS version, crediting period, type of crediting period and type of project activity are now provided under Status of GS project.		
Corrective Action #2	MR corrected.		

DOE Assessment #2	Ok. The registration date stated by GS has been used in updated MR. Finding is closed.

Finding	4
Conclusion *Tick the appropriate checkbox*	☐ To be checked during the next periodic verification ☐ Additional action should be taken (finding remains open) ☒ The finding is closed

Finding	GS5		
Classification	☒ CAR	☐ CL	☐ FAR
Description of finding *Describe the finding in unambiguous style; address the context (e.g. section)*	Following issues w.r.t. sustainability monitoring parameters as per passport have been identified: 1. General: As per passport it is indicated under way of monitoring for several parameters that a random survey to 500 units is conducted and that it is done "yearly once". As per provided excel database the survey included only 367 units for a period of 21 months and even collected after the end date of this monitoring period. Clarification is requested how this is in line with the GS monitoring plan. 2. Air quality: The value for daily stove operation is given as 2.95 which is inconsistent with the CDM MR which states 2.92. Pls clarify. 3. Air Quality: The indicator does also not show "how many days in year" but only daily hours, as required in the GS Monitoring Plan 4. Air quality: Further the response to reduction in incidence of hospitalization is given only as "Yes". No further information is offered. Moreover, the provided survey results lack related response (column BJ) for the HHs 1 – 264. Pls clarify. 5. Water quantity and quality: The value provided is inconsistent with related spreadsheet and CDM MR. 6. Soil condition: The values stated could not be reproduced from related Excel file. Pls clarify the inconsistency. 7. Biodiversity: The value under value of monitored parameter and calculation method are inconsistent. Besides the calculation method given cannot be reproduced e.g. 415.62 is unclear and as per MR 4069 units are operating but 4228 are stated. Pls clarify and revise accordingly. 8. Livelihood of the poor: Description states that this is money spent for fire wood or kerosene and any additional income generation however one value is presented. Clarify how the value is determined and whether this is money spent or saved and for what purpose in line with the description. Value is also inconsistent with ER spreadsheet. Further sentence given under any comment is incomplete. Pls clarify. 9. Human and institutional capacity: "Source of data" is missing to be provided. 10. Quantitative employment and income generation: The value for wages is inconsistent with ER spreadsheet. Sample evidence is missing. Besides clarification is requested how the value for savings is determined. Also the value of "22" given for number of employment is unclear as the related spreadsheet under "ANY TEMPORARY OR PERMANENT EMPLOYMENT OPPURTINITY CREATED BY PROJECT ACTIVITY" gives for more than 22 a yes. Pls clarify. 11. Balance of payments and investment: Value is inconsistent with ER spreadsheet. Pls clarify.		

Corrective Action #1 *This section shall be filled by the PP. It shall address the corrective action taken in details. In case the MR is changed as part of the CA, the PP is requested to indicate the revised sections as well as the new version No.*	1. For this first monitoring period, the monitoring has not been conducted as per requirements in the PDD and the GS Passport, but there was a temporary deviation from registered monitoring plan. Due to this fact, a request for deviation from registered monitoring plan has been submitted to the UNFCCC, and it was approved on 01/10/2015. A section with an explanation and justification about the deviation from timeline of conduction of monitoring survey has been included in the MR at the bottom. In the PRC it is shown that the use of the survey data of the 367 units surveyed for the first monitoring period is accurate and conservative. Further I would like to point out that the number of HH surveyed in the first monitoring is 367 HH, which is much above the required sampling size as per required sample size calculation of the UNFCCC and also much higher than the maximum sample size of 100 HH as required by Gold Standard and thus complies the requirements. Further I would also like to point out, that the number of 500 HH refers to survey requirements after all the units have been implemented and reflects 5% of 10'000 units (Numbers of HH to be implemented as per original registered PDD). If we apply this 5% rule for the actual number of units installed during the first monitoring period, the result would be 204 units (5% of 4069) and thus the number of households conducted in the first period is above the required number of 204 households. 2. The value has been changed to 2.7 (which corresponds to 264 units only) and is now in line with the CDM MR. 3. The operation of biogas plants were monitored continuously by the local level supervisor. These supervisors send monthly reports to the central office through the taluk level teams. These reports were verified by the DOE during the site visit. Any non-functioning of the plant will be reported. Reports have shown that plants were functioning every day of the year. Thus the number of 365 days has been added to the GS MR. 4. This parameter is indicative and cannot be quantified. The beneficiaries were asked whether any health improvement can be attributed to the project activity that avoids indoor air pollution. To further this enquiry incidence of hospitalization question has been asked to know the real impact of avoidance of IAP and general sanitation created by the project activity. The monitoring survey has been conducted in 2 phases. The first phase monitoring sheet does not have these parameter for monitoring as this is related to only GS. The second phase of survey (Jan – Feb) captured this information and hence the column BJ does not have this information that were under the first phase of the survey. The DOE preferred this first survey as conservative for ER calculations. This particular parameter does not have any relevance to the ER calculations and hence the second phase survey data can be taken into consideration for this parameter. The amount of HH survey under the second phase is still above 100Hh and is thus in line with the GS sampling requirements (Technologies and Practices to Displace Decentralized Thermal Energy Consumption version2, page: 10) 5. The value has been corrected to 44 kg/day and is now correct and consistent with the documents. 6. The values have been corrected and can now be reproduced from the excel. 7. The values have been corrected and adapted to the current numbers. 8. This parameter is related to the financial benefits due to the project activity. This may be due to savings from avoidance of fire wood purchases, lesser kerosene purchases, lesser chemical fertiliser purchases and savings related to lesser incidence of hospitalizations. Beneficiaries were unable to segregation these savings as the survey is being conducted at the end of the monitoring period, end of the year. More over the time spent on additional income generation (may be working as a labourer or assistance in agricultural activity) is difficult to be remembered as these were not recorded by the beneficiaries. Hence all the savings including additional income that can be attributed to the project activity has been quantified by the beneficiary and the survey captured this data. The amount is indicative. The value has been corrected and is now consistent with the spread sheet. 9. Source of data has been provided. 10. The Value for wages in the spreadsheet refers to average salary of people. SKG Sangha pays a salary of more than 500INR per day. This value is not in the spreadsheet. We will provide evidence. Regarding savings the point has been explained in the lively hoods of the poor parameter query. Any permanent or temporary employment generation has been created by the project activity question posed to the beneficiaries was answered with "yes" by many of the beneficiaries and this is indicative. The number 22 is given by SKG Sangha as it employed 22 people for the project activity 11. The value has been corrected.

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

Finding	GS5
DOE Assessment #1 *The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.*	1. Ok. A related PRC has been submitted to GS reflecting the issues raised. The passport has been updated accordingly. Besides the issue has been identified during CDM assessment and a related PRC has been submitted to UNFCCC and already approved. In case the GS PRC is accepted then during first monitoring period 204 units would have to be monitored and 367 have been monitored. As the PDD and passport require yearly survey the conducted survey did not fully comply with the monitoring plan. However as stated this is already accepted by UNFCCC and the related ER calculation is considering this and calculated in a conservative manner. Do to the fact that UNFCCC approved the PRC and GS PRC is submitted along the issue is closed. 2. Ok. The value has been corrected in line with the conservative ER estimation of the CDM MR to 2.7 for 264 HH. 3. Ok. The days in year are now provided. 4. Ok. Considering the entire survey conducted of 367 HH 103 of them gave a response as per related ER spreadsheet. Due to the issues identified w.r.t. the timing of the survey only 264 HH have been considered for final ER calculation due to conservativeness. Based on that 103 HH gave response on this issue and all positively responded with yes. Same has been responded during interviews conducted by DOE during site visit. Therefore DOE considers the response as appropriate and the statement in GS MR of “Yes” is now adequate. 5. Ok. The value is now consistent with the CDM MR. 6. Ok. The value can now be reproduced. Under calculation method the principle is described. Further the value provided is consistent with the related ER spreadsheet. 7. Ok. The value has been corrected to 4069 and the determination method has been specified under calculation method which is traceable and values are in line with ER spreadsheet. 8. Ok. Related clarification on the nature of the parameter is given. Besides the value is now consistent with the ER spreadsheet. The related sentence has been deleted under additional comment. 9. Ok. Source of data “SKG Sangha data base” is now provided. 10. Not ok. The value for existing wages could be traced from ER spreadsheet and is consistent. The value for savings is now clear and also consistent with the value provided under parameter livelihood of the poor. However evidence for the 22 employees is missing. 11. OK. This is the value for livelihood of the poor and is now consistent with the related spreadsheet.

Finding	GS5
Corrective Action #2	11. Evidence submitted
DOE Assessment #2	11. Ok. Related evidence has been provided. The project requires the employees at SKG Sangha office as well as the related supervisor. The supervisors are given in ER spreadsheet column BT. Totally 12 are stated. During site visit to the SKG office DOE can confirm that there have been 6 further employees next to the CEO. This are in total 19. Due to this the value stated of 22 is reasonable. Besides has been confirmed via interview with PP. Finding closed.
Conclusion *Tick the appropriate checkbox*	☐ To be checked during the next periodic verification ☐ Additional action should be taken (finding remains open) ☒ The finding is closed

Finding	GS6		
Classification	☒ CAR	☐ CL	☐ FAR
Description of finding *Describe the finding in unambiguous style; address the context (e.g. section)*	The MR refers to a final ER result of 25,673 tCO2e. However as the data collection was not in line with the CDM monitoring period a temporary deviation was submitted were the ER result was calculated by two options. As per report the PP will apply the values which lead to a lower CER result which is given in the PRC report with 25,294 tCO2e. Clarify why the higher value is stated in the GS MR.		
Corrective Action #1 *This section shall be filled by the PP. It shall address the corrective action taken in details. In case the MR is changed as part of the CA, the PP is requested to indicate the revised sections as well as the new version No.*	Emission Reductions for this monitoring report have been reduced to 25,294 tCO2 and are now in line with the PRC.		
	☒ Changes in MR	Section(s):	New version No.: 2
	☐ Changes in XLS	Worksheet(s):	New version No.:
DOE Assessment #1 *The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.*	Ok. The ER result has been corrected w.r.t. the CDM project. Finding closed.		
Conclusion *Tick the appropriate checkbox*	☐ To be checked during the next periodic verification ☐ Additional action should be taken (finding remains open) ☒ The finding is closed		

5 SUMMARY OF VERIFICATION ASSESSMENTS

The following paragraphs include the summary of the final verification assessments after all CARs and CLs are closed out. For details of the assessments pl. refer to the discussion of the verification findings in chapter 4 and the verification protocol (Annex).

5.1 Implementation of the project

During the verification a site visit was carried out. On the basis of this site visit and the reviewed project documentation it can be confirmed that w.r.t. the realized technology, the project equipment, as well as the monitoring and metering equipment, the project has been implemented and operated as described in the registered PDD.

5.2 Project History

The project activity has a fixed crediting period which started on 01/04/2012. This is the first monitoring period for this project activity.

During the validation the validating DOE might have raised issues that could not be closed or resolved during the validation stage. For this purpose FARs might have been raised. No such issues were identified for this project.

As this is the first verification no issues from former verifications are to be considered.

5.3 Special events

During the first monitoring period no special events occurred besides that the timing of the survey was not as per related CDM/GS monitoring plan. Due to this a related PRC has been prepared and submitted to UNFCCC under PRC-4058-001 which has already been approved on 01/10/2015.
Further a related request for approval of design changes for this project has been submitted to GS on 03/12/2015 and the passport has been updated in accordance to actual situation and project circumstances e.g. that the final total number of HH under the project is not 10,000 but 9,380. The survey data require therefore also adjustment.
For this monitoring period the emission reductions have been calculated in a conservative manner considering always the lower bound values of the survey results as well as the general dataset of only 264 HH instead of considering the total HH in the survey of 367 as the additional 103 have been interviewed outside this monitoring period and the ER on basis of the 264 is lower. This has already been approved by UNFCCC.

Besides that generally this event does not modify or have repercussions on the monitoring system or measurements.

5.4 Compliance with the monitoring plan and GS monitoring matrix

The reporting procedures reflect the requirements of the monitoring plan. All relevant data is collected continuously and stored during the whole monitoring period. The monitoring does not involve any meter equipment due to the project type and circumstances. A monitoring survey is to be conducted to obtain all related and relevant parameters. The survey consists of a survey to project households as well as to non-project households. The result of the survey is included in the emission reduction spreadsheet. The DOE has conducted a visit and interviews to a random number of households to crosscheck stated information. The DOE check included also interviews with non-project households. Further DOE checked sample number of filled monitoring survey sheets provided by the PP to confirm consistency of data and information.

The sustainability monitoring parameters are:

Indicator	Parameter	Monitoring procedure	In line with MP (Y/N)
Air Quality	a) How many days in a year and how many hours a single burner is used b) Reduction in incidence of hospitalization of any family member	Random survey of 469 units (5% of total units installed) includes a) Question on no of hours and days of operation of burners in a year b) Question on response to reduction in health problems after using the biogas plants.	Yes, DOE crosschecked database and conducted interviews to households and contrast group. Besides PRC is approved.
Water quality and quantity	How much dung is fed to the biogas plant daily	Random survey of 469 households (or 5% of total units installed) includes the question a) how much dung is fed to the biogas plant daily	Yes, DOE crosschecked database and conducted interviews to households and contrast group. PRC is approved.
Soil condition	c) Quantity of spent slurry disposed in the crop fields	Random survey of 469 households (or 5% of total units installed)	Yes, DOE crosschecked database and conducted interviews to

Indicator	Parameter	Monitoring procedure	In line with MP (Y/N)
	d) Reduction in quantity of chemical fertilisers used in the agricultural soils		households and contrast group. PRC is approved.
Biodiversity	The amount of non-renewable fuel wood saved by the project. How much quantity of fire wood is used for cooking needs by the project participants per day and 78% of it will be the non-renewable biomass	Random survey of 469 households (or 5% of total units installed)	Yes, also relevant reports are delivered to the environmental authority. PRC is approved.
Quality of employment	Total number of trainings given to different types of people involved in different activities and number of people trained	SKG Sangha data. The PP is recording the trainings conducted by attendance register.	Yes, DOE crosschecked related attendance registers and conducted interviews to persons who provided training. PRC is approved.
Livelihood of the poor	Money spent on fire wood and kerosene and any additional income generation by the women through the saved time would have spent on fuel wood collection	Random survey of 469 households (or 5% of total units installed)	Yes, DOE crosschecked database and conducted interviews to households and contrast group. PRC is approved.
Access to affordable and clean energy services	How many hours each beneficiary is using biogas	Random survey of 469 households (or 5% of total units installed)	Yes, DOE crosschecked database and conducted

Indicator	Parameter	Monitoring procedure	In line with MP (Y/N)
	stove per day		interviews to households and contrast group. PRC is approved.
Human and institutional capacity	How many people were trained on construction, monitoring, maintenance of biogas plant	9,380 beneficiaries and 500 masons, supervisors and relevant people for the entire project time. This will be monitored using the SKG Sangha data records.	Yes, DOE crosschecked related attendance registers and conducted interviews to persons who provided training. PRC is approved.
Quantitative employment and income generation	No of people employed due to the project activity and additional income generated by utilizing the saving time which would have spent on collection of fuel wood?	SKG Sangha data base	Yes, DOE crosschecked database and conducted interviews to households and contrast group. PRC is approved.
	Existing local wages and wages paid by the project	Random survey of 469 households (or 5% of total units installed)	
Balance of payments and investment	Monetary savings due to decrease in Kerosene and chemical fertilizer use	Random survey of 469 households (or 5% of total units installed)	Yes, DOE crosschecked database and conducted interviews to households and contrast group. PRC is approved.
Technology transfer and technological self-reliance	How many beneficiaries are trained	Random survey of 469 households (or 5% of total units installed)	Yes, DOE crosschecked database and conducted interviews to households and contrast

Indicator	Parameter	Monitoring procedure	In line with MP (Y/N)
			group. PRC is approved.

5.5 Compliance with the monitoring methodology

The indicator stated in the validated monitoring plan, which is based on the corresponding monitoring methodologies as well as GS requirements, is monitored and reported appropriately and cross-verified by means of checking the provided monitoring survey results database against filled monitoring survey sheets as well as conducted visits and interviews to project and non-project households during onsite visit.

GS requirements are the monitoring of social-environmental contributions, which are described in the monitoring matrix. Corresponding evidence were available to verification team.

5.6 Monitoring parameters

The monitoring parameters described in the monitoring plan and GS monitoring matrix are:

GHG emission parameters are:

- Number of systems (biogas units) operating
- Annual hours of operation of an average system (hours of burner functioning)
- Annual amount of kerosene consumed by household after installation of biogas unit
- Annual quantity of biomass consumed by household after installation of biogas unit
- Consumption of fuel wood for cooking in households not participating in the project activities
- Annual average animal population in a household (number of heads of dairy cow, buffalo and other cattle)
- Average amount of animal manure generated per household per year
- Average amount of animal manure fed into biogas digester per year
- Survey of a sample of households by SKG Sangha (taluk level monitoring team)

Sustainability indicators are:

- Air quality
- Water quality and quantity

- Soil condition
- Biodiversity
- Quality of employment
- Livelihood of the poor
- Access to affordable and clean energy services
- Human and institutional capacity
- Quantitative employment and income generation
- Balance of payments and investment
- Technology transfer and technological self-reliance

During the verification all relevant monitoring parameters have been verified with regard to appropriateness of the applied measurement / determination method, the accuracy, the applied QA/QC measures as well as the correctness of the values applied for ER calculation. The results as well as the verification procedure are described parameter-wise in the project specific GS verification checklist.

The monitoring data related to the GHG emissions was received by means of:

1. Monitoring baseline survey conducted to project and non-project households in Excel database
2. The Excel database data is collected via interviews and related monitoring survey sheets
3. Further data is received by application forms filled by beneficiaries at time when they want to participate in the project activity
4. Attendance registers for related trainings

As no monitoring equipment is involved no calibrations of equipment installed has to be verified: therefore the table given in Annex 3 to this report is not filled.

After appropriate corrections were carried out by the project participant it can be confirmed that all monitoring parameters have been measured / determined without material misstatements and in line with all applicable standards and relevant requirements.

Regarding the materiality application, the DOE reviewed the following according to the CDM VVS par. 361 and the registered PDD:

As per PDD ERy = 25,294 tCO_{2e}

The project falls into the maximum error threshold of:

(7) 0.5 percent

Year	Published MR	Final MR	Difference
2012	6,953 tCO_{2e}	5,623 tCO_{2e}	-19.12%

2013	22,585 tCO_{2e}	19,671 tCO_{2e}	-12.90%

After the corrections made it can be corroborated that the omissions, misstatements and/or erroneous reporting of information are not material, and the identified difference is not higher than the indicated threshold.

5.7 Monitoring reports

A draft Gold Standard Sustainability Monitoring Report was submitted to the verification team by the project participant.

During the verification, mistakes and needs for clarification were identified (see CAR and CRs above). The PP has carried out the requested corrections so that it can be confirmed that the both monitoring reports are complete and transparent and in accordance with the registered PDD and the GS requirements.

5.8 Deviations in GHG emission reduction

As already identified during assessment of the project for the CDM part, the conducted monitoring survey was not in line with the stipulations of the monitoring plan. The frequency of the surveys and the extension was not as per previous statements in the related monitoring plans. The survey was not conducted on annual basis, the survey contained 367 project and 150 non-project households and on set of data was collected after this monitoring period in February 2014. Due to this a post registration change has been submitted to UNFCCC applying for a temporary deviation from the registered monitoring plan. The PRC has been approved via PRC-4058-001 on 01/10/2015.
Further a permanent change to the monitoring plan has been submitted to update the documents w.r.t. updated default values as per IPCC and provide clarification w.r.t. $EF_{kersosene}$ value.
Finally a design change has been submitted alng the PRC as it is now clear the project activity will involve 9,380 households and not 10,000. The value will not be extended. Project documentation has been updated accordingly with the stated PRC request

5.9 Contribution to sustainable development

It was evidenced that the project contributes to reforestation/recuperation of the area/soil, employs local population, contributes to improve the livelihood of the poor, improved access to energy services through rural electrification, and contributes to human and institutional capacity.

It can be confirmed that no changes occurred with negative impact on sustainable development of the project.

For a detailed assessment of the sustainability indicators please refer also to the project specific GS verification checklist.

5.10 Quality Management

The Management System for the monitoring of the GS CDM Project is in place. The organizational structure with the responsibilities has been properly identified. The key parameters are generally measured/determined and reviewed periodically as per the procedures. The exact timing however has to be more carefully observed.

5.11 Hints for next periodic Verification

In the course of this GS verification no FAR has been raised.

6 VERIFICATION OPINION

Foundation myclimate has commissioned the TÜV NORD JI/CDM Certification Program to carry out the 1st periodic GS verification of the project: "Kolar Biogas Project", with regard to the relevant Gold Standard (GS) requirements for CDM project activities. The project reduces GHG emissions by installation of small scale biogas digesters for household applications in rural area of India substituting fossil fuel and destroying methane emissions. This 1st periodic GS verification covers the period from 01/04/2012 to 31/12/2013 (both days included).
In the course of the verification 5 Correction Action Request (CAR) and 1 Clarification Requests (CL) were raised. In this verification NO (zero) Forward Action Request (FAR) have been raised. The verification is based on the draft monitoring report (CDM and Sustainability), the revised monitoring reports, the monitoring plan as set out in the validated PDD, the validation report, the additional annexes to the PDD, the GS validation report, the CDM verification report for this project and supporting documents made available to the TÜV NORD JI/CDM CP by the project participants.

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

- all operations of the project are implemented and installed as planned and described in the validated project design document and GS additional annexes to the PDD.
- the monitoring reports are in accordance with the relevant GS requirements.
- the monitoring plans as set out in the validated PDD and the validated additional annexes to the PDD has been followed.
- the project contributes to sustainability development
- the monitoring system is in place and functional. The project has generated GHG emission reductions.

As the result of the periodic GS verification, the verifier confirms that the GHG emission reductions are calculated without material misstatements in a conservative and appropriate manner. TÜV NORD JI/CDM CP herewith confirms that the project has achieved emission reductions, which could be labelled Gold Standard in the above mentioned reporting period as follows:

Emission reductions: **25,294** t CO_{2e}

Essen, Germany, 2016-04-06

Stefan Winter
TÜV NORD JI/CDM Certification Program
Verification Team Leader

Essen, Germany, 2016-04-06

Rainer Winter
TÜV NORD JI/CDM Certification Program
Final Approver

7 REFERENCES

Table 7-1: Documents provided by the project participant(s)

Reference	Document
/DAT/	SKGS Database
/MR/	CDM: Monitoring report of the project titled "Kolar Biogas Project" version 1.0 dated 25/06/2014 Monitoring report of the project titled "Kolar Biogas Project" version 2.0 dated 25/06/2014 Monitoring report of the project titled "Kolar Biogas Project" version 3.0 dated 28/10/2014 Monitoring report of the project titled "Kolar Biogas Project" version 4.0 dated 18/06/2015 Monitoring report of the project titled "Kolar Biogas Project" version 4.1 dated 30/06/2015 GS: GS Monitoring report of the project titled "Kolar Biogas Project" version not given received 01/09/2015 GS Monitoring report of the project titled "Kolar Biogas Project" dated 22/10/2015 GS Monitoring report of the project titled "Kolar Biogas Project" dated 17/12/2015 GS Monitoring report of the project titled "Kolar Biogas Project" received 22/03/2016
/PAF/	Project Application forms by SKG Sangha
/TEMP/	Standardized forms/templates on • Agreement for providing bio-digester under Kolar biogas project • Agreement for providing assistance under Kolar biogas project • Completion certificate • Receipt of payment
/AGT/	Sample of the following: • Agreement for providing bio-digester under Kolar biogas project • Agreement for providing assistance under Kolar biogas project • Completion certificate • Receipt of payment
/MSS/	Sample number of Monitoring survey sheets for Kolar Biogas Project
/GIS/	Inventory, Mapping and Monitoring of Bio-resources Using GIS and Remote Sensing http://www.ces.iisc.ernet.in/energy/paper/Biores_using_RS_GIS/index.htm

Reference	Document
/GSPRC/	Request for approval of design changes in the project GS 670 dated 03/12/2015
/PASS/	GS Passport for "Kolar Biogas Project" version 3 dated 20/08/2013 Updated GS Passport for "Kolar Biogas Project" version 4 dated 03/12/2015 (track change mode)
/PI/	Project info note by SKG Sangha
/TRAIN/	Training records of programmes conducted for beneficiaries, supervisors and motivators
/OPS/	Records of beneficiaries about their biogas stoves operation Records from motivators
/ER/	Emission Reduction Sheet w.r.t. monitoring report version 1.0 dated 25/06/2014 incl List of all units installed Emission Reduction Sheet version 4.0 dated 18/06/2015 incl List of all units installed Final ER calculation version 5.0 based on 264 HH in monitoring survey submitted along with CDM issuance request Final ER calculation version 5.0 based on 367 HH in monitoring survey

Table 7-2: Background investigation and assessment documents

Reference	Document
/AMS/	• AMS I.E "Switch from non-renewable biomass for thermal applications by the user", version 03 • AMS-III.R "Methane recovery in agricultural activities at the household/small farm level", version 01 • AMS-I.C "Thermal energy production with or without electricity", version 18
/CPM/	TÜV NORD JI / CDM CP Manual (incl. CP procedures and forms)
/DNH/	Do Not Harm assessment for "Kolar Biogas Project"
/GS/	• Gold stand version 2.2 toolkit annexes • Gold Standard Requirements and Toolkit (With its Annexes) Version 2.2, dated 2008/08/01 • Gold Standard (GS) Passport Kolar Biogas project Final Version number 03, dated 10/08/2013 • Gold Standard (GS) Passport Kolar Biogas project Final Version number

Reference	Document
	04, dated 03/12/2015
/IPCC/	1. 1996 IPCC Guidelines for National Greenhouse Gas Inventories: work book 2. 2006 IPCC Guidelines for National Greenhouse Gas Inventories: work book
/KP/	Kyoto Protocol (1997)
/MA/	Decision 3/CMP. 1 (Marrakesh – Accords)
/MRT/	Monitoring Report Form (CDM-MR-FORM), Version 4.0
/PDD/	• Project Design Document for "Kolar Biogas Project" version 11, dated 11/04/2011 • Revised PDD for "Kolar Biogas Project" version 14, dated 18/06/2015
/PRC/	• PRC assessment opinion report, dated 15/07/2015
/PS/	CDM Project Standard (Version 7.0)
/SAMPLE /	• Sampling and surveys for CDM project activities and programme of activities • Guidelines for sampling and surveys for CDM project activities and programme of activities
/SHCR/	• Gold Standard Local Stakeholder Consultation Report ver 1 • Gold Standard Local Stakeholder Consultation Report ver 3 dated 17/08/2009
/TOOL/	• Tool to calculate project or leakage CO2 emissions from fossil fuel combustion version 2
/VAL/	• CDM validation report for the "Kolar Biogas Project " , revision 1.1 dated 18/03/2009 by SGS • Registered ER Spreadsheet Kolar Project version 04 dated 17/06/2009 • Gold Standard sustainability validation report for "Kolar Biogas Project" by TÜV Rheinland No. 0199791005069846, ver 2, dated 14/02/2013
/VVS/	CDM Validation and Verification Standard (Version 07.0)

Table 7-3: Websites used

Reference	Link	Organisation

Reference	Link	Organisation
/moef/	www.envfor.nic.in http://planningcommission.gov.in /reports/genrep/rep_intengy.pdf	Ministry of Environment and Forest
/mnre/	http://mnre.gov.in/schemes/decentralized-systems/schems-2/ http://envfor.nic.in/divisions/ic/wssd/doc2/ch4_anx.pdf	Family Type Biogas Plants Programme, National Biogas and Manure Management Programme (NBMMP)
/unfccc/	http://cdm.unfccc.int	UNFCCC
/ipcc/	www.ipcc-nggip.iges.or.jp	IPCC publications

Table 7-4: List of interviewed persons

No.	Interviewee			Date	Subject	Team member
	Last name	First name	Affiliation			
1.	Kumar K	Kiran	Secretary – M/s SKG Sangha **/IM01/**	22/07/2014 - 24/07/2014	Review MR, ER calculation, site inspection, monitoring documents and Reporting GS Sustainability Indicators database	Stefan Winter Mohinder Amarnath
2.	Reddy	Amala Narayana	Supervisor – SKG Sangha **/IM01/**		Data collection, training, sustainability indicators, database	
3.	K. V	Anand	Kuppahally, Kolar District **/IM02/**	22/07/2014 - 24/07/2014	Installation dates Sustainable Frequency of use Hours of use Number in households Bio-digester capacity Fuel mix in the HH Monitoring surveys conducted Development issues	
4.	K. V	Manrunasha				
5.	T. V	Manjula	Therahalli , Kolar District **/IM02/**			
6.	Santhamma		Therahalli, Kolar District, **/IM02/**			
7.	Anusha	-	Therahalli, Kolar District **/IM02/**			
8.	Nagarjan	M	Madanahath, Kolar District **/IM02/**			
9.	Shobha	-	Purahalli, Kolar District **/IM02/**			
10.	Anand	O.B	Harahalli, Kolar District **/IM02/**			
11.	Bhagaymamma	-	Mavahalli, Kolar District **/IM02/**			
12.	Gopalappa	N. S	Santhehalli ,Kolar District **/IM02/**			
13.	Maramma	-	Sonnappannahalli , Kolar District **/IM02/**			
14.	Susheelamma	-	Venkateshappe, Kolar District **/IM02/**			
15.	Nakasamma	-				
16.	Nanjundappa	-				
17.	Naga	-				
18.	Lakshmamma	-				
19.	Anjanappa	-	Madanahath, Kolar District **/IM02/**			
20.	Nagesh	-				
21.	Rajamma	-				

22.	Manjula	-	Vadahalli, Kolar District **/IM02/**			
23.	Bhagyamma	-		22/07/2014 - 24/07/2014	Review MR, ER calculation, site inspection, monitoring documents and Reporting GS Sustainability Indicators Installation dates Sustainable Frequency of use Hours of use Number in households Bio-digester capacity Fuel mix in the HH Monitoring surveys conducted Development issues	Stefan Winter Mohinder Amarnath
24.	Manjula	-				
25.	Swatti Rami	-				
26.	Bhagyamma w/o Murali Krishna	-	Mavahalli, Kolar District **/IM02/**			
27.	Nagarathna	-	Thorraganadoddi, Kolar District **/IM02/**			
28.	LAKSHMAMMA	-				
29.	Roopa	-				
30.	Gopalappa	N.S.	Santhehalli, Kolar District **/IM02/**			
31.	Amaravathi	-				
32.	Thilakamma	-				
33.	Bhagyalakshmi	-				
34.	Sunanlamma	-	Sonnappannahalli, Kolar District **/IM02/**			
35.	Venkatesh	-				
36.	Gowramma	-				
37.	Vineda	-				
38.	Kamala	-				
39.	Rathnamma	-				
40.	Venkataramanappa	-				
41.	Munjyappa	-				
42.	Sugunamma	-				
43.	Vijaya	-	Sonnapanatti, Kolar District **/IM02/**			
44.	Renukappa	-				
45.	Kalpana	-				
46.	Nanayandurama y	-				
47.	Sunanda	-				
48.	Chinnamma	-				

ANNEX

A1: Verification Protocol

A2: Calibration dates and validity of installed monitoring equipment

A3: Statements of Competence of involved Personnel

ANNEX 1: VERIFICATION PROTOCOL

Table A-2: (Project specific) Periodic Verification Checklist

Checklist Item (incl. guidance for the verification team)	**Refe-rence**	**Verification Team Comments** (Means and results of assessment)	**Draft Concl.**	**Final Concl**
1. Project history				
1.1 Open issues from GS validation *Check (esp. in case of 1st periodic verification) whether there are any open issues indicated in the validation report (e.g. FAR)?*	/VAL/ /PRC/ /PDD/	Based on check of GS validation report there are no open issues e.g. out of a FAR. However during CDM validation the following FAR was raised: 1. Actual implementation schedule of bio-digester units needs to be confirmed during verification 2. As per final PDD, 70:30 ratios have been considered for installation of 2 m³ units and 3 m³. Estimated emission reduction has been calculated based on proposed ratio of 2 m³ units and 3 m³ units installed. Since, this ratio influences the emission reduction, same need to be checked during verification. Based on that during CDM verification assessment related findings have been raised (see CDM CAR 7 and CDM CAR 2) The impact on the actual ratio of 81:19 (2m³:3m³) has been included in the CDM MR section E.6 and leads to less emission reduction than previously estimated as more small scale type digesters have been installed. The actual implementation schedule could not be achieved due to investment issues. A PRC has been submitted to UNFCCC which covers this issue. The registered PDD has been updated w.r.t the actual schedule until date and data is available. Further the PDD has been updated w.r.t. the total number of digesters involved in this project which is considered to be 9,380 instead of 10,000. The reg PDD is updated accordingly and approval of	~~CAR GS3~~	Ok

Checklist Item (incl. guidance for the verification team)	**Refe-rence**	**Verification Team Comments** (Means and results of assessment)	**Draft Concl.**	**Final Concl**
		related changes is already requested with UNFCCC.		
1.2 Open issues from previous verification *Check in case of further periodic verifications whether there are any open issues indicated in previous verification (FAR)?*	/MR/	No open issues from previous verification are to be considered as this is the first verification.	OK	OK
1.3 Requests for Deviations / Revisions of MP *Check if there have been any requests for deviations from the registered CDM monitoring plan or requests for revisions of the CDM monitoring plan. If any, make sure that they are considered during verification?*	/unfccc/ /VAL/ /PRC/ /MR/	*Description:* A request for change in monitoring plan, devation to the monitoring plan, design change and corrections have been submitted to UNFCCC for prior approval. No decision or approval has been received yet. *Verifier´s action:* It was verified (as CDM project) by TÜV NORD, according to verification report. See related PRC report and unfccc project webpage. *Conclusion:* The MR may be updated as applicable due to the changes applied within the PRC. In this context the following findings have been identified: CAR GS3	~~CAR GS3~~	Ok
1.4 Initial verification *In case an initial verification has been carried out, check if all FARs, recommendations etc. have been addressed appropriately.*	/VAL/	Please refer point 1.1 above.	~~CAR GS3~~	Ok
1.5 Initial project implementation *In case of first GS verification: Assess whether the project has been implemented and operated as per the registered PDD and are all physical features of the project in place?*		*Description:* The project has implemented 2m³ and 3m³ Deen Bandhu biogas digester models at rural households in Kolar India. The biogas is used for cooking in a cook stove and replacing firewood or kerosene. The digester is made of bricks, sand, cement, pipes, fittings, metal clips and gas burner/stove.	~~CAR GS3~~	Ok

Checklist Item (incl. guidance for the verification team)	**Refe-rence**	**Verification Team Comments** (Means and results of assessment)	**Draft Concl.**	**Final Concl**
In case of further periodic verifications: Go to next chapter.		Currently for this monitoring period 4069 units are operating. *Verifier´s action:* Based on check of registered PDD, GS documentation, GS and CDM validation reports besides interviews conducted and onsite visit. *Conclusion:* The project is in generally installed as described in the PDD w.r.t. digester type and stove type and purpose of biogas use as well as source of material used in the digester. However it has been identified that the total number under this project activity will not be 10,000 but 9,380. Further to this due to financing constrains the implementation schedule as described in the PDD could not be achieved. In the first years less units could be installed than expected. Due to this a PRC has been also launched and submitted to UNFCC for approval. Therefore CAR GS3 has been raised as well as findings in the related verification report CDM CAR 2.Further higher number of 2m³ digesters has been installed than previously considered the ratio has changed from 70:30 to 81:19. Due to this estimated ER is lower as well as achieved ER as smaller digesters lead to less ER (please refer also to CDM CAR 7).		
2. Update on Changes and Incidents (during the Monitoring Period)				
2.1 Technical equipment *Check if relevant technical equipment of the project activity has been exchanged or modified during the monitoring period.* *Check whether any changes occurred that may have impact on the GS qualification of the project, in particular with reference to any potential changes in*	/IM01/ /PDD/ /VAL/ /VER/	*Description:* The project involves the installation of 2m³ and 3m³ Deen Bandhu biogas digester models at rural households in Kolar India inclusive related cooking stove. *Verifier´s action:* Based on check of registered PDD, GS documentation, GS and CDM validation reports besides interviews conducted and onsite visit. *Conclusion:* as per site visit and check of sample contracts with	OK	OK

Checklist Item (incl. guidance for the verification team)	**Refe-rence**	**Verification Team Comments** (Means and results of assessment)	**Draft Concl.**	**Final Concl**
key parameters leading to an overall impact on sustainable development of the project. *Consider e.g. interviews with operational personnel, QMS records, maintenance records, instrument specifications.* *In case of changes, check whether the project is still in line with the registered PDD and assure that these changes have been considered in the monitoring report, the emission reduction calculation and/or the scoring of the sustainability indicators*		beneficiaries it can be confirmed that related technical equipment has been installed as defined in reg PDD.		
2.2 Operation modes *Check if relevant operation modes of the project activity have been exchanged or modified during the monitoring period.* *Check whether any changes occurred that may have impact on the GS qualification of the project, in particular with reference to any potential changes in key parameters leading to an overall impact on sustainable development of the project.* *Consider e.g. interviews with operational personnel, operation log sheets, data management system records.* *In case of changes, check whether the project is still in line with the registered PDD and assure that these changes have been considered in the monitoring report, the emission reduction calculation and/or the scoring of the sustainability indicators*	/IM01/	*Description:* The operation of the installed equipment is not changed. However the number of units to be installed could not be achieved as per reg PDD. Also the ratio of digester types is different. Please refer also point 1.5 above. *Verifier´s action:* Based on check of registered PDD, GS documentation, GS and CDM validation reports besides interviews conducted and onsite visit. *Conclusion:* The verification team confirms that the project is in line with the operation described in the registered PDD. However CAR GS3 has been raised.	~~CAR GS3~~	Ok

Checklist Item (incl. guidance for the verification team)	**Refe-rence**	**Verification Team Comments** (Means and results of assessment)	**Draft Concl.**	**Final Concl**
2.3 Incidents *Identify if there have been any significant incidents, deviant operation modes and / or downtimes of the equipment?* *Consider e.g. interviews with operational personnel, operational log sheets, analysis of performance data.*	/IM01/ /OPS/	*Description:* No incidents have been identified during check of documentation or interview with HHs or visit to sites. *Verifier´s action:* Based on check of registered PDD, GS documentation, GS and CDM validation reports besides interviews conducted and onsite visit. *Conclusion:* No major incidents occurred during this monitoring period. In this context the following findings have been identified: N/A	OK	OK
2.4 Personnel *Find out, if relevant personnel w.r.t. monitoring has been exchanged?* *In case of changes, assure that the implemented monitoring procedures have not been affected.*	/IM01/ /MR/ /PDD/ /TRAIN/	*Description:* No relevant personnel for the monitoring activities were exchanged during the monitoring period. The set up of Supervisor, motivators and the project coordinator is in place and effective. *Verifier´s action:* Interview with the employees/responsible persons have been performed. Related training documents for beneficiaries and supervisors and motivators have been checked. *Conclusion:* No personnel were exchanged during the monitoring period. Also the system has not been rearranged.	Ok	OK
2.5 Legislation Find out whether relevant legislation with effect on the project activity in the host country has been changed.	/IM01/ /moef/	*Description:* Small scale digesters do not reqire any EIA. The legislation has not changed. *Verifier´s action:* check of moef wepage. And interview with PP as well as host country knowledge and experience. *Conclusion:* No changes to the legislation are identified. The PP	OK	OK

Checklist Item (incl. guidance for the verification team)	Refe-rence	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl
		complies with local regulation.		
3. Monitoring Report – General				
3.1 Monitoring period *Check if the monitoring period is in line with a) the crediting period and/or b) previous monitoring periods?*	/unfccc/ /MR/	*Description:* The 'La Esperanza Hydroelectric project' is a registered CDM project since 24/11/2011. In 2014-01-30 it was registered as a Gold Standard CDM project. The monitoring period lasts from 01/04/2012 to 31/12/2013. both days included. The established crediting period is from 01/04/2012 to 31/03/2022. *Verifier´s action:* The Gold Standard and UNFCCC web sites were checked. *Conclusion:* The monitoring period is in line with the crediting period.	OK	OK
3.2 References *Check if the carbon monitoring report and sustainability monitoring report provides the correct references.*	/MR/	*Description:* All references are given in the monitoring reports. *Verifier´s action:* The draft monitoring reports provided by the PP were checked. *Conclusion:* All references provided are correct besides two issues have been identified. Please refer finding CAR GS1 and CL GS2.	~~CAR GS1~~ ~~CL GS2~~	Ok
3.3 Completeness *Assess if the carbon monitoring report and sustainability monitoring report are complete, i.e. have all relevant issues been addressed? The MR shall include: (i) The implementation status of the project during the monitoring period (ii) Monitoring systems and procedures incl. QA/QC system employed (iii) all parameters to be monitored*	/MR/	Yes all relevant issues are covered; in detail: ☒ (i) Implementation status ☒ (ii) Monitoring systems and procedures (esp. QA/QC) ☒ (iii) All parameters and corresponding intervals ☒ (iv) Information on calibration of monitoring instruments ☒ (v) Emission factors, IPCC default values etc. ☒ (vi) Reference to deviations, if applicable	~~CAR GS1~~ ~~CAR GS 3~~ ~~CAR GS4~~	Ok

Checklist Item (incl. guidance for the verification team)	**Refe-rence**	**Verification Team Comments** (Means and results of assessment)	**Draft Concl.**	**Final Concl**
and reported at the intervals required by the MP and the Meth (iv) information on calibration of monitoring instruments (v) Emission factors, IPCC default values etc. (vi) reference to any deviation request approved by the EB, (vii) calculation of ER including reference to formulae and methods used (viii) comparison of the actual ER claimed in the MP with the estimate in the registered PDD and explanation in case of significant increase.		☒ (vii) Calculation of emission reductions ☒ (viii) Comparison of ER with PDD estimation However MR has to be updated w.r.t. issues raised CAR GS1, CAR GS4. Besides a PRC has been submitted for approval is still to be awaited (see CAR GS3).		
3.4 Comparison of estimated and actual ER *Have differences between the monitored ER and the ex-ante ER been reported and appropriately justified? Please assess potential impacts on baseline and additionality.*	/MR/ /PDD/ /PRC/ /XLS/	*Description* The emission reduction of this verification period is lower than the estimation stated in the PDD. *Verifier´s action:* by means of comparing latest PDD with value in MR and Excel spreadsheet. *Conclusion:* The emission reduction of this verification period is lower than the estimation stated in the PDD. Even though considering the value in the not yet approved updated PDD the ER achieved.	OK	OK
3.4 Transparency *Assess if the carbon monitoring report and sustainability monitoring report are transparent, i.e. clear and unequivocal in all respect?*	/MR/	*Description:* The GS-MR report is free of unequivocal and unclear issues. *Verifier´s action:* The draft GS-MR provided by the PP was checked. *Conclusion:* The monitoring report can be assessed to be transparent. No ambiguous statements have been identified however CL GS2 has been raised.	~~CL GS2~~	Ok

Checklist Item (incl. guidance for the verification team)	**Refe-rence**	**Verification Team Comments** (Means and results of assessment)	**Draft Concl.**	**Final Concl**
3.5 Misstatements on general issues *Assess whether the carbon monitoring report and sustainability monitoring report are free of material misstatements regarding issues other than the monitoring parameters.* *Discuss the monitoring parameters in detail in chapter "Monitoring Parameters".*	/MR/	The MR is free of misstatements besides the issues raised e.g. CAR GS1, CL GS", CAR GS3 and CAR GS4	~~CAR GS1 CL GS2 CAR GS3 CAR GS4~~	Ok
***3.6 Deviations from the validated monitoring plan* and GS monitoring matrix** *Assess whether the carbon monitoring report and sustainability monitoring report are in line with the validated monitoring plan and the GS monitoring matrix?*	/MR/ /VAL-GS/ /PDD/	*Description:* The MR provides a list of monitoring parameters as well as the CDM MR. *Verifier´s action:* The draft monitoring report provided by the PP was crosschecked with the monitoring plan and the GS monitoring matrix in GS passport. *Conclusion:* The list of parameters in the GS MR is consistent with the list as per GS passport. No parameter has been missed out. However CAR GS3 and CAR GS4 have been raised as several inconsistencies have been identified. Further a PRC has been submitted incl. deviation from registered CDM monitoring for which approval is still awaited.	~~CAR GS3 CAR GS4~~	Ok
3.7 Deviations from the approved methodology *Assess whether the MR in line with the applied monitoring methodology?*	/MR/ /AMS-ID/ /PRC/ /VER/	*Description:* The GS monitoring report is in line with the applied methodology. *Verifier´s action:* The draft monitoring report provided by the PP was crosschecked with the applied methodology. *Conclusion:* No deviations from the approved methodology have been identified. However a PRC is submitted incl. permanent changes to the CDM monitoring plan for which approval is not yet provided. CAR GS3 has been raised.	~~CAR GS3~~	Ok

<table>
<tr><th>Checklist Item
(incl. guidance for the verification team)</th><th>Refe-rence</th><th>Verification Team Comments
(Means and results of assessment)</th><th>Draft Concl.</th><th>Final Concl</th></tr>
<tr><td>4. Monitoring Parameters
(List all parameters of the PDD chapter B.7.1; pl. copy the 6 lines below for each parameter)</td><td></td><td></td><td></td><td></td></tr>
<tr><td>4.1. CDM Parameters</td><td></td><td></td><td></td><td></td></tr>
<tr><td>a) Measurement / Determination method
Describe how the monitoring parameter was measured / determined.
Check if relevant equipment has been exchanged and if in cases of failures / downtimes of standard equipment other measurement / determination methods have been used.
Assess whether the measurement / determination method is in line with the registered monitoring plan of the PDD and the applied methodology.</td><td>/VER/
/MR/
/XLS/
/OPS/
/SAMPLE/
/PRC/</td><td>Description: The monitoring plan as per reg PDD requires the following parameters to be monitored:
<table><tr><th>Parameter</th><th>Description</th><th>How monitored?</th></tr><tr><td>$N_{operating}$</td><td>Number of systems (biogas units) operating</td><td>Info by motivator to PP, monthly.</td></tr><tr><td>H_{stove}</td><td>Annual hours of operation of an average system (hours of burner functioning)</td><td>Notes by beneficiaries</td></tr><tr><td>$F_{kerosene, project}$</td><td>Annual amount of kerosene consumed by household after installation of biogas unit</td><td>Monitoring survey</td></tr><tr><td>$B_{biomass, project}$</td><td>Annual quantity of biomass consumed by household after installation of biogas unit</td><td>Monitoring survey</td></tr><tr><td>$B_{biomass, non-project}$</td><td>Consumption of fuel wood for cooking in</td><td>Monitoring survey</td></tr></table></td><td>~~CAR GS3~~</td><td>Ok</td></tr>
</table>

Checklist Item (incl. guidance for the verification team)	Refe-rence	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl
		households not participating in the project activities.		
		$N_{(T)}$ — Annual average animal population in a household (number of heads of dairy cow, buffalo and other cattle). — Monitoring survey		
		$B_{manure,generated}$ — Average amount of animal manure generated per household per year. — Monitoring survey		
		$B_{manure,fed}$ — Average amount of animal manure fed into biogas digester per year. — Monitoring survey		
		Application of sludge — Proper application of the sludge from the biogas unit. — Monitoring survey		
		No measurement equipment is involved at all for any of the parameters to obtain the related value. The value is collected either by an annual monitoring survey or monthly from motivators or beneficiaries took notes for a week. *Verifier´s action:* The CDM Verification Report was checked. Besides check of PP database in Excel spreadsheet. Further DOE checked also the contracts with beneficiaries. Monitoring survey sheets, notes, motivator records, etc and conducted own		

Checklist Item (incl. guidance for the verification team)	**Refe-rence**	**Verification Team Comments** (Means and results of assessment)	**Draft Concl.**	**Final Concl**
		sample check to sites to crosscheck values stated and plausibility check. *Conclusion:* The procedure as described is established and working. No inconsistency or misstatement has been identified. However the monitoring survey has not been conducted as per monitoring plan.		
c) Accuracy and QA/QC Procedure *Describe whether all applicable QA/QC procedures are met. Assess further if the calibration and maintenance of the monitoring equipment has been carried out by competent personnel.*	/VER/ /MR/ /XLS/ /OPS/ /SAMPLE/ /PRC/	*Description:* No monitoring equipment is involved to collect any data for any parameter. Due to this no accuracy is relevant of measurement equipment. Data is mainly collected via survey. The survey conducted is established to ensure 95%precision. *Verifier´s action:* By means of checking CDM report, excel data sheet on monitoring survey results, besides motivator records as well as notes by beneficiaries as well as interviews with PP and HHS besides onsite check to sample number of units and HH. *Conclusion:* The measurement method is in line with the registered monitoring plan however the monitoring survey has not been conducted in line with the reg monitoring plan on annual basis. A related PRC is submitted to UNFCCC. Hence related CARs have been raised in CDM report as well as e.g. CAR GS3.	~~CAR GS3~~	Ok
b) Correctness *Determine whether the value given in the carbon monitoring report is correct.* *In case of mistakes pl. provide details and descriptions of the CARs raised.*	/VER/ /MR/ /XLS/ /OPS/ /SAMPLE/ /PRC/	*Description & Conclusion:* The values have been checked against provided records from motivators or notes of beneficiaries as well as results from monitoring survey which has been checked by cross-verifying the monitoring survey sheets and local database. Besides visit to sample number of HH have been conducted. Based on that the values stated are correct besides that the monitoring survey has not been conducted in line with the reg monitoring plan on annual basis.	~~CAR GS3~~	Ok

Checklist Item (incl. guidance for the verification team)	Refe-rence	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl
		To check the results of the survey the DOE has calculated the reliability of the survey conducted has been calculated in line with the Standard "Sampling and surveys for CDM project activities and programme of activities" and related Guideline EB75 Annex 8 esp. Appendix 4. Please refer for the results of the reliability calculation to the related PRC report. A related PRC is submitted to UNFCCC. Hence related CARs have been raised in CDM report as well as e.g. CAR GS3. *Verifier´s action:* The CDM Verification Report was checked. Besides check of PP database in Excel spreadsheet. Further DOE checked also the contracts with beneficiaries and conducted own sample check to sites to crosscheck whether units are operating.		
Sustainability indicators **4.2. Air quality**				

Checklist Item (incl. guidance for the verification team)	**Refe-rence**	**Verification Team Comments** (Means and results of assessment)	**Draft Concl.**	**Final Concl**
a) Measurement / Determination method *Describe how the monitoring parameter was measured / determined.* *Check if relevant equipment has been exchanged and if in cases of failures / downtimes of standard equipment other measurement / determination methods have been used.* *Assess whether the measurement / determination method is in line with the registered monitoring plan of the PDD and the applied methodology.*	/XLS/ /MR/ /VER/ /IM01/ /OPS/ /PRC/	*Description:* The air quality is monitored by how many days in a year and how many hours a single burner is used per day the plant is in operation. Further the reduction in incidence of hospitalization is monitored in parallel. This is monitored yearly once by a monitoring survey which checks whether kerosene and firewood has been completely replaced by biogas usage. *Verifier´s action:* By means of checking MR, database, besides records by motivator and conducted interviews as well as visit to sample number of households. *Conclusion:* As per passport the value should be determined yearly once by survey to 500 HHs. However the survey has not been conducted as described. Therefore CAR GS5 has been raised.	~~CAR GS5~~	Ok
b) Accuracy and QA/QC Procedure *Describe whether all applicable QA/QC procedures are met. Assess further if the calibration and maintenance of the monitoring equipment has been carried out by competent personnel.*	/XLS/ /MR/ /VER/ /IM01/ /OPS/ /PRC/	*Description:* The Project coordinator SKG Sangha conducts random checks at village level to check the monitoring data. Further organises and checks the annual surveys. *Verifier´s action:* By means of checking MR, database, besides records by motivator and conducted interviews as well as visit to sample number of households. *Conclusion:* The data collection and procedure are in place and working well. However the survey has not been conducted as per schedule required. CAR GS3 and CAR GS5 have been raised.	~~CAR GS3~~ ~~CAR GS5~~	Ok

Checklist Item (incl. guidance for the verification team)	Refe-rence	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl
c) Correctness *Determine whether the value or information given in the sustainability monitoring report is correct.* *In case of mistakes pl. provide details and descriptions of the CARs raised.*	/XLS/ /MR/ /VER/ /IM01/ /OPS/ /PRC/	☐ Correct ☒ Not correct *Description & Conclusion:* The value given in GS MR is inconsistent with CDM documents. Further as per passport the value should be determined yearly once by survey to 500 HHs. However the survey has not been conducted as described. Therefore CAR GS5 has been raised. *Verifier´s action:* Excel has been checked against GS MR and CDM documents.	~~CAR GS5~~	Ok
4.3. Water Quality and Quantity				
a) Measurement / Determination method *Describe how the monitoring parameter was measured / determined.* *Check if relevant equipment has been exchanged and if in cases of failures / downtimes of standard equipment other measurement / determination methods have been used.* *Assess whether the measurement / determination method is in line with the registered monitoring plan of the PDD and the applied methodology.*	/XLS/ /MR/ /VER/ /IM01/ /OPS/ /PRC/	*Description:* The water quality and quantity is monitored by how much dung is fed into the biodigester. The value is determined via an annual monitoring survey. *Verifier´s action:* By means of checking MR, database, besides records by motivator and conducted interviews as well as visit to sample number of households. *Conclusion:* As per passport the value should be determined yearly once by survey to 500 HHs. However the survey has not been conducted as described. Therefore CAR GS5 has been raised.	~~CAR GS5~~	Ok
c) Accuracy and QA/QC Procedure *Describe whether all applicable QA/QC procedures*	/XLS/ /MR/	*Description:* The Project coordinator SKG Sangha conducts random checks at village level to check the monitoring data.	~~CAR GS3~~	Ok

Checklist Item (incl. guidance for the verification team)	Refe-rence	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl
are met. Assess further if the calibration and maintenance of the monitoring equipment has been carried out by competent personnel.	/VER/ /IM01/ /OPS/ /PRC/	Further organises and checks the annual surveys. *Verifier´s action:* By means of checking MR, database, besides records by motivator and conducted interviews as well as visit to sample number of households. *Conclusion:* The data collection and procedure are in place and working well. However the survey has not been conducted as per schedule required. CAR GS3 and CAR GS5 have been raised.	~~CAR GS5~~	
c) Correctness *Determine whether the value or information given in the sustainability monitoring report is correct.* *In case of mistakes pl. provide details and descriptions of the CARs raised.*	/XLS/ /MR/ /VER/ /IM01/ /OPS/ /PRC/	☐ Correct ☒ Not correct *Description & Conclusion:* The value given in GS MR is inconsistent with CDM documents. Further as per passport the value should be determined yearly once by survey to 500 HHs. However the survey has not been conducted as described. Therefore CAR GS5 has been raised. *Verifier´s action:* Excel has been checked against GS MR and CDM documents.	~~CAR GS5~~	Ok
4.4. Soil condition				
a) Measurement / Determination method *Describe how the monitoring parameter was measured / determined.* *Check if relevant equipment has been exchanged and if in cases of failures / downtimes of standard equipment other measurement / determination*	/XLS/ /MR/ /VER/ /IM01/ /OPS/	*Description:* The soil condition is monitored by quantity of spent slurry disposed in the crop fields besides reduction in quantity of chemical fertilizers used in the agricultural soils. The value is determined via annual survey. *Verifier´s action:* By means of checking MR, database, besides records by motivator and conducted interviews as well as visit to	~~CAR GS5~~	OK

Checklist Item (incl. guidance for the verification team)	**Refe-rence**	**Verification Team Comments** (Means and results of assessment)	**Draft Concl.**	**Final Concl**
methods have been used. *Assess whether the measurement / determination method is in line with the registered monitoring plan of the PDD and the applied methodology.*	/PRC/	sample number of households. *Conclusion:* As per passport the value should be determined yearly once by survey to 500 HHs. However the survey has not been conducted as described. Therefore CAR GS5 has been raised.		
b) Accuracy and QA/QC Procedure *Describe whether all applicable QA/QC procedures are met. Assess further if the calibration and maintenance of the monitoring equipment has been carried out by competent personnel.*	/XLS/ /MR/ /VER/ /IM01/ /OPS/ /PRC/	*Description:* The Project coordinator SKG Sangha conducts random checks at village level to check the monitoring data. Further organises and checks the annual surveys. *Verifier´s action:* By means of checking MR, database, besides records by motivator and conducted interviews as well as visit to sample number of households. *Conclusion:* The data collection and procedure are in place and working well. However the survey has not been conducted as per schedule required. CAR GS3 and CAR GS5 have been raised.	~~CAR GS3~~ ~~CAR GS5~~	Ok
c) Correctness *Determine whether the value or information given in the sustainability monitoring report is correct.* *In case of mistakes pl. provide details and descriptions of the CARs raised.*	/XLS/ /MR/ /VER/ /IM01/ /OPS/ /PRC/	☐ Correct ☒ Not correct *Description & Conclusion:* The value given in draft GS MR is inconsistent with CDM documents. Further as per passport the value should be determined yearly once by survey to 500 HHs. However the survey has not been conducted as described. Therefore CAR GS5 has been raised. *Verifier´s action:* Excel has been checked against GS MR and CDM documents.	~~CAR GS5~~	Ok

Checklist Item (incl. guidance for the verification team)	Refe-rence	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl
4.5. Biodiversity				
a) Measurement / Determination method *Describe how the monitoring parameter was measured / determined.* *Check if relevant equipment has been exchanged and if in cases of failures / downtimes of standard equipment other measurement / determination methods have been used.* *Assess whether the measurement / determination method is in line with the registered monitoring plan of the PDD and the applied methodology.*	/XLS/ /MR/ /VER/ /IM01/ /OPS/ /PRC/	*Description:* The value given in draft GS MR is calculated from expected fuel savings as estimated ex-ante and quantified during monitoring surveys. *Verifier´s action:* By means of checking MR, database, besides records by motivator and conducted interviews as well as visit to sample number of households. *Conclusion:* As per passport the value should be determined yearly once by survey to 500 HHs. However the survey has not been conducted as described. Therefore CAR GS5 has been raised.	~~CAR GS5~~	Ok
b) Accuracy and QA/QC Procedure *Describe whether all applicable QA/QC procedures are met. Assess further if the calibration and maintenance of the monitoring equipment has been carried out by competent personnel.*	/XLS/ /MR/ /VER/ /IM01/ /OPS/ /PRC/	*Description:* The Project coordinator SKG Sangha conducts random checks at village level to check the monitoring data. Further organises and checks the annual surveys. *Verifier´s action:* By means of checking MR, database, besides records by motivator and conducted interviews as well as visit to sample number of households. *Conclusion:* The data collection and procedure are in place and working well. However the survey has not been conducted as per schedule required. CAR GS3 and CAR GS5 have been raised.	~~CAR GS3~~ ~~CAR GS5~~	Ok
c) Correctness *Determine whether the value or information given in the sustainability monitoring report is correct.* *In case of mistakes pl. provide details and*	/XLS/ /MR/ /VER/ /IM01/	☐ Correct ☒ Not correct *Description:* The value given in GS MR is inconsistent with CDM documents and within the parameter table. Besides the calculation given cannot be reproduced. Further as per passport the value should be determined yearly once by survey to 500	~~CAR GS5~~	Ok

Checklist Item (incl. guidance for the verification team)	Refe-rence	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl
descriptions of the CARs raised.	/OPS/ /PRC/	HHs. However the survey has not been conducted as described. Therefore CAR GS5 has been raised. *Verifier´s action:* Excel has been checked against GS MR and CDM documents. *Conclusion:* CAR GS5 has been raised.		
4.6. Quality of employment				
a) Measurement / Determination method *Describe how the monitoring parameter was measured / determined.* *Check if relevant equipment has been exchanged and if in cases of failures / downtimes of standard equipment other measurement / determination methods have been used.* *Assess whether the measurement / determination method is in line with the registered monitoring plan of the PDD and the applied methodology.*	/DAT/ /TRAIN/ /IM01/ /IM02/	*Description:* The quality of employment is determined from the number of trainings conducted by SKG Sangha for beneficiaries, masons and supervisors during the monitoring period. *Verifier´s action:* By checking MR, database, and conducted interviews onsite *Conclusion:* As per passport the value should be determined yearly once by survey to 500 HHs. However the survey has not been conducted as described. Therefore CAR GS5 has been raised.	~~CAR GS5~~	Ok
b) Accuracy and QA/QC Procedure *Describe whether all applicable QA/QC procedures are met. Assess further if the calibration and maintenance of the monitoring equipment has been carried out by competent personnel.*	/DAT/ /TRAIN/	It is not applicable.	N/A	
c) Correctness *Determine whether the value or information given in the sustainability monitoring report is correct.* *In case of mistakes pl. provide details and*	/DAT/ /TRAIN/	☐ Correct ☒ Not correct (initial assessment) *Description:* At draft verification stage, the values given in the monitoring report are correct can only be determined as correct pending closure of CAR GS5.	~~CAR GS5~~	Ok

Checklist Item (incl. guidance for the verification team)	Refe-rence	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl
descriptions of the CARs raised.		*Verifier´s action:* Employee List and Payroll records were checked *Conclusion:* The provided evidence match with the description given in the monitoring reports. However, as per registered GS passport the value should be determined yearly once by survey to 500 HHs. However the survey has not been conducted as described. Therefore CAR GS5 has been raised.		
4.7. Livelihood of the poor				
a) Measurement / Determination method *Describe how the monitoring parameter was measured / determined.* *Check if relevant equipment has been exchanged and if in cases of failures / downtimes of standard equipment other measurement / determination methods have been used.* *Assess whether the measurement / determination method is in line with the registered monitoring plan of the PDD and the applied methodology.*	/DAT/ /IM01/ /IM02/	*Description:* The Livelihood of the poor is estimated from estimated amount of money saved from using kerosene and fuelwood as well as income gained from activities carried out from time saved from wood collection and cooking. *Verifier´s action:* By checking MR, database, and conducted interviews onsite *Conclusion:* It is not clear how the value presented is determined. As per passport the value should be determined yearly once by survey to 500 HHs. However the survey has not been conducted as described. Therefore CAR GS5 has been raised.	~~CAR GS5~~	Ok
b) Accuracy and QA/QC Procedure *Describe whether all applicable QA/QC procedures are met. Assess further if the calibration and maintenance of the monitoring equipment has been carried out by competent personnel.*	/DAT/	It is not applicable.	N/A	
c) Correctness *Determine whether the value or information given in*	/DAT/	☐ Correct ☒ Not correct *Description:* At draft verification stage the value cannot be	~~CAR GS5~~	Ok

Checklist Item (incl. guidance for the verification team)	Refe-rence	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl
the sustainability monitoring report is correct. *In case of mistakes pl. provide details and descriptions of the CARs raised.*		unambiguously determined as correct. *Verifier´s action:* Sales database and interviews onsite *Conclusion:* It is not clear how the value presented is determined. Correctness to be confirmed upon closure of CAR GS5.		
4.8. Access to affordable and clean energy services				
a) Measurement / Determination method *Describe how the monitoring parameter was measured / determined.* *Check if relevant equipment has been exchanged and if in cases of failures / downtimes of standard equipment other measurement / determination methods have been used.* *Assess whether the measurement / determination method is in line with the registered monitoring plan of the PDD and the applied methodology.*	/DAT/ /ER/ /IM01/ /IM02/	*Description:* The Access to affordable and clean energy services is determined from the number of hours spent cooking on a biogas stove per day and is measured through surveys annually. *Verifier´s action:* By checking MR, database, and conducted interviews onsite *Conclusion:* value given is inconsistent with CDM documents. CAR GS5 has been raised	~~CAR GS5~~	Ok
b) Accuracy and QA/QC Procedure *Describe whether all applicable QA/QC procedures are met. Assess further if the calibration and maintenance of the monitoring equipment has been carried out by competent personnel.*	/DAT/	It is not applicable.	N/A	
c) Correctness *Determine whether the value or information given in the sustainability monitoring report is correct.*	/DAT/	☐ Correct ☒ Not correct *Description:* At draft verification stage the value cannot be unambiguously determined as correct as a finding has been	~~CAR GS5~~	Ok

Checklist Item (incl. guidance for the verification team)	**Refe-rence**	**Verification Team Comments** (Means and results of assessment)	**Draft Concl.**	**Final Concl**
In case of mistakes pl. provide details and descriptions of the CARs raised.		raised. *Verifier´s action:* Sales database and interviews onsite *Conclusion:* Correctness to be confirmed upon closure of CAR GS5.		
4.9. Human and institutional capacity				
a) Measurement / Determination method *Describe how the monitoring parameter was measured / determined.* *Check if relevant equipment has been exchanged and if in cases of failures / downtimes of standard equipment other measurement / determination methods have been used.* *Assess whether the measurement / determination method is in line with the registered monitoring plan of the PDD and the applied methodology.*	/DAT/ /ER/ /IM01/ /IM02/	*Description:* The Human and institutional capacity is determined from the number of people trained in construction and maintenance of biogas systems. 69 people were trained in construction and 22 in maintenance as well. *Verifier´s action:* By checking MR, database, and conducted interviews onsite as well as attendance registers of trainings. *Conclusion:* However CAR GS5 has been raised.	~~CAR GS5~~	Ok
b) Accuracy and QA/QC Procedure *Describe whether all applicable QA/QC procedures are met. Assess further if the calibration and maintenance of the monitoring equipment has been carried out by competent personnel.*	/DAT/	It is not applicable.	N/A	N/A
c) Correctness *Determine whether the value or information given in the sustainability monitoring report is correct.* *In case of mistakes pl. provide details and descriptions of the CARs raised.*	/DAT/ /IM01/ /IM02/	☒ Correct ☐ Not correct *Description:* The value is assessed as correct and consistent with reports. *Verifier´s action:* Sales database and interviews onsite	~~CAR GS5~~	Ok

Checklist Item (incl. guidance for the verification team)	Refe-rence	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl
		Conclusion: Value is correct based on check of related attendance registers as well as PP database and interviews.		
4.10. Quantitative employment and income generation				
a) Measurement / Determination method *Describe how the monitoring parameter was measured / determined.* *Check if relevant equipment has been exchanged and if in cases of failures / downtimes of standard equipment other measurement / determination methods have been used.* *Assess whether the measurement / determination method is in line with the registered monitoring plan of the PDD and the applied methodology.*	/DAT/ /ER/ /IM01/ /IM02/	*Description:* The Quantitative employment and income generation is determined from the number of employed people, fuel savings and wages earned, through project monitoring surveys annually. *Verifier´s action:* By checking MR, database, and conducted interviews onsite *Conclusion:* CAR GS5 has been raised.	~~CAR GS5~~	Ok
b) Accuracy and QA/QC Procedure *Describe whether all applicable QA/QC procedures are met. Assess further if the calibration and maintenance of the monitoring equipment has been carried out by competent personnel.*	/DAT/	It is not applicable.	N/A	N/A
c) Correctness *Determine whether the value or information given in the sustainability monitoring report is correct.* *In case of mistakes pl. provide details and descriptions of the CARs raised.*	/DAT/	☐ Correct ☒ Not correct *Description:* It is unclear how the value is determined. *Verifier´s action:* Sales database and interviews onsite *Conclusion:* CAR GS5 Has been raised accordingly.	~~CAR GS5~~	Ok
4.11. Balance of payments and investment				

Checklist Item (incl. guidance for the verification team)	**Refe-rence**	**Verification Team Comments** (Means and results of assessment)	**Draft Concl.**	**Final Concl**
a) Measurement / Determination method *Describe how the monitoring parameter was measured / determined.* *Check if relevant equipment has been exchanged and if in cases of failures / downtimes of standard equipment other measurement / determination methods have been used.* *Assess whether the measurement / determination method is in line with the registered monitoring plan of the PDD and the applied methodology.*	/DAT/ /ER/ /IM01/ /IM02/	*Description:* The Balance of payments and investment is determined from avoided kerosene, fuelwood, and inorganic fertilizer use, and is measured through surveys annually (direct questions). *Verifier´s action:* By checking MR, database, and conducted interviews onsite *Conclusion:* As per passport the value should be determined yearly once by survey to 500 HHs. However the survey has not been conducted as described. Therefore CAR GS5 has been raised	~~CAR GS5~~	Ok
b) Accuracy and QA/QC Procedure *Describe whether all applicable QA/QC procedures are met. Assess further if the calibration and maintenance of the monitoring equipment has been carried out by competent personnel.*	/DAT/	It is not applicable.	N/A	N/A
c) Correctness *Determine whether the value or information given in the sustainability monitoring report is correct.* *In case of mistakes pl. provide details and descriptions of the CARs raised.*	/DAT/	☐ Correct ☒ Not correct *Description:* The value cannot be assessed as correct until finding is closed. *Verifier´s action:* Sales database and interviews onsite *Conclusion:* Value is inconsistent and correctness to be confirmed upon closure of CAR GS5.	~~CAR GS5~~	Ok
4.12. Technology transfer and technological self-reliance				
a) Measurement / Determination method *Describe how the monitoring parameter was*	/DAT/ /ER/	*Description:* The technology transfer and technological self-reliance is determined from the number of beneficiaries trained	OK	OK

Checklist Item (incl. guidance for the verification team)	**Refe-rence**	**Verification Team Comments** (Means and results of assessment)	**Draft Concl.**	**Final Concl**
measured / determined. *Check if relevant equipment has been exchanged and if in cases of failures / downtimes of standard equipment other measurement / determination methods have been used.* *Assess whether the measurement / determination method is in line with the registered monitoring plan of the PDD and the applied methodology.*	/IM01/ /IM02/	on the biogas technology and measured annually. 578 beneficiaries have been trained during this monitoring period. *Verifier´s action:* By checking MR, database, and conducted interviews onsite *Conclusion:* value given is consistent with provided documents.		
b) Accuracy and QA/QC Procedure *Describe whether all applicable QA/QC procedures are met. Assess further if the calibration and maintenance of the monitoring equipment has been carried out by competent personnel.*	/DAT/	It is not applicable.	OK	OK
c) Correctness *Determine whether the value or information given in the sustainability monitoring report is correct.* *In case of mistakes pl. provide details and descriptions of the CARs raised.*	/DAT/	☒ Correct ☐ Not correct *Description:* The value is assessed as correct and consistent with reports and database. *Verifier´s action:* Sales database and interviews onsite *Conclusion:* value is correct as per records.	OK	OK
5. ER Calculation				
5.1 Traceability *Assess if the calculation is fully traceable. In case of complex calculations an Excel calculation spread-sheet shall be used. All applied formulae must be visible.*	/XLS/ /MR/ /PDD/ /VAL/	*Description:* The PP had used an Excel calculation sheet to provide evidence of the measured parameter and the ER to be generated. *Verifier´s action:* The emission reduction calculation spread sheet was provided by the PP. *Conclusion:* The emission reduction calculation is traceable and	OK	OK

Checklist Item (incl. guidance for the verification team)	Refe-rence	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl
		all formulae are visible.		
5.2 Parameter consistency *Assess whether all internal and external parameters and data used for calculation are applied consistently in the monitoring report and the calculation spreadsheet?* *Consider only the correct data exchange between the monitoring report and the calculation spreadsheet (if any). The evaluation of the correctness of the parameter values itself should be discussed in the chapter "Monitoring Parameters".*	/XLS/ /MR/ /PDD/	*Description:* By means of checking MR against ER spreadsheet inconsistencies have been identified. Further the monitoring survey was not conducted as required by the monitoring plan. *Verifier´s action:* Monitoring report and Excel calculation spread sheet were checked accordingly. *Conclusion:* Due to the above assessment CAR GS5 has been issued as well as a PRC has been submitted to UNFCCC w.r.t. deviation from monitoring plan w.r.t. the monitoring survey conducted.	~~CAR GS5~~	Ok
5.3 Applied formulae *Check if the applied formulae are in accordance with the monitoring plan and / or the approved methodology.*	/MR/ /VER/ /VAL/	*Description:* All applied formulae and methods for calculating baseline emissions are in accordance with the monitoring plan and the approved methodology. Neither project emissions nor leakage are considered for this project. *Verifier´s action:* Monitoring report and Excel calculation spread sheet were checked accordingly and crosschecked with the monitoring plan and the approved methodology. *Conclusion:* All applied formulae are in accordance with the monitoring plan and the approved methodology as well. No discrepancies were identified. The calculation is completely traceable. No information/calculation gaps have been identified.	OK	OK
5.4 Completeness of calculation *Assess whether the provided calculations are complete and reflect all requirements of the*	/XLS/ /MR/	*Description:* All applied formulae are in accordance with the monitoring plan. Neither project emissions nor leakage are considered for this project.	OK	OK

Checklist Item (incl. guidance for the verification team)	**Refe-rence**	**Verification Team Comments** (Means and results of assessment)	**Draft Concl.**	**Final Concl**
monitoring plan. *Check especially that no standard or old values have been used for calculation where calculations based on up-to-date data is required.*	/PDD/ /AMS-ID/	*Verifier´s action:* Monitoring report and Excel calculation spread sheet were checked accordingly and crosschecked with the monitoring plan. *Conclusion:* All applied formulae are correct.		
6. Quality Management; defined organisational structure, responsibilities and competencies Internal QA/QC and document control				
6.1 Management System *Check if the GHG data monitoring system is embedded in a (certified) company quality management system, if so, check if all CDM monitoring procedures been fully integrated in the project participant's quality management system. If not how the GHG management system has been implemented.*	/MR / /IM01/	*Description:* Although there is no certified quality management system in place. However the PP has implemented a related database. Besides the PP has set up a dedicated network to distribute knowledge and systems as well as collect related data. At village level so called motivators are established, at taluk level supervisors with a team and at project level personnel at PP SKG Sangha. For each village digesters are installed a dedicated person is nominated. *Verifier´s action:* Interviews were performed with personnel. As well as check of supporting documents. *Conclusion:* GHG and sustainability monitoring system is included and integrated in the management system of the project and it could be evidenced and confirmed during site visit that GHG management system is completely implemented. However as the monitoring survey was not conducted as per monitoring plan CAR GS5 has been raised.	~~CAR GS5~~	Ok
6.2 Roles and Positions *Check if all roles and positions of each person in the GHG data management process are clearly defined*	/MR/ /IM01/	*Description:* The roles and positions were evidenced on the List of Employees. Responsibilities for measurements, collection and compilation of data, data storage and archiving are clearly	OK	OK

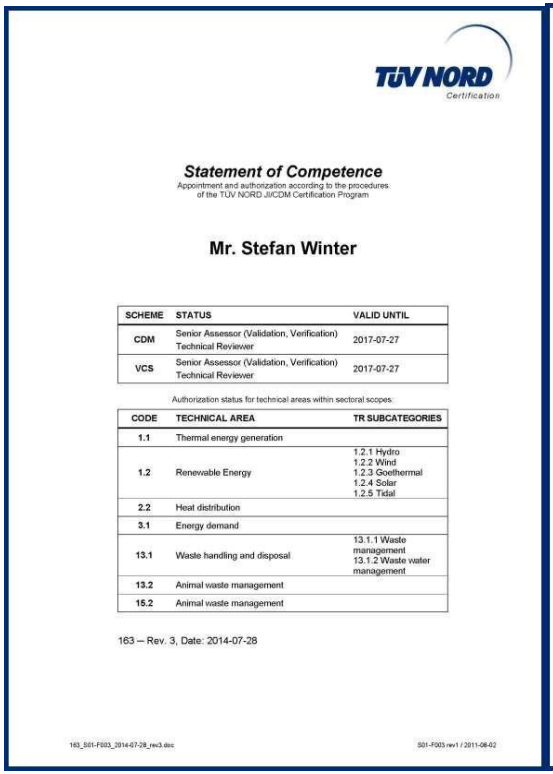
Checklist Item (incl. guidance for the verification team)	**Refe-rence**	**Verification Team Comments** (Means and results of assessment)	**Draft Concl.**	**Final Concl**
and implemented, from raw data generation to submission of the final data. *Check further if only duly qualified personnel is involved in the monitoring procedures.*	/TRAIN/	stated. *Verifier´s action:* Interviews were performed during on site visit as well as training records. *Conclusion:* It was verified by the VT that only duly qualified personnel is involved in the monitoring procedures. Training evidence of all personnel involved in the project was checked. Personnel confirmed that rolls are established and correctly followed.		
6.3 Trainings *Check if initial trainings have been carried out, in case deemed necessary.*	/IM01/ /TRAIN/	*Description:* Different trainings are provided to corresponding people. Trainings to beneficiaries focus on digester and stove operation and maintenance and trainings for supervisors and motivators also next to operation and technology esp. on data collection or administration. *Verifier´s action:* Interviews were performed during on site visit and training evidence were provided to the verification team. *Conclusion:* The PP had provided initial training to all personnel involved at several levels.	OK	OK
6.4 Troubleshooting procedures *Assess whether troubleshooting procedures have been implemented.*		*Description:* As per CDM Verification Report *Verifier´s action:* It was verified (as CDM project) by TÜV NORD, according to verification report. *Conclusion:* As per CDM verification report	OK	OK
6.5 Maintenance procedures Are appropriate maintenance procedures in place?	/IM01/ /MP/	*Description:* As per CDM Verification Report *Verifier´s action:* It was verified (as CDM project) by TÜV NORD, according to verification report. *Conclusion:* As per CDM verification report	OK	OK
6.7 Data archive and data protection	/IM01/	*Description:* As per CDM Verification Report	OK	OK

Checklist Item (incl. guidance for the verification team)	**Refe-rence**	**Verification Team Comments** (Means and results of assessment)	**Draft Concl.**	**Final Concl**
Check whether all records of monitoring parameters are archived according to the monitoring plan.	/PDD/	*Verifier´s action:* It was verified (as CDM project) by TÜV NORD, according to verification report /VER-CDM/. *Conclusion:* As per CDM verification report		

ANNEX 2: CALIBRATION DATES AND VALIDITY OF INSTALLED MONITORING EQUIPMENT

Monitoring equipment	Related monitoring parameter as per applicable registered monitoring plan	Serial number	Type	Accuracy or accuracy class	Previous calibration (last calibration before start of this monitoring period)	Calibration date(s) during this monitoring period	Validity of calibration(s)	Delay in calibration: yes/no	Period of delayed calibration
n.a.									

ANNEX 2: STATEMENTS OF COMPETENCE OF TEAM MEMBERS



TÜV NORD Certification

Statement of Competence

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

Mr. Stefan Winter

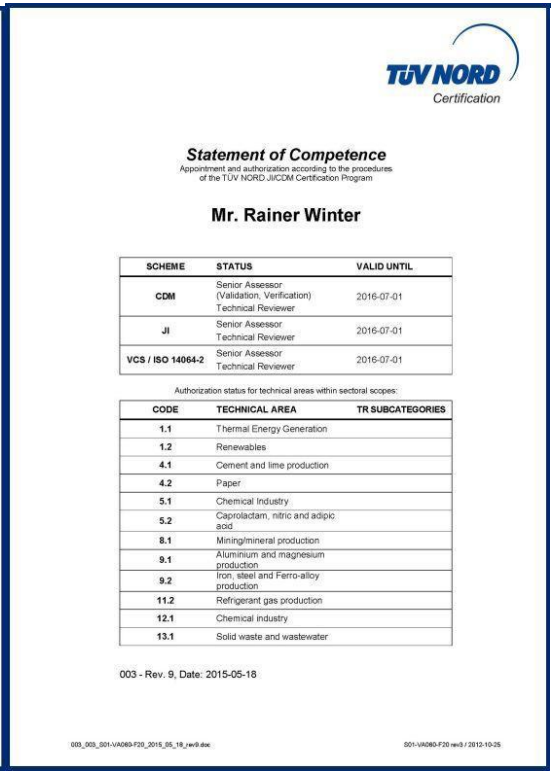
SCHEME	STATUS	VALID UNTIL
CDM	Senior Assessor (Validation, Verification) Technical Reviewer	2017-07-27
VCS	Senior Assessor (Validation, Verification) Technical Reviewer	2017-07-27

Authorization status for technical areas within sectoral scopes:

CODE	TECHNICAL AREA	TR SUBCATEGORIES
1.1	Thermal energy generation	
1.2	Renewable Energy	1.2.1 Hydro 1.2.2 Wind 1.2.3 Geothermal 1.2.4 Solar 1.2.5 Tidal
2.2	Heat distribution	
3.1	Energy demand	
13.1	Waste handling and disposal	13.1.1 Waste management 13.1.2 Waste water management
13.2	Animal waste management	
15.2	Animal waste management	

163 – Rev. 3, Date: 2014-07-28

163_S01-F003_2014-07-28_rev3.doc S01-F003 rev1 / 2011-08-02



TÜV NORD Certification

Statement of Competence

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

Mr. Rainer Winter

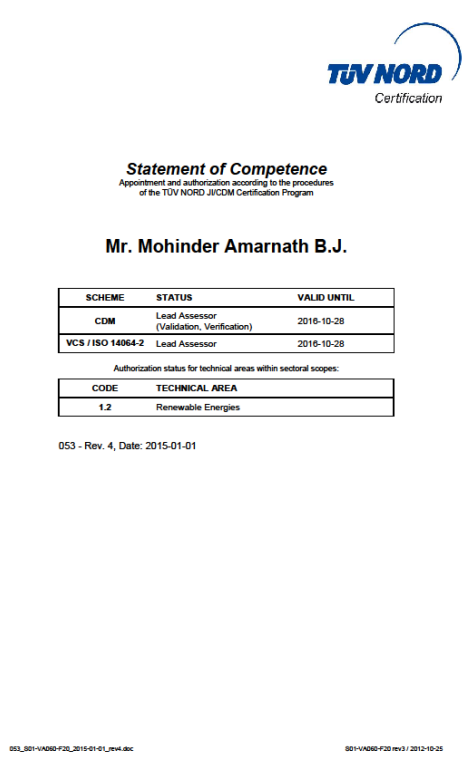
SCHEME	STATUS	VALID UNTIL
CDM	Senior Assessor (Validation, Verification) Technical Reviewer	2016-07-01
JI	Senior Assessor Technical Reviewer	2016-07-01
VCS / ISO 14064-2	Senior Assessor Technical Reviewer	2016-07-01

Authorization status for technical areas within sectoral scopes:

CODE	TECHNICAL AREA	TR SUBCATEGORIES
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	
11.2	Refrigerant gas production	
12.1	Chemical industry	
13.1	Solid waste and wastewater	

003 - Rev. 9, Date: 2015-05-18

003_003_S01-VA060-F20_2015_05_18_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. Mohinder Amarnath B.J.

SCHEME	STATUS	VALID UNTIL
CDM	Lead Assessor (Validation, Verification)	2016-10-28
VCS / ISO 14064-2	Lead Assessor	2016-10-28

Authorization status for technical areas within sectoral scopes:

CODE	TECHNICAL AREA
1.2	Renewable Energies

053 - Rev. 4, Date: 2015-01-01

053_S01-VA060-F20_2015-01-01_rev4.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. Indrapal Parmar

SCHEME	STATUS	VALID UNTIL
CDM	Lead Assessor (Validation, Verification)	2018-01-06
VCS / ISO 14064-2	Lead Assessor	2018-01-06

Authorization status for technical areas within sectoral scopes:

CODE	TECHNICAL AREA	TR SUBCATEGORIES
1.2	Renewable Energies	

191 - Rev. 4, Date: 2015-01-07

191_S01-VA060-F20_2015-01-07_rev4.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. Ulrich Walter

SCHEME	STATUS	VALID UNTIL
CDM	Lead Assessor (Validation, Verification) Technical Reviewer	2014-12-08
JI	Lead Assessor Technical Reviewer	2014-12-08
VCS / ISO 14064-2	Lead Assessor Technical Reviewer	2014-12-08

Authorization status for technical areas within sectoral scopes:

CODE	TECHNICAL AREA	TR SUBCATEGORIES
1.1	Thermal Energy Generation	
1.2	Renewable Energies	
2.1	Electricity Distribution	
2.2	Heat Distribution	
3.1	Energy Demand	
5.1	Chemical Process Industries	
11.1	Chemical Process Industries	
12.1	Chemical Process Industries	
13.1	Waste Handling and Disposal	13.1.1 Waste Management 13.1.2 Waste Water Management
13.2	Animal Waste Management	
15.2	Animal Waste Management	

149 – Rev. 4, Date: 2012-02-27

149_S01-F003_2012-02-27_rev4.doc S01-F003 rev2 / 2012-04-05