

GOLD STANDARD MONITORING REPORT



Project Title

Kolar Biogas Project

GS No: 670

UNFCCC – CDM No: 4058

Monitoring report version number: 02

Completion date of the monitoring report: 22/10/2015

Monitoring Period

1st GS CDM Monitoring Period: 01/04/2012 – 31/12/2013

Status of GS Project

GS registration date: 18/10/2013

GS version: 2.0

GS crediting period: 01/04/2012 – 31/03/2022

Type of crediting period: Fixed crediting period.

Type of project activity: regular project activity.

The starting date of crediting period of the GS CDM project was on 01/04/2012.

All important basic GS information about this project can be found in the GS Passport version 4, dated 03/12/2015. The passport and supporting documents are available on request on the GS market Registry and

https://products.markit.com/br-reg/public/project.jsp?project_id=103000000002257

According to section 4.1 of the GS Toolkit, this monitoring report comprises

- Monitoring table from the PDD and Passport;
- Data entry sheets of self-monitored parameters;
- Remarks on the monitoring process used;
- Current status of the parameters in the table;
- Other data sources to substantiate the claims;
- Scoring of the indicators compared to the baseline indicator situation.
- The main part of the report follows up on the Monitoring Plan laid out in the GS Passport

Carbon Monitoring conform PDD

The valid PDD contains a description and a list of all monitored data (cf. section B.7). This is reflected in the latest CDM Monitoring Report with the latest data.

Amount of Emission Reductions achieved:

Vintage	GS CERS (tCO ₂ e)
2012	5,623
2013	19,671
Total	25,294

The actual PDD can be found on the UNFCCC Project Website:

<https://cdm.unfccc.int/Projects/DB/SGS-UKL1287587238.03/view>

Sustainability Monitoring Parameters

Data / Parameter:	Air Quality
Unit:	Hours/day
Description:	a) How many days in a year and how many hours a single burner is used per day the plant is functioning b) Reduction in incidence of hospitalization
Measured/ Calculated / Default:	
Source of data:	Monitoring report
Value(s) of monitored parameter:	a) 365days, 2.7hours/day b) Yes
Monitoring equipment:	-
Measuring/ Reading/ Recording frequency:	Yearly once
Calculation method (if applicable):	the value of biogas burner usage per day has been calculated with 95% confidence and 5% margin of error.
QA/QC procedures:	In the monitoring survey it was surveyed whether kerosene and firewood has been completely replaced by biogas.
Purpose of data:	Sustainability indicator
Additional comment:	In the PDD it is anticipated that the operational time per day of an average stove will be 4.6 hours. Whereas monitoring data showed that average operational time is 2.7 hours. This time of operation is fulfilling all the cooking needs of the households. Complete replacement of firewood and kerosene by the project unit is the evidence for fulfilment of complete cooking needs of the households. More over the households are feeding lesser dung to the plant to suit their need for gas.

Comment:

Data / Parameter:	Water quality and quantity
Unit:	Kg/day
Description:	How much dung is fed into the biogas plant daily.
Measured/ Calculated / Default:	Measured
Source of data:	Monitoring survey
Value(s) of monitored parameter:	44
Monitoring equipment:	-
Measuring/ Reading/ Recording frequency:	Yearly once
Calculation method (if applicable):	Calculation of sum of baskets and basket size fed per day per household
QA/QC procedures:	N.A.
Purpose of data:	Sustainability indicator
Additional comment:	-

Data / Parameter:	Soil condition
Unit:	Liters/year
Description:	a) Quantity of spent slurry disposed in the crop fields b) Reduction in quantity of chemical fertilisers used in the agricultural soils
Measured/ Calculated / Default:	Measured
Source of data:	Monitoring survey
Value(s) of monitored parameter:	a) 32,120 b) 8 kg
Monitoring equipment:	
Measuring/ Reading/ Recording frequency:	
Calculation method (if applicable):	a) Average amount of the dung fed plus equal quantity of water per day multiplied with 365 days. Thus $(44 + 44) * 365 = 32,120$ liters b) Total number of bags reduced times bag size (50kg). Thus $0.16 * 50 = 8$ kg
QA/QC procedures:	
Purpose of data:	Sustainability indicator
Additional comment:	

Data / Parameter:	Biodiversity
Unit:	t/y
Description:	The amount of non-renewable fuel wood saved by the project.

Measured/ Calculated / Default:	Measured
Source of data:	Baseline Survey and Monitoring Survey
Value(s) of monitored parameter:	21,301
Monitoring equipment:	-
Measuring/ Reading/ Recording frequency:	Yearly once
Calculation method (if applicable):	Amount of fuel wood saved per day times average functioning days of the 1 st crediting period of a unit times number of units installed. $12.99\text{kg} * 403 * 4069 / 1000 = 21,301$ tonnes
QA/QC procedures:	
Purpose of data:	Sustainability indicator
Additional comment:	

Data / Parameter:	Quality of employment
Unit:	Trainings
Description:	Total number of trainings given to different types of people involved in different activities and number of people trained
Measured/ Calculated / Default:	
Source of data:	SKGS database
Value(s) of monitored parameter:	a) 578 beneficiaries and 14 trainings b) 69 masons in 3 trainings c) 22 supervisors in 3 trainings
Monitoring equipment:	
Measuring/ Reading/ Recording frequency:	Times and number per year
Calculation method (if applicable):	Data available with the SKG Sangha
QA/QC procedures:	
Purpose of data:	Sustainability indicator
Additional comment:	

Data / Parameter:	Livelihood of the poor
Unit:	Rupees/year
Description:	a) Money spent on fire wood for cooking, Money spent on kerosene for cooking and any additional income generation by the women through the saved time would have spent on fuel wood collection and cooking
Measured/ Calculated / Default:	Measured
Source of data:	Monitoring survey
Value(s) of monitored parameter:	a) 2,784

Monitoring equipment:	-
Measuring/ Reading/ Recording frequency:	Yearly once
Calculation method (if applicable):	N.A.
QA/QC procedures:	N.A.
Purpose of data:	Sustainability indicator
Additional comment:	

Data / Parameter:	Access to affordable and clean energy services
Unit:	
Description:	How many hours each beneficiary is using biogas stove per day
Measured/ Calculated / Default:	Measured
Source of data:	Monitoring survey
Value(s) of monitored parameter:	2.7
Monitoring equipment:	N.A.
Measuring/ Reading/ Recording frequency:	Yearly once
Calculation method (if applicable):	N.A.
QA/QC procedures:	N.A.
Purpose of data:	Sustainability indicator
Additional comment:	The monitoring Survey showed that

Data / Parameter:	Human and institutional capacity
Unit:	Number of People
Description:	How many people were trained on a) construction b) monitoring and maintenance of biogas plant
Measured/ Calculated / Default:	Measured
Source of data:	SKG Sangha data base
Value(s) of monitored parameter:	a) 69 b) 22
Monitoring equipment:	-
Measuring/ Reading/ Recording frequency:	crediting period
Calculation method (if applicable):	SKG Sangha data base
QA/QC procedures:	
Purpose of data:	Sustainability indicator
Additional comment:	-

Data / Parameter:	Quantitative employment and income generation
Unit:	Number of People /Rupees
Description:	a) No of people employed due to the project activity b) savings due to project activity c) Existing local wages and wages paid by the project
Measured/ Calculated / Default:	Measured
Source of data:	Monitoring Survey
Value(s) of monitored parameter:	a) 22 b) 2784 c) Existing wages 290/day. SKGS is paying more than 500/day
Monitoring equipment:	-
Measuring/ Reading/ Recording frequency:	Yearly once
Calculation method (if applicable):	N.A.
QA/QC procedures:	N.A.
Purpose of data:	Sustainability indicator
Additional comment:	Monitoring survey data

Data / Parameter:	Balance of payments and investment
Unit:	Rupees
Description:	Monetary savings due to decrease in Kerosene and chemical fertiliser use
Measured/ Calculated / Default:	Measured
Source of data:	Monitoring Survey
Value(s) of monitored parameter:	2,784 rupees per year
Monitoring equipment:	
Measuring/ Reading/ Recording frequency:	
Calculation method (if applicable):	A direct question to the beneficiaries has been coined to get the information in the monitoring sheet. The collected data has been calculated with 95% confidence interval.
QA/QC procedures:	
Purpose of data:	Sustainability indicator
Additional comment:	The money saved on purchase of firewood, kerosene and chemical fertilisers

Data / Parameter:	Technology transfer and technological self-reliance
Unit:	Trainings given
Description:	How many beneficiaries are trained
Measured/ Calculated / Default:	
Source of data:	SKGS data base

Value(s) of monitored parameter:	578 beneficiaries were trained in 14 training programmes
Monitoring equipment:	
Measuring/ Reading/ Recording frequency:	
Calculation method (if applicable):	
QA/QC procedures:	
Purpose of data:	Sustainability indicator
Additional comment:	

Deviation from monitoring Plan

Time of conduction of monitoring survey

A temporary deviation from registered monitoring plan has been applied during this monitoring period. In the registered PDD it is stated the monitoring survey for all parameters will be conducted every year. The monitoring of the two parameters “units in operation” and “hours of operation” are continuously monitored and have been monitored since 2012 on a daily basis. But the Monitoring survey for monitoring the other parameters was not conducted until 1 year and 9 month after the project activity start. This is a temporary deviation from monitoring plan as written in the PDD.

The reason for this temporary deviation from registered monitoring plan is the fact that the project activity achieved Gold Standard registration only in January 2014. We did not want to conduct the monitoring before successful GS registration, because only after registration we could be sure that the monitoring plan was approved. There were many sustainable parameters to be monitored from GS side apart from the CDM. The GS is insisting on 95% precision of data and hence the baseline values will be changed which will affect the ER calculations. This approach is more conservative and we felt that more accurate too. The consequence is that the first monitoring survey was conducted only 1 year and 9 month after the start of crediting period and thus deviates from the registered monitoring plan, which states that the monitoring survey shall be conducted on yearly basis.

The deviation is relating to the date of monitoring survey: The first monitoring survey was conducted in December 2013 instead of March 2013.

The deviation is applicable for the duration of the first year of project activity which is the period from 01/04/2012 – 31/03/2013. In that year, 3145 units have been installed and continuously monitored but no comprehensive monitoring survey was conducted. From 01/04/2013 onwards, a monitoring survey was and will be conducted on yearly basis, always at the end of the monitoring period, which is in line with the registered monitoring plan.

The monitoring plan will be as following:

Monitoring period	Monitoring Survey
01/04/2012 – 31/12/2013	End of 2013
01/01/2014 – 31/12/2014	End of 2014
01/01/2015 – 31/12/2015	End of 2015
01/01/2016 – 31/12/2016	End of 2016
01/01/2017 – 31/12/2017	End of 2017
01/01/2018 – 31/12/2018	End of 2018

01/01/2019 – 31/12/2019	End of 2019
01/01/2020 – 31/12/2020	End of 2020
01/01/2021 – 31/03/2022	End of 2021

Below please find the justification, why the temporary deviation from monitoring plan is a conservative approach:

This is a biogas project. Values of number and type of cattle will affect the ERs. Monitored values were lower than the baseline values. Thus it will be conservative to apply these values for 2012.

The other values that will affect the ERs are the consumption of fire wood and kerosene for cooking needs. When the biogas plant functions well then the generated biogas will replace the fire wood and kerosene. Chances of biogas plant functionality will come down with longer installed time. If the monitoring survey has been conducted in the middle of the 2012 all the plants will be new and function well. If the same plants were monitored after a long time the functionality rate may be lower. This is also a conservative approach.

The same applies for the survey of non-project households. The longer the project activity is running the bigger is the positive impact on the availability of wood fuel in the project region and the probability of leakage due to use of more biomass in non-project Households increases over the years. Thus it is conservative to use the survey of 2014 for 2012 and 2013.

The same applies for use of kerosene in non-project households: The longer the project activity is running the bigger is the impact on kerosene availability in the project region. If there is less demand for kerosene, the price will drop, and thus the incentive for non-project HH to consume more kerosene than before.

The following table shows the comparative values of the baseline and monitored to prove the conservativeness:

Sl. No.	Parameter	Baseline	Monitored
1	Annual hours of operation of a unit (operation of a burner)	No data collected for traditional cook stove	1066
2	Annual amount of kerosene used for cooking purpose	24.12	0
3	Annual amount of fuel wood used – baseline and non project household	21.5	15.4
4	Animal population per household (for each type of cattle)		
	Dairy cow	2.56	2.37
	Buffalo	1.17	0.33
	Other cattle	0.55	0.47
5	Amount of manure generated on the farm	25.76	18.81
6	Amount of animal manure fed into the system in tons/year	No unit to feed into	17.45
7	Amount of manure fed into compost pit in kg/year	27'432	1'354
8	Proper soil application of the final sludge in tons/year	0	1.98
9	Number of units operating – total number of biogas plants	0	4069

The value of number of cattle, their generation of dung and amount of biomass use for cooking will affect the number of ERs. From the above table it is clear that the monitored values are lower than the baseline. Thus it is conservative to use the survey of 2014 for 2012 and 2013.

This temporary deviation from monitoring plan has been approved by the EB board on 01/10/2015 by the board with the following PRC approval number: PRC-4058-001

Sample size

As per registered PDD and monitoring plan a minimum of 169 project-HHs have to be included in the monitoring survey and 58 non-project HHs to comply with the standard of sampling and survey given by the UNFCCC. During the conducted survey 367 project households and 150 non-project households have been visited and interviewed. This is higher than the required number as required during validation based on the requirements by the standard for sampling and survey.

Even though the maximum result of the sample size calculation was given as 169 Households and 58 non-project households, in the Sustainable Monitoring Plan, for many parameters it is written that a total of 500 Household will be surveyed each year. This number of 500 corresponds to 5% of the total units (which was originally planned to be 10'000 units). The Project Owner SKG Sangha set this higher benchmark to survey a number of 5% of all units implemented to get more accurate data. During the first monitoring period 4069 units were installed and thus 204 units should have been surveyed according to the 5% rule. 367 units have actually been surveyed, which is clearly above the required sampling size.

Conservativeness

The monitoring survey was conducted in three stages; Dec 2013, Feb 2014 and June 2014. During its assessment the DOE has found that calculation of the values was conservative and that the lower bound values were applied for all the values. Further the DOE also calculated the ER result applying only the survey results with lower bound values of Dec 2013 and Feb 2014 and found that the total ER result for monitoring period 1 would be 25,294 tCO₂, 1.3% lower in comparison to the ER result applying all data of 25,634 tCO₂. Thus to the PP decided to apply only the result of the survey data from Dec 2013 and Feb 2014 for this monitoring period which is even more conservative.