



**Verified Carbon
Standard**

DISTRIBUTION OF IMPROVED COOK STOVE - PHASE VI



Document Prepared By Earthood Services Private Limited

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Project Title	Distribution of Improved cook stove - Phase VI
Report Title	Distribution of Improved cook stove - Phase VI
Version	02
Report ID	VCS.VAL 21.53
Verification Period	15-December-2012 to 14-December-2017 (First and last date included)
Client	EKI Energy Services Limited
Pages	38
Date of Issue	14-February-2022 (updated for VCS Accuracy Review)
Prepared By	Earthood Services Private Limited

Summary:

GAP Validation purpose: The project activity involves the distribution of improved cook stoves as per IS13152 (Part 1): 1991 (Solid Biomass – Chulha Part 1 (Metallic)) of CPRI Design, Type I design approved by Bureau of Indian Standard. The Ministry of New and renewable Energy has approved Vikram cook stoves and Fabricators for manufacturing of the cook stoves as per the above specifications and the same stoves are distributed in this project.

This project involves distribution of improved cook stoves in tribal households (Schedule Tribe) and families living below the poverty level (BPL) in the villages of Satara and Solapur districts in Maharashtra, India. The improved cook stoves through replacement of inefficient traditional cook stove will contribute towards reduction of greenhouse gas emission resulting in the reduction of firewood consumption leading to climate change mitigation in a sustainable manner.

The project is registered under CDM mechanism (reference number: 8732). The present validation (gap validation) is under VCS mechanism and assessment of clause (1.1, 1.2, 1.3, 1.5, 1.6, 1.7, 1.9, 1.10, 1.12, 1.13, 1.14, 1.15.1, 1.16, 1.17 and 3.6) of the VCS Project Description Template. The same is in line with Para 3.19.5 of VCS standard version 4.1.

Verification purpose: This project involves distribution of improved cook stoves in tribal households (Schedule Tribe) and families living below the poverty level (BPL) in the villages of Satara and Solapur districts in Maharashtra, India. The improved cook stoves through replacement of inefficient traditional cook stove will contribute towards reduction of greenhouse gas emission resulting in the reduction of firewood consumption leading to climate change mitigation in a sustainable manner. Total 14,450 cook stoves were distributed during first year operation of the project activity i.e. 15-December-2012 to 14-December-2013.

This is the first monitoring period under VCS and covers the activity from 15-December-2012 to 14-December-2017 (First and last date included). The project is registered under Clean Development Mechanism (CDM) of UNFCCC with 10 years crediting period (Fixed) (Reference No: 8732¹) on 14-December-2012. The Crediting period of the project under CDM started on 15-December-2012 and will end on 14-December-2022. The start date of the project activity is taken as 12-October-2012, the date on which distribution of ICS was started and thus fulfills requirements of VCS standard, version 4.1. The crediting period for VCS began same as CDM and started on 15-December-2012 and will end on 14-December-2022. The project proponent will also not claim GHG emission reductions under two schemes for the same period. The GHG credits from 15-December-2012 to 14-December-2017 will be claimed under VCS only. An undertaking from the project participant confirms that project will not claim any other scheme benefits for the concerned monitoring period.

EKI Energy Services Limited contracted **ESPL** to conduct the verification of the project “Distribution of Improved cook stove - Phase VI” (VCS ID PL2427). The scope of verification includes confirming the implementation of the monitoring plan and the application of methodology AMS II-G., Energy efficiency measures in thermal applications of non-renewable biomass, Version 03.0.

The verification consisted of three phases: a. Desk review of the project; b. Follow-up remote audit; c. Resolution of outstanding issues and issuance of the final verification report and opinion. The overall verification, from Contract Review to Verification Report & Opinion, was conducted following ESPL’s internal quality procedures.

A risk-based approach has been followed to perform this verification activity. In the course of gap validation and verification, 07 Corrective Action request (CAR) and 03 Clarification Requests (CLs) were raised and successfully closed (Including GAP validation & verification) in Appendix 2. No FAR raised during this GAP Validation and verification. The review of the project description and additional documents related to baseline and monitoring methodology; the subsequent background investigation, follow-up interviews and PP have provided Earthood with sufficient evidence to verify the fulfilment of the stated criteria of VCS.

The only purpose of the verification is its usage during the issuance process as part of the VCS project cycle. Therefore, Earthood can’t be held liable by any party for decisions made or not made based on the verification opinion, which will go beyond that purpose.

The verification has been planned and organized to achieve a Reasonable Level of assurance as per the requirement of VCS. As the PP has applied sampling approach and same samples for all the monitoring parameters, hence the VVB had planned to apply the acceptance sampling in accordance with the paragraph 27-33 of the “Standard: Sampling and surveys for CDM project activities and programme of activities, version 09.0”.

Verified GHG emission reductions and removals in this verification period:

Year	Baseline	Project	Leakage	Net GHG emission
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¹ <https://cdm.unfccc.int/Projects/DB/TUEV-SUED1140718710.42/view>

	emissions or removals (tCO ₂ e) ²	emissions or removals (tCO ₂ e)	emissions (tCO ₂ e)	reductions or removals (tCO ₂ e)
15-December-2012 - 14-December-2013	12,596	0	630	11,966
15-December-2013 - 14-December-2014	12,177	0	609	11,568
15-December-2014 - 14-December-2015	11,427	0	572	10,855
15-December-2015 - 14-December-2016	10,827	0	542	10,285
15-December-2016 - 14-December-2017	10,917	0	546	10,371
Total	57,944	0	2899	55,045

² Rounddown values

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1 INTRODUCTION

1.1 Objective

EKI Energy Services Limited has contracted ESPL (Hereinafter referred as Earthood) to conduct the Gap Validation and verification of the project activity “Distribution of Improved cook stove - Phase VI” according to the requirements of the Verified Carbon Standard, version 4.1.

The objective of this gap validation and verification activity is to have an independent third party for the assessment of the VCS project design clause (1.1, 1.2, 1.3, 1.5, 1.6, 1.7, 1.9, 1.10, 1.12, 1.13, 1.14, 1.15.1, 1.16, 1.17 and 3.6) & monitoring Report and ensure a thorough assessment of the project activity “Distribution of Improved cook stove - Phase VI” against the applicable CDM and VCS requirement for the period 15-December-2012 to 14-December-2017 (inclusive both days).

1.2 Scope and Criteria

The scope of the gap validation and verification is to establish/verify that:

- the appropriate VCS-MR form and VCS PD templates was used and correctly filled up;
- the project activity is in accordance with all relevant host country criteria (India);
- the project activity is in accordance with all relevant VCS rules and requirements/18/,19/;
- the project activity is in accordance with conditions of the applied methodology AMS II-G., Energy efficiency measures in thermal applications of non-renewable biomass, Version 03.0/4/.

The verification of the project activity is based on the CDM registered PDD and applicability methodology.

1.3 Level of Assurance

☒ Reasonable level of assurance

☐ Limited level of assurance

ESPL's verification approach is based on the understanding of the risks associated with reporting of GHG emission data and the controls in place to mitigate these. ESPL planned and performed the gap validation and verification by obtaining evidence and other information and explanations that ESPL considers necessary to give reasonable assurance that reported estimated GHG emission reductions are fairly stated.

In our opinion, the estimated GHG emissions reductions were calculated correctly on the basis of the approved baseline and monitoring methodology AMS II-G., Energy efficiency measures in thermal applications of non-renewable biomass, Version 03.0/4/and the VCS standard, v4.1/18/.

1.4 Summary Description of the Project

The project activity involves the distribution of improved cook stoves as per IS13152 (Part 1): 1991 (Solid Biomass – Chulha Part 1 (Metallic)) of CPRI Design, Type I design approved by Bureau of Indian Standard. The Ministry of New and renewable Energy has approved Vikram cook stoves and Fabricators for manufacturing of the cook stoves as per the above specifications and the same stoves are distributed in this project.

This project involves distribution of improved cook stoves in tribal households (Schedule Tribe) and families living below the poverty level (BPL) in the villages of Satara and Solapur districts in Maharashtra, India. The improved cook stoves through replacement of inefficient traditional cook stove will contribute towards reduction of greenhouse gas emission resulting in the reduction of firewood consumption leading to climate change mitigation in a sustainable manner.

As confirmed through the remote inspection, the technology deployed under the project activity is single pot, portable, metallic, improved biomass cook stoves made of cast iron for combustion of solid biomass, which are manufactured in accordance to IS 13152, Part-1: 1991, CPRI Design Type I standard. The cook stove has been tested for thermal efficiency of 29.88% as per water boiling test protocol specified in IS 13152, Part 1: 1991. The efficiency test report provided to assessment team was reviewed and it was concluded that the efficiency test/9/ was conducted in accordance with the procedure stipulated in the applied methodology AMS II-G., Energy efficiency measures in thermal applications of non-renewable biomass, Version 03.0/4/.

The individual households using ICS has signed an agreement with the PP along with Vikram Stoves (Manufacturer) & entered into contractual agreement with the beneficiaries by virtue of which, the end user will confirm use of cook stove as well as transfer the CER right to the Project Participant. The sample agreement /12/ was validated by the assessment team for the cook stoves and found in line with the VCS-PD/01/. The estimated total amount of emission reductions over the chosen 10-year “fixed crediting period” is less than 300,000 tCO₂e /7/. The estimated amount of emission reductions per annum are 12,990 tCO₂e/7/.

Validation team has checked the summary description of the project defined in the VCS PD /01/ and found consistent with the registered CDM PDD/07/.

The project is registered under Clean Development Mechanism (CDM) of UNFCCC with 10 years crediting period (Fixed) (Reference No: 8732) on 14-December-2012. The Crediting period of

the project under CDM started on 15-December-2012 and will end on 14-December-2022. The project has begun generating GHG emission reductions from distribution of the cook stove, Thus, VCS crediting period chosen same as CDM. The gap validation under VCS mechanism which includes assessment of clause 1.1, 1.2, 1.3, 1.5, 1.6, 1.7, 1.9, 1.10, 1.12, 1.13, 1.14, 1.15.1, 1.16, 1.17 and 3.6 of VCS project description template. The same in in line with the para 3.19.5 of VCS Standard, v.4.1.

The project proponent will also not claim GHG emission reductions under two schemes for the same period. The GHG credits from 15-December-2012 to 14-December-2017 will be claimed under VCS only. An undertaking from the project participant confirms that project will not claim any other scheme benefits for the concerned monitoring period/20/.

During the Current Monitoring Period from 15-December-2012 to 14-December-2017 (First and last date included) the project activity is contributing to the GHG reductions of 55,045 tCO₂e.

2 VALIDATION AND VERIFICATION PROCESS

2.1 Method and Criteria

The overall verification, from Contract Review to Verification Report & Opinion, was conducted using ESPL's internal procedures. The Project was verified against the latest requirements of VCS standard (Version 4.1)/18/ and guidance set out in VCS Standards as applicable.

- The validation/verification process consists of the following three phases;
- A document review of the VCS PD and VCS MR (described in Section 2.2)
- Remote Audit and follow up interviews with project stakeholders (described in Section 2.3 and 2.4)
- The resolution of outstanding issues and issuance of the final report and opinion. (described in Section 2.5)

DOE's Sampling Approach:

As the PP has applied sampling approach and same samples for all the monitoring parameters, hence the VVB had planned to apply the acceptance sampling in accordance with the paragraph 28-33 of the "Standard: Sampling and surveys for CDM project activities and programme of activities, version 09". ESPL verification team carried out the random sampling from the PP's sample records and check (using its professional judgment) the acceptability of the data for each record in the PP's sample records. The VVB has determined acceptance sample size based on the "Table 2. Sample size and acceptance number based on AQL, UQL, and producer and consumer risks" of standard "Sampling and surveys for CDM project activities and programmes of activities" version 09.0/5/.

During the remote audit verification, a random sampling approach has been used by the verification team to verify the reported values for the monitored parameters as listed in the MR which are determined through sample survey by PP.

For the determination of VVB's acceptance sample size, verification team has selected the following using its professional judgment:

- i. Acceptable quality level (AQL) – 0.5%
- ii. Unacceptable Quality Level (UQL) – 10%
- iii. Producer risk -10%
- iv. Consumer risk -20%

Verification team has determined acceptance sample size for all the sample survey parameters based on the “Table 2. Sample size and acceptance number based on AQL, UQL, and producer and consumer risks” of standard “Sampling and surveys for CDM project activities and programmes of activities” version 09.0/5/. From the above factors, the verification team determined the minimum sample size (n) as 16 and acceptance number (c) as 0. The sample size used to verify the reported values for the monitored parameters which are determined through sample survey by PP. The VVB interviewed the Improved stove users and filled the VVB survey form to check the acceptability of the data for each record in the PP's sample records. Verification team shared the samples with PP during remote audit.

The actual number of sample size where the acceptance survey was done given below:

Parameters	Total Population	PP's sample size	Acceptance sample size	Acceptance Number	Sampling method used
Monitoring parameters as per section 4.2 of the MR	Total households using stoves: 14,450	160	16	0	Acceptance Sampling based on random selection of households.

Using acceptance sampling approach, verification team checked the PP's samples results (reported in the Monitoring forms) along with the following evidences:

1. Remote inspection/interview
2. PP household database
3. Database of all project participating households using the various technologies as per the ER sheet
4. Thermal efficiency of the stoves from stove supplier/determined from qualified laboratory.
5. Shipping details of various technologies used by project participating households.

The result of the survey is given below:

Parameters	VVB Sample size	No of PP's record beyond unacceptable level	Accepted
Monitoring parameters as per 4.2 of the MR	16	0	16

Following the requirement of the paragraph 28 of standard “Sampling and surveys for CDM project activities and programmes of activities” version 09.0/5/, the acceptability of data in the random sample chosen from the PP's sample records was determined. Based on the number of records where there was agreement, it was determined whether the PP's sample records meet the

requirements. The acceptability of the data was based on the VVB's professional judgement in line with the paragraph 28 of the Sampling Standard/5/.

All the data records for the monitoring parameters were in line with the PP's sample records and there were no discrepant records found from the PP's records. Since there were no discrepant records (0), the PP's set of records have been accepted based on the VVB's acceptance sampling. This is in line with the paragraph 33 of standard "Sampling and surveys for CDM project activities and programmes of activities" version 09.0 and hence, found appropriate/5/.

2.2 Document Review

The verification is performed primarily as a review of documents submitted at various stages of assessments. The review is performed by assessment team using dedicated protocols. The assessment team cross checks the information provided in the documents (VCS PD, CDM PDD, MR, CDM & VCS validation report) and information from sources other than those used, if available and also conducts independently background investigations.

Earthood conducted a desk review as under;

- A review of the data and information presented to verify their completeness.
- A review of the monitoring plan, the monitoring methodology including applicable tool(s) and, where applicable, the applied standardized baseline, paying particular attention to the frequency of measurements, the quality of metering equipment including calibration requirements, and the quality assurance and quality control procedures.

An evaluation of data management and the quality assurance and quality control system in the context of their influence on the generation and reporting of emission reductions.

2.3 Interviews

A remote audit was conducted for the project activity on 14-June-2020. Remote audit was conducted due to pandemic situation. The names of the persons interviewed (during remote audit through Zoho Application/13/is given below;

Organization	Name of Persons/Designation	Topics discussed	Team leader
G K Energy Marketers Pvt. Ltd	Mr. Suvra Majumdar	Operational data, Stakeholder engagement, data storage, QA/QC, Management practices etc. Data collection, data storage, procedures	Atul Takarkhede
	Mr. Gopal Kabra		
CTran Consultant	Papia Chakraborty	Third party survey	
EKI Energy	Mr. Supratik Dutta	GHG calculations, MR and ER preparation etc.	
	Pankaj Rajpoot		

Telephonic interviews of household users by verification team:

Sr.	Agreement No.	Name	Address
1.	GKEMPLPH6-108	Hussein Syed Usman	B-5 Mohot, Satara, Maharastra
2.	GKEMPLPH6-301	Jadhav Chander Hamant	213 Suraj Colony Jaoli, Satara, Maharashtra
3.	GKEMPLPH6-190	Kamble Gapati Gundappa	12, Near Main Market Karad, Satara, Maharashtra
4.	GKEMPLPH6-7370	Kamble Maroti Ram	h-24 Near Hanuman Mandir, Solapur, Maharashtra
5.	GKEMPLPH6-7170	Kamble Suresh Zatingrao	14 Vanya Colony Khatav, Solapur, Maharashtra
6.	GKEMPLPH6-8	Khadap Mahadev Shankar	214 Gaurav Colony, Satara, Maharashtra
7.	GKEMPLPH6-856	Lahu Namdev Shinde	103 Near Main Market, Mahabaleshwar, Satara, Maharashtra
8.	GKEMPLPH6-7147	Manohar Dhondiba Karlewad	10-d Barshi Solapur Maharashtra 413001
9.	GKEMPLPH6-322	Pathan Ismail Karimkho	plot no. 12 Patan District - Satara Maharashtra 415001
10.	GKEMPLPH6-7338	Rathod Prabhu Tukaram	24 Block Phaltan District - Solapur Maharashtra 415002
11.	GKEMPLPH6-179	Sasane Vitthal Bhujangrao	k-2 Moholla Mohol Satara Maharashtra 413004
12.	GKEMPLPH6-192	Sharda Maroti	14 Paratemadha Satara Maharashtra 413003
13.	GKEMPLPH6-7235	Sheikh Hamidkho Lalekho	10F quarter no. 3 Karmala Solapur Maharashtra 413001
14.	GKEMPLPH6-7131	Sheikh Ibrahim Mahboob	block 7 Patan solapur Maharashtra 413002
15.	GKEMPLPH6-7390	Suryavanshi Nivruti Satwaji	v-43 Phaltan district - solapur Maharashtra 415001
16.	GKEMPLPH6-2	Waghbije Nivruti Dhondiba	7d near Hippargi satara Maharashtra 413005

2.4 Site Inspections

As a result of the COVID-19 pandemic, taking into account the rules of relevant national and local authorities (local to the VVB offices as well as to locality of the site visits), World Health Organization (WHO) recommendations, policies of the VVB, VERRA notification of Covid-19 Travel Guidance for Projects³ and other relevant travel restrictions and guidance (for example, a requirement to self-isolate upon return from specific countries), the VVB has skipped the on-site visit. Further, “The VCS Program does not explicitly mandate site visits as part of the validation and verification process, only that VVBs must achieve a reasonable level of assurance on all validations and verifications (per Section 4.1.2 of the VCS Standard, v4.1). Hence, the VVB has used other standard auditing techniques for validation or verification as referred to in VCS Rules/requirements.

Verification team has used the following alternative means for its assessment and to justify that they are sufficient for the purpose of verification. Along with desk review, audit team has conducted remote audit interview as follows:

- A complete desk review of the MR, as well as all applicable country legal requirement and supportive evidences have been checked by the verification team.
- Verification team has performed interview with PP in order to check implementation, project boundary, current situation, monitoring procedures etc.
- Cross-check evaluation, for information received from interviews, under the scope of all information and references provided in MR and supporting documents.
- A check of the monitoring equipment including performance and observations of monitoring practices against the requirements of the VCS PD and registered CDM PDD and the selected methodology.
- Total 16 users were inspected through video conferencing and interviewed in order to assess the baseline practice and usage of cookstoves in the project case for PA.

Details of interviewees, topics covered and additional information are provided in Section 2.3 above & VVBs sampling approach in Section 2.1 above.

2.5 Resolution of Findings

The objective of this phase of the gap validation and verification was to identify, discuss and conclude on the issues related to the monitoring, implementation and operations of the project activity that could impair the capacity of the project activity to achieve emission reductions or influence the monitoring and reporting of emission reductions. This is done based on the desk

³ <https://verra.org/covid-19-travel-guidance>

review and remote onsite assessment. The verification team prepares and/or updates a verification protocol (internal document) that records the conformities and nonconformities, which may be of following types;

CAR (Corrective Action Request) is raised if one of the following occurs:

- a) Non-compliance with the monitoring plan, the methodology or the standardized baseline are found in monitoring and reporting and has not been sufficiently documented by the project participants, or if the evidence provided to prove conformity is insufficient
- b) Modifications to the implementation, operation and monitoring of the registered project activity has not been sufficiently documented by the project participants
- c) Mistakes have been made in applying assumptions, data or calculations of emission reductions that will impact the quantity of emission reductions
- d) Change to the key sustainable development indicators
- e) Issues identified in a FAR during validation to be verified during verification or previous verification(s) have not been resolved by the project participants.

Clarification request (CL) is raised if information is insufficient or not clear enough to determine whether the applicable requirements have been met. All CARs and CLs raised by the Earthhood during verification shall be resolved prior to submitting a request for issuance.

FAR (Forward Action Request) is raised during verification if the monitoring and reporting require attention and/or adjustment for the next verification period.

A total of 07 CAR and 03 CL were raised in the current verification. No FAR was raised. All the findings that are raised and communicated to project participant during the verification are included under Appendix 2. The section also includes the response, if provided, by the project participants and an assessment by the verification team if it was closed out or otherwise.

2.5.1 Forward Action Requests

This is Gap validation & verification of the project activity and no FAR is raised.

3 VALIDATION FINDINGS

3.1 Project Details

The project activity involves the distribution of improved cook stoves as per IS13152 (Part 1): 1991 (Solid Biomass – Chulha Part 1 (Metallic)) of CPRI Design, Type I design approved by Bureau of Indian Standard. The Ministry of New and renewable Energy has approved Vikram cook stoves and Fabricators for manufacturing of the cook stoves as per the above specifications and the same stoves are distributed in this project.

This project involves distribution of improved cook stoves in tribal households (Schedule Tribe) and families living below the poverty level (BPL) in the villages of Satara and Solapur districts in

Maharashtra, India. The improved cook stoves through replacement of inefficient traditional cook stove will contribute towards reduction of greenhouse gas emission resulting in the reduction of firewood consumption leading to climate change mitigation in a sustainable manner.

As confirmed through the remote inspection, the technology deployed under the project activity is single pot, portable, metallic, improved biomass cook stoves made of cast iron for combustion of solid biomass, which are manufactured in accordance to IS 13152, Part-1: 1991, CPRI Design Type I standard. The cook stove has been tested for thermal efficiency of 29.88% as per water boiling test protocol specified in IS 13152, Part 1: 1991. The efficiency test report provided to assessment team was reviewed and it was concluded that the efficiency test/9/ was conducted in accordance with the procedure stipulated in the applied methodology AMS II-G., Energy efficiency measures in thermal applications of non-renewable biomass, Version 03.0/4/.

The individual households using ICS has signed an agreement with the PP along with Vikram Stoves (Manufacturer) & entered into contractual agreement with the beneficiaries by virtue of which, the end user will confirm use of cook stove as well as transfer the CER right to the Project Participant. The sample agreement /12/ was validated by the assessment team for the cook stoves and found in line with the VCS-PD/01/. The estimated total amount of emission reductions over the chosen 10-year “fixed crediting period” is less than 300,000 tCO₂e /7/. The estimated amount of emission reductions per annum are 12,990 tCO₂e/7/.

Validation team has checked the summary description of the project defined in the VCS PD /01/ and found consistent with the registered CDM PDD/07/.

During the Current Monitoring Period from 15-December-2012 to 14-December-2017 (First and last date included) the project activity is contributing to the GHG reductions of 55,045 tCO₂e.

Project Proponent

As per CDM registered PDD/7/ “M/s G K Energy Marketers Pvt. Ltd.” is the project proponent. In VCS PD also the PP name is correctly mentioned as “M/s G K Energy Marketers Pvt. Ltd.”. The name of the person, address and phone number is assessed correct for VCS (gap validation and verification) purpose. Hence, Clause 1.5 as depicted in the VCS PD/1/ for gap validation is acceptable to the assessment team.

Project Start Date

The start date of the project is considered as the date when the cook stove is distributed to the end users selected by the concerned line department of Rural Development Department. i.e. 12-October-2012 and the same is correct as per the definition of start date of VCS standard version 4.1. The validation team has verified the receipt of the first cook stove /14/. Thus, start date of the project activity is correct as per the requirement of Para 3.7 of VCS standard version 4.1. Hence, Clause 1.5 as depicted in the VCS PD/1/ for gap validation is acceptable to the assessment team.

Project Crediting Period

The Project activity is commissioned/cookstove distribution started on 12-October-2012. CDM crediting period is started from 15-December-2012 to 14-December-2022 (fixed). In CDM, as on August 2021 no CERs claimed/issued⁴. The VCS crediting period is also considered as per CDM i.e. from 15-December-2012 to 14-December-2022. The project crediting period shall be a ten years (fixed).

Project Scale and Estimated GHG Emission Reductions or Removals

The proposed project activity was categorized as “Project”, since the estimated average annual GHG emission reductions is 12,990 tCO₂e, which is lower than 300,000 tCO₂e per year as per the registered CDM PDD/7/.

Project Location

The project location of the project activity is checked by the assessment via Google earth software and found correct inline with the CDM PDD/7/.

Conditions Prior to Project Initiation

Through reviewing the registered CDM PDD and validation report at UNFCCC website <https://cdm.unfccc.int/Projects/DB/RWTUV1355387034.25/view>, it is confirmed that the project is a Greenfield project. The improved cook stoves through replacement of inefficient traditional cook stove contributes towards reduction of greenhouse gas emission. Assessment team checked the same with PP during the remote audit and also cross checked with CDM PDD/7/ and validation report/8/. Thus clause 1.13 as depicted in the VCS PD/1/ for gap validation is acceptable to the assessment team.

Compliance with Laws, Statutes and Other Regulatory Frameworks

The project is registered under CDM and UNFCCC (Registration ID -8732). The project is also approved by the DNA and a copy of the approval is available on the UNFCCC page. The project activity is not mandatory by any local or national laws. Same is confirmed from section B.3 of the registered CDM PDD. Thus clause 1.14 as depicted in the VCS PD/1/ for gap validation is acceptable to the assessment team.

Ownership and other programs-

Right of use

The project activity is owned by “M/s G K Energy Marketers Pvt. Ltd.”. The ownership of the project activity is verified through the following documents:

⁴ <https://cdm.unfccc.int/Projects/DB/RWTUV1355387034.25/view>

- Beneficiary agreements: Tripartite agreement between PP (M/s G K Energy Marketers Pvt. Ltd), Supplier (Vikram Stoves & Fabricators) and end users /12/
- CDM PDD/07/

Project has been registered with UNFCCC under Clean Development Mechanism program. Registration reference number is 8732. Project Proponent has submitted undertaking/20/ for not availing other forms of environmental credit for the same crediting period under consideration. PP is registering in the VCS program with the crediting period effective from 15-December-2012. And PP also confirmed that the project will not claim CERs for the period when the VCU are claimed under VCS.

Other forms of environmental credit sought or received and eligible to be sought or received:

Project has been registered with UNFCCC under Clean Development Mechanism program. Registration reference number is 8732. Project Proponent has submitted undertaking/20/ for not availing other forms of environmental credit for the same crediting period under consideration. PP is registering in the VCS program with the crediting period effective from 15-December-2012. And PP also confirmed that the project will not claim CERs for the period when the VCU are claimed under VCS.

PP also submitted undertaking for Project neither has any intends to generate any form of GHG related environmental credit for neither GHG emission reductions nor removals claimed under the VCS program/20/. Thus clause 1.16 as depicted in the VCS PD/1/ for gap validation is acceptable to the assessment team.

Participation under other GHG programs:

The project is registered under CDM and UNFCCC (Registration ID -8732). The project is also approved by the DNA and a copy of the approval is available on the UNFCCC page. Project Proponent has submitted undertaking that they will not claim same GHG emission reductions of the project from CDM and VCS/20/. PP would not use net GHG emission reductions by the projects for compliance with emission trading program to meet binding limits on GHG emissions/20/. Thus clause 1.15.1 as depicted in the VCS PD for gap validation is acceptable to the assessment team.

Rejection by other GHG programs:

The project has not been rejected by other GHG programs.

Additional information relevant to the project, including:

- Eligibility criteria for grouped projects

Not applicable to the project activity.

Leakage management for AFOLU projects

Not applicable to the project activity.

Commercially sensitive information

No commercially sensitive information has been excluded from the public version of the project description.

The improved cook stoves through replacement of inefficient traditional cook stove will contribute towards reduction of greenhouse gas emission resulting in the reduction of firewood consumption leading to climate change mitigation in a sustainable manner.

Further the GHG emission reductions generated by the project activity has not been included by any other an emissions trading program or any other mechanism that includes GHG allowance trading. Also, the project has not received any other form of environmental credit and has not been participated/rejected under any other GHG programs.

Sustainable Development- The project activity contributes to the sustainable development by MoEFCC and has the benefits such as reduction in indoor air pollution, reduction in time spent and distance travelled for fuel wood collection, conservation of forest by reducing rate of forest degradation /deforestation and thereby reducing GHG emissions from the environment. There are other economic benefits such as opportunities for local communities involved in monitoring, training of users, undertaking periodic maintenance and post life time replacement.

Conclusion:

In view of the assessment of VCS PD/1/ and supporting documents as listed in Appendix 1 of this report, the validation team is able to confirm that the description contained in the VCS PD/1/ of the project activity provides the reader with a clear understanding of the precise nature of the project activity and the technical aspects of its implementation. Consequently, ESPL confirms that the project description of the project contained in the VCS PD/1/ to be complete and accurate. The VCS PD complies with the relevant forms and guidance for completing the VCS PD.

3.2 Participation under Other GHG Programs

The present project activity is registered under CDM mechanism (UN reference number: 8732). The project can be traced via link:

<https://cdm.unfccc.int/Projects/DB/RWTUV1355387034.25/view>

The gap validation is performed for the project activity as per Para 3.19.5 of VCS standard version 4.1. As per the requirement of this template following are the observation of the assessment team:

1. The project is registered under CDM mechanism and UN reference number of the project is 8732. The project title is "Distribution of Improved cook stove - Phase VI".
2. The project is eligible under Para 3.19.5 of VCS standard version 4.1.
3. Assessment team adopted a step wise procedure to assess the respective clause required for gap validation under VCS vide Para 3.19.5 of VCS standard version 4.1.

Summary Description of the Project

Clause 1.1: The project activity involves the distribution of improved cook stoves as per IS13152 (Part 1): 1991 (Solid Biomass – Chulha Part 1 (Metallic)) of CPRI Design, Type I

design approved by Bureau of Indian Standard. The Ministry of New and renewable Energy has approved Vikram cook stoves and Fabricators for manufacturing of the cook stoves as per the above specifications and the same stoves are distributed in this project.

This project involves distribution of improved cook stoves in tribal households (Schedule Tribe) and families living below the poverty level (BPL) in the villages of Satara and Solapur districts in Maharashtra, India. The improved cook stoves through replacement of inefficient traditional cook stove will contribute towards reduction of greenhouse gas emission resulting in the reduction of firewood consumption leading to climate change mitigation in a sustainable manner.

As confirmed through the remote inspection, the technology deployed under the project activity is single pot, portable, metallic, improved biomass cook stoves made of cast iron for combustion of solid biomass, which are manufactured in accordance to IS 13152, Part-1: 1991, CPRI Design Type I standard. The cook stove has been tested for thermal efficiency of 29.88% as per water boiling test protocol specified in IS 13152, Part 1: 1991. The efficiency test report provided to assessment team was reviewed and it was concluded that the efficiency test/9/ was conducted in accordance with the procedure stipulated in the applied methodology AMS II-G., Energy efficiency measures in thermal applications of non-renewable biomass, Version 03.0/4/.

The individual households using ICS has signed an agreement with the PP along with Vikram Stoves (Manufacturer) & entered into contractual agreement with the beneficiaries by virtue of which, the end user will confirm use of cook stove as well as transfer the CER right to the Project Participant. The sample agreement /12/ was validated by the assessment team for the cook stoves and found in line with the VCS-PD/01/. The estimated total amount of emission reductions over the chosen 10-year “fixed crediting period” is less than 300,000 tCO₂e /7/. The estimated amount of emission reductions per annum are 12,990 tCO₂e/7/.

Validation team has checked the summary description of the project defined in the VCS PD /01/ and found consistent with the registered CDM PDD/07/. Hence the project is eligible under Clause 1.1 of VCS PD.

Sectoral Scope and Project Type

Clause 1.2: According to the categorisation system of the Clean Development Mechanism, which is part of Green House Gas (GHG) program that has been approved by the VCS board, the project is categorised as:

Category: AMS II-G., Energy efficiency measures in thermal applications of non-renewable biomass, Version 03.0.0 . Assessment team checked the type and category of the project activity and found that the project is eligible under Type I and renewable category of project. Hence the project is eligible under Clause 1.2 of VCS PD/1/.

Project Eligibility

Clause 1.3: The project registered under CDM and UNFCCC (Registration ID-8732)/7/. Thus, eligible for gap validation under VCS standard Version 4.1.

Project Proponent

Clause 1.5: As per CDM registered PDD/7/ “M/s G K Energy Marketers Pvt. Ltd.” is the project proponent. In VCS PD also the PP name is correctly mentioned as “M/s G K Energy Marketers Pvt. Ltd.”. The name of the person, address and phone number is assessed correct for VCS (gap validation and verification) purpose. Hence, Clause 1.5 as depicted in the VCS PD/1/ for gap validation is acceptable to the assessment team.

Other Entities Involved in the Project

Clause 1.6: In VCS PD, the Other Entities Involved name is mentioned as “EKI Energy Services Limited”. The name of the person, address and phone number is assessed correct for VCS (combined validation and verification) purpose. Hence, Clause 1.6 as depicted in the VCS PD/1/ for gap validation is acceptable to the assessment team.

Ownership

Clause 1.7: The project activity is owned by “M/s G K Energy Marketers Pvt. Ltd.”. The ownership of the project activity is verified through the following documents:

- Beneficiary agreements: Tripartite agreement between PP (M/s G K Energy Marketers Pvt. Ltd), Supplier (Vikram Stoves & Fabricators) and end users /12/
- CDM PDD/07/

Project has been registered with UNFCCC under Clean Development Mechanism program. Registration reference number is 8732. Project Proponent has submitted undertaking/20/ for not availing other forms of environmental credit for the same crediting period under consideration. PP is registering in the VCS program with the crediting period effective from 15-December-2012. And PP also confirmed that the project will not claim CERs for the period when the VCU are claimed under VCS.

Project Start Date

Clause 1.8: The start date of the project is considered as the date when the cook stove is distributed to the end users selected by the concerned line department of Rural Development Department. i.e. 12-October-2012 and the same is correct as per the definition of start date of VCS standard version 4.1. The validation team has verified the receipt of the first cook stove /14/. Thus, start date of the project activity is correct as per the requirement of Para 3.7 of VCS standard version 4.1. Hence, Clause 1.5 as depicted in the VCS PD/1/ for gap validation is acceptable to the assessment team.

Project Crediting Period

Clause 1.9: The Project activity is commissioned/cookstove distribution started on 12-October-2012. CDM crediting period is started from 15-December-2012 to 14-December-2022 (fixed). In CDM, as on August 2021 no CERs claimed/issued⁵. The VCS crediting period is also considered as per CDM i.e. from 15-December-2012 to 14-December-2022. The project crediting period shall be a ten years (fixed).

The start date of the VCS crediting period is considered as 15-December-2012 same as CDM CP and the end date of the VCS crediting period is considered as 14-December-2022. This is in line with Section 3.8.7 of VCS Standard, Version 4.1/18/. Thus, clause 1.9 as depicted in the VCS PD/1/ for gap validation is acceptable to the assessment team.

Project Scale and Estimated GHG Emission Reductions or Removals

Clause 1.10: The proposed project activity was categorized as “Project”, since the estimated average annual GHG emission reductions is 12,990 tCO_{2e}, which is lower than 300,000 tCO_{2e} per year as per the registered CDM PDD/7/.

Project Location

Clause 1.12: The project location of the project activity is checked by the assessment via Google earth software and found correct inline with the CDM PDD/7/.

Conditions Prior to Project Initiation

Clause 1.13: Through reviewing the registered CDM PDD and validation report at UNFCCC website <https://cdm.unfccc.int/Projects/DB/RWTUV1355387034.25/view>, it is confirmed that the project is a Greenfield project. The improved cook stoves through replacement of inefficient traditional cook stove contributes towards reduction of greenhouse gas emission. Assessment team checked the same with PP during the remote audit and also cross checked with CDM PDD/7/ and validation report/8/. Thus clause 1.13 as depicted in the VCS PD/1/ for gap validation is acceptable to the assessment team.

Compliance with Laws, Statutes and Other Regulatory Frameworks

Clause 1.14: The project is registered under CDM and UNFCCC (Registration ID -8732). The project is also approved by the DNA and a copy of the approval is available on the UNFCCC page. The project activity is not mandatory by any local or national laws. Same is confirmed from section B.3 of the registered CDM PDD. Thus clause 1.14 as depicted in the VCS PD/1/ for gap validation is acceptable to the assessment team.

Projects Registered (or seeking registration) under Other GHG Program(s)

Clause 1.15.1: The project is registered under CDM and UNFCCC (Registration ID -8732). The project is also approved by the DNA and a copy of the approval is available on the UNFCCC

⁵ <https://cdm.unfccc.int/Projects/DB/RWTUV1355387034.25/view>

page. Project Proponent has submitted undertaking that they will not claim same GHG emission reductions of the project from CDM and VCS/20/. PP would not use net GHG emission reductions by the projects for compliance with emission trading program to meet binding limits on GHG emissions/20/. Thus clause 1.15.1 as depicted in the VCS PD for gap validation is acceptable to the assessment team.

Other Forms of Credit

Clause 1.16: Project has been registered with UNFCCC under Clean Development Mechanism program. Registration reference number is 8732. Project Proponent has submitted undertaking/20/ for not availing other forms of environmental credit for the same crediting period under consideration. PP is registering in the VCS program with the crediting period effective from 15-December-2012. And PP also confirmed that the project will not claim CERs for the period when the VCUs are claimed under VCS.

PP also submitted undertaking for Project neither has any intends to generate any form of GHG related environmental credit for neither GHG emission reductions nor removals claimed under the VCS program/20/. Thus clause 1.16 as depicted in the VCS PD/1/ for gap validation is acceptable to the assessment team.

Methodology Deviations

Clause 3.6: No methodology deviation is applied in the VCS PD/1/. Thus, clause 3.6 as depicted in the VCS PD/1/ for gap validation is acceptable to the assessment team.

Hence, the project is eligible to participate and registered under gap validation for the VCS guideline/18/.

Conclusion:

The project activity has fulfilled the all clause for GAP Validation and thus the project is eligible to participate under the VCS Program.

3.3 Safeguards

3.3.1 No Net Harm

The project activity is utilization of Improved Cook stove for cooking in rural households and does not involve any negative impact. As no potential negative environmental and socio-economic impacts identified, hence this section is not required.

3.3.2 Local Stakeholder Consultation

Local stakeholder consultation has been conducted at the time of project registration. For on-going stakeholder's communication, PP have made the provision of the grievance register/16/. Assessment team checked the grievance registers provided by PP and found that local stakeholders/beneficiaries can anytime lodge their grievances if any in the register over the operational life time of the project. During the remote audit, it was confirmed that PP is responsible to address any grievances received from stakeholders/13/. During current monitoring period there is one grievance received and addressed by the PP (Refer Section 2.2 of MR). Also, monitoring report of current monitoring period is webhosted on VCS website for 30

days for the purpose of global stakeholder consultation, however no comments received during the webhosting period. Thus, assessment team is of the opinion that the on-going stakeholder mechanism and global stakeholder consultation is adequate and appropriate. Moreover, CAR 06 & CAR 07 was raised regarding the on-going stakeholder's consultation same and after submission of satisfactory response the CAR was closed.

3.3.3 Environmental Impact

Being cookstove improvement project, there are no significant environmental impacts due to implementation of the project activity. There is no mandatory legal requirement for carrying out an environmental impact assessment in the host country. The Ministry of Environment, Forests and Climate Change (MoEFCC), Government of India (GoI) notification dated September 14, 2006 regarding the requirement of Environment Impact Assessment (EIA) studies states that any project developer in India needs to file an application to the Ministry of Environment and Forests (including a public hearing and an EIA) in case the proposed industry or project is listed in a predefined list. The improved cookstove distribution projects are not included in this list and thus an EIA study is not required.

3.3.4 Public Comments

Section not applicable as project is undergoing VCS GAP Validation & Verification.

3.3.5 AFOLU-Specific Safeguards

Not applicable.

3.4 Application of Methodology

3.4.1 Title and Reference

Category: AMS II-G., Energy efficiency measures in thermal applications of non-renewable biomass, Version 03.0. Assessment team checked the type and category of the project activity and found that the project is eligible under Type I and renewable category of project.

3.4.2 Applicability

Not applicable being GAP Validation & Verification project.

3.4.3 Project Boundary

Not applicable being GAP Validation & Verification project.

3.4.4 Baseline Scenario

Not applicable being GAP Validation & Verification project.

3.4.5 Additionality

Not applicable being GAP Validation & Verification project.

3.4.6 Quantification of GHG Emission Reductions and Removals

Not applicable being GAP Validation & Verification project.

3.4.7 Methodology Deviations

The project activity used AMS II-G., Energy efficiency measures in thermal applications of non-renewable biomass, Version 03.0, which is as per the registered CDM PDD and thus no deviation is sought regarding the methodology. The project complies with all the requirements of the methodology and thus deviation to the methodology is not a requirement for the present monitoring period.

3.4.8 Monitoring Plan

Not applicable being GAP Validation & Verification project.

3.5 Non-Permanence Risk Analysis

No.	Risk that could lead to material errors, omissions or misstatements	Assessment of the risk		Response to the risk in the verification plan and/or sampling plan
		Risk level	Justification	
NA	NA	NA	NA	NA

4 VERIFICATION FINDINGS

4.1 Accuracy of GHG Emission Reduction and Removal Calculations

Means of verification	The verification team assessed whether the data and calculations of GHG emission reductions achieved resulting from the MR. The verification team has checked whether calculations of baseline GHG emissions, project GHG emissions and leakage GHG emissions have been carried out in accordance with the formulae and methods described in the monitoring plan of the MR.
Findings	CAR 10 was raised during the verification process and closed successfully. Please refer Appendix 2 of this report for the detailed closure of the CAR.
Conclusion	All the ex-ante & monitored parameters are described section 4.1 & 4.2 of the MR/2/ transparently. It is confirmed that all the ex-ante parameters have been correctly used in the emission reduction calculation. Ex-ante Parameter: B_{old} = Quantity of woody biomass used in absence of the project activity (tonnes/household/year) The value 1.469 is based on historical database sourced from Teri Energy Data Directory Yearbook for 2010 and it is used for calculation of baseline Emission and is found to be consistent with the registered CDM-PDD/7/. η_{new} = Efficiency of the cook stove being deployed as a part of the project activity (%) The value 29.88% is obtained from Test report issued by Biomass Cook stove Testing Centre, Dept. of Renewable Energy Sources, Udaipur, and it is used for calculation of baseline Emission and is found to be consistent with the registered CDM-PDD/7/.

	By,savings = Quantity of woody biomass saved due to implementation of the project activity 9 tonne/household/year) By, savings is calculated using equation $\text{By, savings} = \text{Bold} * (1 - \eta_{\text{old}} / \eta_{\text{new}})$ The value 0.9774 is used for calculation of baseline Emission and is found to be consistent with the registered CDM-PDD /7/. Energy Saving per cook stove or household = Energy saving per cook stove due to improved efficiency of the distributed cook stove (GWh_{th}/household/year) Energy Saving is calculated using equation $\text{Energy Saving} = \text{By, saving} * \text{NCVbiomass}$ $= \text{Bold} * (1 - \eta_{\text{old}} / \eta_{\text{new}}) * \text{NCVbiomass}$ The value 0.00407 is used for calculation of baseline Emission and is found to be consistent with the registered CDM-PDD /7/. F_{NRB,y} = The factors relates to the fraction of non-renewable biomass The value 87.9% is calculated using fuel wood demand and supply of biomass across the state of Maharashtra and it is used for calculation of baseline Emission and is found to be consistent with the registered CDM-PDD /7/. During the verification, all relevant monitoring parameters of the registered monitoring plan have been verified with regard to the appropriateness of the verification method; the correctness of the values applied for ER calculation, the accuracy and applied QA/QC measures. All monitoring parameters have been measured / determined without material misstatements and are in line with all applicable standards and relevant requirements. It is confirmed that the monitoring mechanism is effective and reliable. Therefore, from the document review and remote inspection, it is confirmed that all the parameters were monitored in accordance with the registered monitoring plan during the monitoring period. Following are the details of monitoring in accordance with the monitoring plan of the registered CDM PDD/7/ & VCS PD/1/: η_{new} = Efficiency of the system being deployed in project activity (%) During the remote inspection and through the review of efficiency test reports/9/, it has been confirmed that the value is calculated on annual basis through representative sampling as per Water Boiling Test Protocol indicated in IS 13152 (Part 1): 1991 for solid biomass cook stove. The minimum value of tested efficiency or 29.88% which so ever is lower is used to calculate emission reduction of the systems for particular year of operation, which was found to be acceptable and consistent with the registered CDM PDD/7/ and gap validation PD /1/ as verified by the verification team. Verification team reviewed the Third-party efficiency test reports by Regional Test Centre, School of Energy Studies (which is an accredited test centre) /9/ and found the source of the data be consistent. Monitored values are as below: 15 December 2012 – 14 December 2013 – 27.06% 15 December 2013 – 14 December 2014 – 26.20% 15 December 2014 – 14 December 2015 – 25.13% 15 December 2015 – 14 December 2016 – 24.01% 15 December 2016 – 14 December 2017 – 23.78% No. cook stoves in use = The number of improved cook stoves distributed to households under the project activity (Numbers) During the remote inspection and through document review, it has been confirmed that the value is based on annual survey by third-party/10/ to evaluate the number of systems in
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	operation. The percentage of cook stove in usage as estimated from the survey result, which is multiplied with the total number of cook stove to determine number of cook stove in operation and to be considered for the purpose of emission reduction calculation which was found to be acceptable and consistent with the VCS PD /1/ and the registered CDM PDD /7/. Verification team reviewed the Third-party agency survey reports/10/ and database/17/ managed by the Project Participant and was found to be consistent. The verification team crosschecked the stove distribution database/17/ and the end user agreements/9/ and found it to be consistent. Number of improved cookstoves under operation: 15 December 2012 – 14 December 2013 – 87.50% 15 December 2013 – 14 December 2014 – 86.25% 15 December 2014 – 14 December 2015 – 83.13% 15 December 2015 – 14 December 2016 – 81.25% 15 December 2016 – 14 December 2017 – 82.50% Days of Operation= The parameter relates to the number of days for which the cook stove in operation during the particular year (Number) During the remote inspection and through document review, it was confirmed that the data is calculated using the below equation: Number of days of operation = 365–Average number of days the cook stove was non-functional The number of non-functional days is based on the number of days the cook stoves were under repair/replacement as confirmed during the remote audit. Same is verified by the verification team through the review of the Third-party survey results/10/ carried out throughout the monitoring period. Value is taken as 365 days as per the third party survey. Number of days of functioning of traditional cook stoves = The parameters refer to the number of days for which the traditional cook stove is being used by the household (Numbers) Verification team reviewed the annual third-party survey reports/15/ and found the source to be consistent. During the remote inspection and review of annual third-party survey reports/10/, it was confirmed that the Number of days of operation of the traditional cook stove is obtained from the result of sample survey. The number of days of traditional cook stove as per the survey is used to obtain the average days of usage of the traditional cook stoves for all the households who still use the improved cook stoves of this project activity. This average day is used to arrive at a factor : = (365- Average number of days of traditional cook stove usage in all households /365) This factor is considered as leakage and is multiplied with baseline emission to obtain the leakage emission for the usage of traditional cook stoves as per Paragraph 20 (b) of the methodology/4/. Value is taken as 0 as per the third party survey. Number of Cook stove replaced= The parameters refer to the number of cook stove that are replaced (due to end of life time or damage) by the new cook stove with efficiency greater than or equal to 29.88%. (Number) Monitoring database/17/ has been checked to confirm that there has been no replacement. Hence, no new end user agreement and test certificate of the new system supplied are available. By, savings = Quantity of woody biomass that is saved through the project activity (Tonnes/year/household) During the remote inspection and through the review of calculations in ER sheet/3/, it has been confirmed that the value is calculated using the following equation: By, saving = Bold * (1- η_{old}/η_{new}). Where, Bold is calculated based on number of days cook stove is operational as calculated above and per capita biomass consumption of 25.51 kg/person/month multiplied by 4.8 members per rural household also factoring into the number of days for which the traditional cook stoves were in operation and the number of days of non-functioning of the improved cook
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	stoves. The efficiency of the project system is tested on a representative sample, on annual basis as confirmed through the efficiency test reports/10/. 15 December 2012 – 14 December 2013 – 0.9261 15 December 2013 – 14 December 2014 – 0.9082 15 December 2014 – 14 December 2015 – 0.8843 15 December 2015 – 14 December 2016 – 0.8573 15 December 2016 – 14 December 2017 – 0.8512 Baseline Emissions: The baseline emissions (BE_y) are calculated based on the following formula: $BE_y = B_{y, savings} \times f_{NRB,y} \times NCV_{biomass} \times EF_{projectedfossilfuel}$ It is noted that the formula and calculation used for baseline emission calculation in the monitoring report and ER sheet /3/ is in compliance with the registered CDM PDD/7/. The default values and data used in the monitoring report /2/ is in-line with the registered PDD/7/. Hence, acceptable to the verification team. Project Emissions: As per the methodology /4/ the PE_y is considered zero. Hence, PE_y = 0 is acceptable to the verification team. Leakage: As per the methodology and as defined in the registered CDM PDD/7/, leakage emission per cook stove is estimated as difference between the emission reduction estimated considering the actual value of Bold and emission reduction estimated considering the value of Bold obtained by multiplying Bold with a net to gross adjustment factor of 0.95.
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4.2 Quality of Evidence to Determine GHG Emission Reductions and Removals

Means of verification	All relevant documents were checked to assess the correctness and quality of data submitted by the project participants, which are used to determine emission reductions.
Findings	No finding raised on the section.
Conclusion	All records needed for monitoring are archived in line with the requirements of the registered monitoring plan /1/. No significant lack of evidence and missing data were detected during remote audit discussion and inspection /13/. Hence, the verification team confirms that the monitoring system ensures required quality of the monitoring system to ensure the quality of the monitored data. All internal data are subjected to QA/QC measures. The monitoring parameters have been measured / determined without material misstatements and is in line with all applicable standards and relevant requirements. The information inflow (from data generation, aggregation, to recording, calculation and reporting) is included in section 4.1 under each parameter and confirms to the requirement of the PDD /1/. It was also verified through remote audit inspection/13/that the team involved in the monitoring of project activity is well experienced. Hence, the verification team concludes that competent staff is employed by the project proponent to carry out the relevant tasks with sufficient accuracy. Furthermore, it was confirmed during remote audit discussion that internal training program for the monitoring staff is conducted on regular basis/13/. Comparison of Estimated Vs actual ERs: On comparison of achieved emission reductions (55,045 tCO_{2e}) with the estimated emission reductions (64,950 tCO_{2e}) for the monitoring period, a 15% decrease was

	observed. According to the applied methodology /4/, the conservativeness of the achieved emission reduction was checked and the detailed emission reduction calculation has been transparently provided in the ER sheet/3/. All the formulae and the calculation procedure were checked by the verification team. In the opinion of verification team, the assumptions, emission factors and default values that were applied in the calculations have been justified.
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5 VALIDATION AND VERIFICATION CONCLUSION

Earthood Services Private Limited (Earthood), contracted by EKI Energy Services Limited, has performed the independent Gap validation and verification of the emission reductions for the VCS project activity reference number PL2427 “Distribution of Improved cook stove - Phase VI” in India for the monitoring period 15-December-2012 to 14-December-2017 reported in the Monitoring Report Version 02, dated 24-August-2021.

It is our responsibility to express an independent verification statement on the reported GHG emission reductions from the project activity.

ESPL commenced the Gap validation and verification on the basis of the baseline and monitoring methodology “AMS II-G., Energy efficiency measures in thermal applications of non-renewable biomass, Version 03.0”, the monitoring plan contained in the registered CDM PDD and VCS guidelines version 4.0, Monitoring Report Version 02, dated 24-August-2021 as per the process described under Section 2 of this report.

ESPL's verification approach is based on the understanding of the risks associated with reporting of GHG emission data and the controls in place to mitigate these. Earthood planned and performed the verification by obtaining evidence and other information and explanations that ESPL considered necessary to achieve reasonable level of assurance that reported GHG emission reductions are fairly stated.

In our opinion the GHG emissions reductions reported for the project activity for the period 15-December-2012 to 14-December-2017 are fairly stated in the Monitoring Report Version 02, dated 24-August-2021. The GHG emission reductions were calculated correctly on the basis of the approved baseline and monitoring methodology “AMS II-G., Energy efficiency measures in thermal applications of non-renewable biomass, Version 03.0” and the VCS standard, version 4.1.

Verification period: 15-December-2012 to 14-December-2017 (inclusive of both days).

Verified GHG emission reductions and removals in the above verification period:

Year	Baseline emissions or removals	Project emissions or removals	Leakage emissions (tCO ₂ e)	Net GHG emission reductions or removals (tCO ₂ e)
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	(tCO ₂ e) ⁶	(tCO ₂ e)		
15-December-2012 - 14-December-2013	12,596	0	630	11,966
15-December-2013 - 14-December-2014	12,177	0	609	11,568
15-December-2014 - 14-December-2015	11,427	0	572	10,855
15-December-2015 - 14-December-2016	10,827	0	542	10,285
15-December-2016 - 14-December-2017	10,917	0	546	10,371
Total	57,944	0	2899	55,045

Approved by



Dr Kaviraj Singh

Managing Director
Earthood Services Privated Limited

Date: 14-February-2022
Place: Gurgaon, Haryana

⁶ Rounddown values

APPENDIX 1: DOCUMENTS REVIEWED OR REFERENCED (GAP VALIDATION & VERIFICATION)

S. No	Title of Document	Version	Date
1.	Draft VCS PD	version 01	15-January-2021
	Final VCS PD	version 02	24-August-2021
2.	Draft VCS Monitoring Report	version 01	29-April-2021
	Final VCS Monitoring Report	version 02	24-August-2021
3.	ER spread-sheet (corresponding to the Draft monitoring report)	version 01	03-February-2021
	ER spread-sheet (corresponding to the final monitoring report)	version 02	07-July-2021
4.	AMS II-G., Energy efficiency measures in thermal applications of non-renewable biomass, Version 03.0	-	-
5.	Standard: Sampling and surveys for CDM project activities and programme of activities,	version 09.0	-
6.	VCS webpage for the project, VCS ID PL2427; https://registry.terra.org/app/projectDetail/VCS/2427	-	Last accessed on 10-January-2020
7.	Registered CDM PDD https://cdm.unfccc.int/Projects/DB/RWTUV1355387034.25/view	02	26-January-2006
8.	CDM Validation Report https://cdm.unfccc.int/Projects/DB/RWTUV1355387034.25/view	Version 01	23-February-2006
9.	Third party efficiency test report	-	-
10.	Third-party survey report:	-	-
11.	Training Records:	-	-
12.	Beneficiary agreements: Tripartite agreement between PP(M/s G K Energy Marketers Pvt. Ltd), Supplier (Vikram Stoves & Fabricators) and end users	-	-
13.	Remote audit records	-	22-May-2020
14.	Delivery receipt of first cook stove by the Supplier (Vikram Stoves & Fabricators) dated 03-September-2011 (Start date)	-	-
15.	Technical specifications of cookstoves	-	-
16.	Grievance register with details of the complaints and the mitigation measures		
17.	Monitoring/ stove distribution database		
18.	VCS Standard	Version 4.1	Last accessed on 30-July-2021
19.	VCS Program Guide	Version 4.0	Last accessed on 30-July-2021
20.	Letter of declaration dated from PP regarding not having	-	-

S. No	Title of Document	Version	Date
	created or sought any other form of environmental credit for the same period and double counting		

APPENDIX 2: CORRECTIVE ACTION REQUESTS, CLARIFICATION REQUESTS AND FORWARD ACTION REQUESTS (CAR/CL/FAR)

Table 1. Remaining FAR from previous verification

FAR ID	00	Section no.	E.2	Date : DD-Month-YYYY
Description of FAR				
There is no FAR from the validation of the project activity				
Project participant response				Date : DD-Month-YYYY
NA				
Documentation provided by project participant				
NA				
DOE assessment				Date: DD-Month-YYYY
NA				

Table 2. CL from this Validation and verification

Validation

CL ID	01	Section no.	3	Date : 24-June-2021
Description of CL				
PP requested to submit following documents:				
1. List of beneficiaries 2. Efficiency test report of improved cook stove 3. Documentary evidence for project ownership 4. Delivery receipt of first cook stove (evidence of start date) 5. Technical details of cook stove from manufacturer 6. Sample agreement between PP and beneficiaries				
Project participant response				Date : 07-July-2021
Following documents have now been submitted to assessment team:				
1. List of beneficiaries 2. Efficiency test report of improved cook stove 3. Documentary evidence for project ownership 4. Delivery receipt of first cook stove (evidence of start date) 5. Technical details of cook stove from manufacturer 6. Sample agreement between PP and beneficiaries				
Documentation provided by project participant				
1. List of beneficiaries 2. Efficiency test report of improved cook stove 3. Documentary evidence for project ownership 4. Delivery receipt of first cook stove (evidence of start date) 5. Technical details of cook stove from manufacturer 6. Sample agreement between PP and beneficiaries				
DOE assessment				Date: 30-July-2021

PP have submitted the requisite documents and information provided in the revised VCS PD & monitoring period are found correct. CL thus closed.

Verification

CL ID	02	Section no.	3.1	Date : 24-June-2021
Description of CL				
PP requested to submit following documents:				
1. Third party efficiency test reports 2. Third party agency survey report, end user agreement 3. Project/Monitoring database				
Project participant response				Date : 07-July-2021
Following documents have now been submitted to assessment team:				
1. Third party efficiency test reports 2. Third party agency survey report, end user agreement 3. Project/Monitoring database				
Documentation provided by project participant				
1. Third party efficiency test reports 2. Third party agency survey report, end user agreement 3. Project/Monitoring database				
DOE assessment				Date: 30-July-2021
PP have submitted Third party efficiency test reports, Third party agency survey report & end user agreement and Project/Monitoring database. Information provided in the VCS PD, MR and ER sheet found correct. CL thus closed.				

CL ID	03	Section no.	4.1	Date : 24-June-2021
Description of CL				
Under the "HS syn" tab in the ER sheet, it has been mentioned that some beneficiaries (out of 160 have discontinued or are partially using ICS. However, no. of days of operation of traditional cook stoves has been reported as 0.				
PP shall clarify on how it is ensured that no traditional cook stoves are in use since the improved cook stoves are being partially used during the current monitoring period.				
Project participant response				Date : 07-July-2021
Beneficiaries using improved cook stoves partially during the crediting period as assessed during the survey are not considered for the purpose of emission reduction calculation.				
Percentage of cook stoves in operation are estimated based on the number of beneficiaries using cook stove for all purpose.				
Therefore, based on the CL the number of days of operation of traditional cook stoves for beneficiaries using improved cook stove partially has been denoted as NA in the emission reduction calculation sheet.				
Documentation provided by project participant				
Emission Reduction Sheet Version 02				
DOE assessment				Date: 30-July-2021
Verification team has checked the calculations in the ER sheet and confirms that the beneficiaries using the traditional cookstoves have not been considered for Percentage of cook stoves in operation and therefore, are not included in the calculation of the emission reduction. CL thus closed.				

Table 3. CAR from this verification

GAP Validation

CAR ID	04	Section no.	3	Date: 24-June-2021
Description of CAR				

1. PP requested to refer and apply VCS standard version 4.1 which is valid and current version of the standard. Corrective action sought.
2. Editorial mistakes observed in the VCS PD. Refer comments provided in VCS PD and thus corrections requested.
3. Footnote reference found not superscripted and footnotes missing in the VCS PD. Corrections requested.
4. VCS PD section, Appendix not attempted nor deleted as per instructions to complete VCS PD. Corrective action sought.
Project participant response
Date: 07-July-2021
1. VCS standard version 4.1 has now been referred.
2. Editorial mistakes have now been corrected in Project Design Document Version 02.
3. Footnote references have now been superscripted and relevant footnotes have now been incorporated in Project Design Document Version 02.
4. Appendix has now been deleted from the Project Design Document Version 02.
Documentation provided by project participant
Project Design Document Version 02.
DOE assessment
Date: 30-July-2021
1. PP have revised the VCS PD inline with the latest version of standard i.e. Version 4.1 and found correct. CAR thus closed.
2. PP have revised the VCS PD appropriately inline with comments raised. Hence, CAR closed.
3. PP have submitted revised VCS PD with footnote reference superscripted and added footnotes in the VCS PD. CAR thus closed.
4. PP have submitted revised VCS PD with deleting section, Appendix as not applicable. CAR thus closed.

CAR ID	05	Section no.	3.1	Date: 24-June-2021
Description of CAR				
PP requested to submit declaration in effect of avoiding double counting with regard to Participation under other GHG Programs/Other forms credits. Corrections sought.				
Project participant response				Date: 07-July-2021
No double counting declaration has now been submitted to assessment team.				
Documentation provided by project participant				
No double counting declaration				
DOE assessment				Date: 30-July-2021
PP have submitted a declaration in effect of avoiding double counting with regard to Participation under other GHG Programs/Other forms credits. CAR thus closed.				

CAR ID	06	Section no.	4.2.1	Date: 24-June-2021
Description of CAR				
Section 2.4 of VCS PD is not found completed inline with guidelines to complete VCS PD. Corrections sought.				
Project participant response				Date: 07-July-2021
Relevant information has now been incorporated in section 2.4 of VCS Project Design Document version 02.				
Documentation provided by project participant				
Project Design Document Version 02.				
DOE assessment				Date: 30-July-2021
PP have revised the VCS PD section 2.4 and found correct. CAR thus closed.				

Verification

CAR ID	07	Section no.	4.1	Date: 24-June-2021
Description of CAR				
1.	PP requested to refer and apply VCS standard version 4.1 which is valid and current version of the standard. Corrective action sought.			
2.	MR not completed using instructions to complete MR including font and font size. Corrections requested.			
3.	PP requested to review and correct footnotes as some are non-functional. Corrections requested.			
4.	Section 1.4 of the VCS PD and MR, the details of PP are inconsistent with the details provided in CDM PDD. Corrective action sought.			
5.	Applied methodology is not consistent throughout MR. Corrective action sought.			

Project participant response	Date: 07-July-2021
1. VCS standard version 4.1 has now been applied and referred in monitoring report version 02. 2. Font type and size has now been made as per the instructions. 3. Footnotes have now been rectified and updated in monitoring report Version 02. 4. Details of Project Participant has now been made consistent with the registered CDM PDD. 5. Applied methodology has now been made consistent throughout the Monitoring Report Version 02.	
Documentation provided by project participant	
1. Monitoring Report Version 02. 2. Project Design Document 02	
DOE assessment	Date: 30-July-2021
1. PP submitted revised VCS PD with referring to the VCS standard version 4.1 and found correct. CAR thus closed. 2. MR revised and completed using instructions to complete MR including font and font size. CAR closed. 3. PP revised the footnote and now functional. CAR closed. 4. Section 1.4 of the VCS PD and MR, the details of PP are now revised and found correct. CAR thus closed. 5. Applied meth version is now revised inline with CDM PDD and found correct. CAR closed.	

CAR ID	08	Section no.	4.2.2	Date: 24-June-2021
Description of CAR				
Section 2.2 of VCS MR is not found completed inline with guidelines to complete VCS MR, Version 04. Information on ongoing LSC mechanism and comments during monitoring period is missing. PP requested to submit grievance register. Corrections sought.				
Project participant response				Date: 07-July-2021
Relevant information has now been incorporated in section 2.2 of Monitoring Report Version 02. Information regarding the LSC mechanism and grievances received during the current monitoring period have also been incorporated.				
Documentation provided by project participant				
1. Monitoring Report Version 02 2. Copy of Grievance Register				
DOE assessment				Date: 30-July-2021
Section 2.2 of the MR now revised for the ongoing LSC communications and details of grievances during this monitoring period and found correct. CAR thus closed.				

CAR ID	09	Section no.	4.1	Date : 24-June-2021
Description of CAR				
In Section 3.1 of the MR, lacks actual implementation status of the project activity. Further information on "The operation of the project activity(s) during this monitoring period, including any information on events that may impact the GHG emission reductions or removals and monitoring." & "Any other changes (e.g., to project proponent or other entities)" is missing. Corrections sought.				
Project participant response				Date : 07-July-2021
Under section 3.1 of the VCS Monitoring Report Version 02 the operation of the project activity(s) during this monitoring period has now been incorporated.				
Documentation provided by project participant				
Monitoring Report Version 02.				
DOE assessment				Date: 30-July-2021
PP have submitted revised MR with the details of actual implementation of the project activity and found correct. CAR closed.				

CAR ID	10	Section no.	4.4	Date : 24-June-2021
Description of CAR				

1. PP requested to submit supporting documents for the monitored parameters. 2. Tables for fixed ex-ante & expost parameters missing information on purpose of data. Corrective action sought. 3. Under section 4.2 of the VCS MR, tables are not completed for frequency of monitoring, equipments, etc. 4. Also values of the monitored parameters missing under Section 4.2 of the MR.	
Project participant response	Date : 07-July-2021
1. Supportive documents for the monitored parameters have now been submitted to assessment team. 2. Purpose of data has now been incorporated in all the tables. 3. Relevant information has now been incorporated in all the tables in section 4.2 of VCS Monitoring Report Version 02. 4. Values have now been incorporated for all the parameters in Monitoring Report Version 02.	
Documentation provided by project participant	
Monitoring Report Version 02.	
DOE assessment	Date: 30-July-2021
1. Supportive documents for the monitored parameters have now been now submitted by the PP and values in the MR & ER sheet are found correct. CAR closed. 2. Purpose of data has now clearly mentioned in the parameter tables. CAR thus closed. 3. Relevant information like frequency of monitoring, equipments, etc has been now in the tables in section 4.2 of VCS Monitoring Report. CAR thus closed. 4. Values for all the parameters are now provided in the revised MR. CAR thus closed.	

Table 4. FAR from this verification

FAR ID	-	Section No.	-	Date : DD/MM/YYYY
Description of FAR				
There is no FAR from this verification				
Project participant response				Date : DD/MM/YYYY
NA				
Documentation provided by project participant				
NA				
DOE assessment				Date: DD/MM/YYYY
NA				

APPENDIX 3: COMPETENCE OF TEAM MEMBERS AND TECHNICAL REVIEWERS

Competence Statement	
Name	Atul Takarkhede
Education	Ph.D. Environmental Science
Experience	12 years

Field	Climate Change and environment		
Approved Roles			
Team Leader	YES		
Validator	NO		
Verifier	NO		
Methodology Expert	NO		
Local expert	NO		
Financial Expert	NO		
Technical Reviewer	NO		
TA Expert	YES (1.2)		
Reviewed by	Shreya Garg	Date	24/04/2019
Approved by	Anshika Gupta	Date	25/04/2019

Competence Statement			
Name	Sanjeev Kumar		
Country	India		
Education	B. Tech. (Chemical Engineering) M.Tech. (Energy Management)		
Experience	13.5 years +		
Field	Climate Change, Environment, Energy		
Approved Roles			
Team Leader	YES		
Validator	YES		
Verifier	YES		
Methodology Expert	YES (ACM0002, ACM0006, ACM0004, ACM0009, ACM0012, ACM0001, AMS I.D, AMS I.F, AMS I.C, AMS I.A, AMS II.C, AMS II.D, AMS II.E, AMS III.H, AM0009, AM0013, AM0025, AM0056, AM0028, AM0029, AM0008, AMS III.R, ACM0003)		
Local expert	YES (India)		
Financial Expert	NO		
Technical Reviewer	YES		
TA Expert	YES (TA 1.1, TA 1.2, 4.1, 13.1)		
Reviewed by	Shreya Garg	Date	16/01/2020
Approved by	Anshika Gupta	Date	16/01/2020

Competence Statement	
Name	Shreya Garg

Country	India		
Education	M.Sc. (Climate Science & Policy), TERI University		
Experience	7 Years +		
Field	Climate Change		
Approved Roles			
Team Leader	YES		
Validator	YES		
Verifier	YES		
Methodology Expert	AMS.I.A., AMS.I.C., AMS.I.D., AMS.I.F., AMS.II.D., AMS.II.G., AMS.II.J., AMS.III.AV., ACM0002, ACM0012		
Local expert	YES (India)		
Financial Expert	NO		
Technical Reviewer	YES		
TA Expert	YES (TA 1.2, TA 3.1)		
Reviewed by	Abhishek Mahawar	Date	01/03/2018
Approved by	Ashok Gautam	Date	01/03/2018

APPENDIX 4: ABBREVIATIONS

Abbreviations	Full texts
CAR	Corrective Action Request
CDM	Clean Development Mechanism
CER	Certified Emission Reduction(s)
CEA	Central Electricity Authority
CL	Clarification request
CO ₂	Carbon dioxide
CO ₂ e	Carbon dioxide equivalent
DNA	Designated National Authority
DOE	Designated Operational Entity
DR	Document Review

EF	Emission Factor
EIA	Environmental Impact Assessment
ER	Emission Reductions
FAR	Forward Action Request
GHG	Greenhouse gas(es)
GWP	Global Warming potential
PP	Project Participant
VVB	Validation & Verification Body